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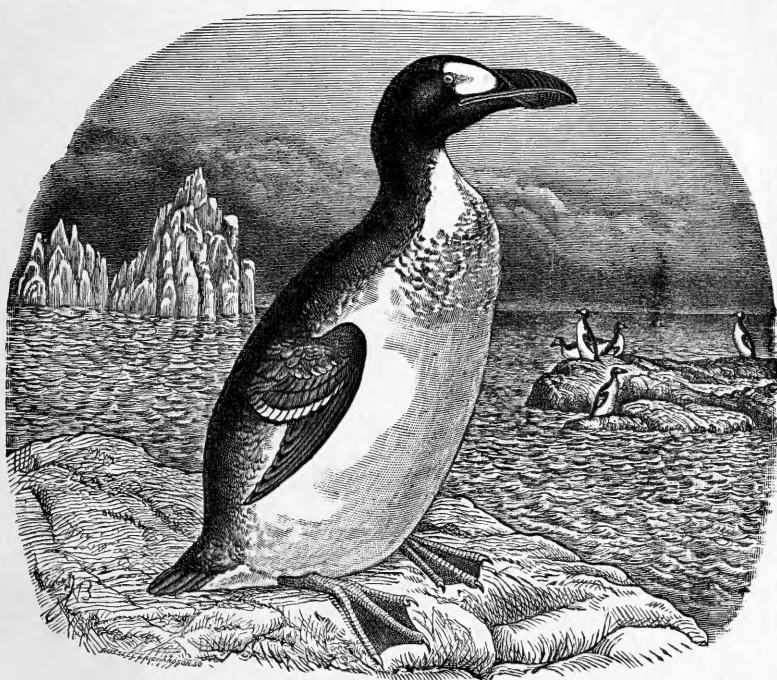
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¹ The date of capture given on the plate should be 1893 instead of 1896.

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IHRING, DR. HERMANN VON, Museu Paulista, Sao Paulo, Brazil....	1902
KNUDSON, VALDEMAR, Kauai, Hawaiian Islands.....	1888
KRUKENBERG, DR. E. F. W., Würzburg, Germany.....	1884
KRÜPER, DR. THEOBALD J., University Museum, Athens, Greece....	1884
LEGGE, WILLIAM V., Cullenswood House, St. Mary's, Tasmania....	1891
LEVERKÜHN, DR. PAUL, The Palace, Sophia, Bulgaria.....	1890
MACFARLANE, ROBERT, Winnipeg, Manitoba.....	1886
MADARÁSZ, DR. JULIUS VON, National Museum, Budapest, Hungary..	1884
MENZBIER, DR. M., Imperial Society of Naturalists, Moscow.....	1884
NAMIYE, M., Tokio.....	1886
NICHOLSON, FRANCIS, 84 Major St., Manchester, England.....	1884
NORTH, ALFRED J., Australian Museum, Sydney, New South Wales.....	1902
OATES, EUGENE WILLIAM, 1 Carlton Gardens, Ealing, London, W..	1884
OUSTALET, DR. EMILE, Jardin des Plantes, 55 Rue de Buffon, Paris..	1888
PALMÉN, DR. J. A., Helsingfors, Finland.....	1883
PHILIPPI, DR. R. A., Santiago, Chili.....	1884
PYCRAFT, W. P., British Museum (Nat. Hist.), Cromwell Road, London, S. W.....	1902
RAMSEY, E. P., Sydney, New South Wales.....	1884
RINGER, FREDERIC, Nagasaki.....	1888
ROTHSCHILD, HON. L. WALTER, Zoölogical Museum, Tring, England.....	1898
SCHALOW, HERMAN, 15 Schleswiger Ufer, Berlin, N. W.....	1884
SHELLEY, Capt. G. E., 39 Edgerton Gardens, South Kensington, London, S. W., England.....	1884
SUCSHKIN, DR. PETER, Imperial University, Moscow, Russia.....	1903
THEEL, DR. HJALMAR, University of Upsala, Upsala, Sweden.....	1884
TRISTRAM, Rev. Canon H. B., The College, Durham, England.....	1884
TSCHUSI ZU SCHMIDHOFFEN, VICTOR RITTER VON, Hallein, (Villa Tännenhof), Salzburg, Austria.....	1884
WATERHOUSE, F. H., 3 Hanover Square, London, W.	1889
WINGE, DR. HERLUF, Copenhagen, Denmark.....	1903
WOODHOUSE, DR. SAMUEL W., Philadelphia, Pa.....	1903
WORCESTER, Prof. DEAN C., Manila, P. I.....	1903
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 TORREY, BRADFORD, Wellesley Hills, Mass.....1901
 TOWNSEND, CHARLES H., Aquarium, Battery Park, New York City..1901
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 Colo.....1898
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ATKINSON, Dr. DANIEL ARMSTRONG, Wilksburg, Pa.....	1899
ATKINSON, GEORGE E., Portage la Prairie, Manitoba.....	1903
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BARBOUR, Rev. ROBERT, 62 Walnut St., Montclair, N. J.....	1902
BARBOUR, THOMAS, 13 Conant Hall, Cambridge, Mass.....	1903
*BARBOUR, Mrs. WILLIAM D., 235 Madison Ave., New York City....	1901
BARNARD, JOB, 1306 Rhode Island Ave., Washington, D. C.....	1886
BARNES, Hon. R. MAGOON, Lacon, Ill.....	1889
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BOWDITCH, HAROLD, Jamaica Plain, Boston, Mass.....	1900
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BRENNAN, CHARLES F., Mount Carmel, Ill.....	1902
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BROOKS, Rev. EARLE AMOS, Waverly, W. Va.....	1892
BROOKS, CLARENCE MORRISON, 105 West St., Keene, N. H.....	1900
BROWN, EDWARD J., Lemon City, Florida.....	1891
BROWN, HUBERT H., 70 Collier St., Toronto, Ontario.....	1889
BROWN, STEWARDSON, Germantown, Philadelphia, Pa.....	1895
BROWN, WILMOT W., Jr., 52 Trowbridge St., Cambridge, Mass.....	1892
BROWNSON, W. H., Advertiser Office, Portland, Me.....	1903
BRYANT, OWEN, 56 Plympton St., Cambridge, Mass.....	1903
BUCK, HENRY ROBINSON, Box 213, Hartford, Conn.....	1897
BUMPUS, Dr. HERMON C., Am. Mus. Natural History, New York City.	1901
BURGESS, JOHN KINGSBURY, Dedham, Mass.....	1898
BURKE, Wm. BARDWELL, 130 Spring St., Rochester, N. Y.....	1901
BURNETT, LEONARD E., Little Medicine, Wyo.....	1903
BURNETT, WILLIAM L., 128 N. Sherwood St., Fort Collins, Colo....	1895
BURNHAM, JOHN, Jackson, Mich.....	1903
BURTCH, VERDI, Branchport, N. Y.....	1903
BURTIS, HENRY MOTT, Babylon, N. Y.....	1897
BUXBAUM, Mrs. CLARA E., 2305 Niles St., St. Joseph, Mich.....	1895
CALLENDER, JAMES PHILLIPS, 603 Springfield Ave., Summit, N. J.	1903
CAMERON, E. S., V. Ranch, Terry, Montana.....	1903
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CARPENTER, Rev. CHARLES KNAPP, Polo, Ill.....	1894
CARROLL, JAMES J., Camden, Texas.....	1898
CARY, MERRITT, Dept. of Agriculture, Washington, D. C.....	1898
CASE, Rev. BERT F., Middle Haddam, Conn.....	1903
CASE, CLIFFORD M., 100 Ashley St., Hartford, Conn.....	1892
CASH, HARRY A., 37 N. Main St., Providence, R. I.....	1898
CHAMBERLAIN, CHAUNCY W., 36 Lincoln St., Boston, Mass.....	1885
CHAPIN, Prof. ANGIE CLARA, Wellesley College, Wellesley, Mass...	1896
CHASE, Mrs. AGNES, 59 Florida Ave., N. W., Washington, D. C....	1896
CHILDS, JOHN LEWIS, Floral Park, N. Y.....	1900
CHRISTY, BAYARD H., 403 Frederick Ave., Sewickley, Pa.....	1901
CHUBB, SAMUEL H., 468 W. 153d St., New York City.....	1894

CLAPP, Miss M. G. B., 163 East St., Pittsfield, Mass.....	1903
CLARK, AUSTIN HOBART, 107 Audubon Road, Boston, Mass.....	1899
CLARK, EDWARD B., 341 Oak St., Chicago, Ill.....	1900
CLARK, JOSIAH H., 238 Broadway, Paterson, N. J.....	1895
CLARKE, Dr. CHARLES K., Rockwood Hospital, Kingston, Ont....	1902
CLARKE, Miss HARRIET E., 9 Chestnut St., Worcester, Mass.....	1896
CLEVELAND, Dr. CLEMENT, 59 W. 38th St., New York City.....	1903
COALE, HENRY K., Highland Park, Ill.....	1883
COGGINS, HERBERT LEONARD, 5025 McKean Ave., Germantown, Philadelphia, Pa.....	1898
COLBURN, ALBERT E., P. O. Box 212, Santa Barbara, Cal.....	1891
COLE, ROY NALL, Newnan, Ga.....	1902
COLVIN, WALTER S., Osawatomie, Kansas.....	1896
COMEAU, NAPOLEON A., Godbout, Quebec.....	1885
COMEY, ARTHUR C., 54 Concord Ave., Cambridge, Mass.....	1901
COMMONS, Mrs. MARIE A., 2437 Park Ave., Minneapolis, Minn....	1902
CONANT, Mrs. MARTHA W., 243 W. 98th St., New York City.....	1901
CONGDON, JAMES W., 202 S. 9th St., La Crosse, Wis.....	1902
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COPE, FRANCIS R., Jr., Dimock, Pa.....	1892
COPELAND, Dr. ERNEST, 141 Wisconsin St., Milwaukee, Wis.....	1897
COPELAND, MANTON, 40 Winthrop St., Taunton, Mass.....	1900
COUES, Dr. WILLIAM PEARCE, 90 Charles St., Boston, Mass.....	1888
COX, ULYSSES O., State Normal School, Mankato, Minn.....	1894
CRAM, R. J., 26 Hancock Ave., W., Detroit, Mich.....	1893
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DEARBORN, NED, Field Columbian Museum, Chicago, Ill.....	1902
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FARR, MARCUS S., 12 Maple St., Princeton, N. J.....	1900
FARWELL, Mrs. ELLEN DRUMMOND, Lake Forest, Ill.....	1896
FARWELL, Mrs. FRANCIS COOLEY, Lake Forest, Ill.....	1898
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FERNALD, ROBERT HEYWOOD, Washington Univ., St. Louis, Mo....	1890
FERRY, JOHN FARWELL, 50 State St., Albany, N. Y.....	1894
FIELD, EDWARD BRONSON, 981 Asylum Ave., Hartford, Conn.....	1898
FIELD, EUGENE DWINELL, 200 Beacon St., Hartford, Conn.....	1899
FINNEY, Mrs. WILLIAM W., Churchville, Ind.....	1900
FISHER, Miss ELIZABETH WILSON, 1502 Pine St., Philadelphia, Pa...	1896
FISHER, WILLIAM H., 1318 Bolton St., Baltimore, Md.....	1895
FISHER, WILLIAM HUBBELL, Wiggins Block, Cincinnati, Ohio.....	1883
FLANAGAN, JOHN H., 392 Benefit St., Providence, R. I.....	1898
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FLINT, HARRY W., Yale National Bank, New Haven, Conn.....	1888
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FOWLER, HENRY W., Acad. Nat. Sci., Logan Square, Philadelphia, Pa.	1898
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FRASER, DONALD, Johnstown, N. Y.....	1902
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FULLER, CHARLES ANTHONY, Sumner Road, Brookline, Mass.....	1894
GAMMELL, IVES, 170 Hope St., Providence, R. I.....	1903
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GERMANN, F. W., 214 S. Geneva St., Ithaca, N. Y.....	1901
GESNER, Rev. ANTHON T., Shattuck School, Faribault, Minn.....	1899
GILBERT, CLARENCE H., Portland, Oregon.....	1903
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GILLET, LOUIS BLISS, North Wilbraham, Mass.....	1895
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GOULD, JOSEPH E., Lima, Ohio.....	1889
GRANGER, WALTER W., Am. Mus. Nat. Hist., New York City.....	1891
GREENOUGH, HENRY V., 48 Mt. Auburn St., Cambridge, Mass.....	1901
GRIFFING, MOSES BOWDITCH, Shelter Island Heights, N. Y.....	1897

GRIFFITHS, BARTRAM W., 4024 Green St., Philadelphia, Pa.....	1902
HALES, HENRY, Ridgewood, N. J.....	1890
HALL, CHARLES K., 54 Tweedle Bldg., Albany, N. Y.....	1903
HAMBLETON, JAMES CHASE, 212 E. 11th St., Columbus, Ohio.....	1903
HAMFELDT, A., Morris, Ill.....	1892
HAMLIN, GEORGE L., 16 Division St., Danbury, Conn.....	1893
HANKINSON, THOMAS LEROY, Charleston, Ill.....	1897
HANN, HERBERT H., 700 Springfield Ave., Summit, N. J.....	1903
HARRIMAN, Miss CORNELIA, 229 Madison Ave., New York City.....	1899
HARRIMAN, Miss MARY, 229 Madison Ave., New York City.....	1899
HARRIS, JOHN CAMPBELL, 119 S. 16th St., Philadelphia, Pa.....	1903
HARTLEY, GEORGE INNESS, 159 Grove St., Montclair, N. J.....	1901
HARVEY, HERBERT A., 86 Boylston St., Bradford, Pa.....	1899
HARVEY, Miss RUTH SAWYER, Bond Hill, Ohio.....	1902
HATHAWAY, HENRY S., Box 498, Providence, R. I.....	1897
HAVEMEYER, H. O., Jr., Mahwah, N. J.....	1893
HAZARD, Hon. R. G., Peace Dale, R. I.....	1885
HEAD, Miss ANNA, 2538 Channing Way, Berkeley, Cal.....	1903
HECOX, Miss LAURA J. F., Light House Keeper, Santa Cruz, Cal....	1897
HEDGES, CHARLES F., Box 24, Miles City, Montana.....	1891
HEERMANCE, EDGAR THORNTON, 364 Palisade Ave., Yonkers, N. Y..	1903
HEIMSTREET, Dr. T. B., 2217 15th St., Troy, N. Y.....	1888
HELME, ARTHUR H., Millers Place, N. Y.....	1888
HENDERSON, Judge JUNIUS, Boulder, Colo.....	1903
HENDRICKSON, W. F., 130 12th St., Long Island City, N. Y.....	1885
HENNINGER, Rev. WALTHER F., 206 Jefferson St., Tiffin, Ohio.....	1898
HIGBEE, HARRY G., 13 Austin St., Hyde Park, Mass.....	1900
HILL, JAMES HAYNES, Box 485, New London, Conn.....	1897
HILL, Mrs. THOMAS R., 1825 Greene St., Philadelphia, Pa.....	1903
HINDSHAW, HENRY HAVELOCK, N. Y. State Museum, Albany, N. Y.	1897
HINE, Prof. JAMES STEWART, State Univ., Columbus, Ohio.....	1899
HINE, Mrs. JANE L., Sedan, Ind.....	1890
HINTON, Miss SUSAN McV., 41 W. 32d St., New York City.....	1900
HITCHCOCK, FRANK H., Dept. of Commerce and Labor, Washington, D. C.....	1891
HODGE, Prof. CLIFTON FREMONT, Clark Univ., Worcester, Mass....	1899
HOLDEN, Mrs. EMELINE T., 13 E. 79th St., New York City.....	1902
HOLDEN, Mrs. EDWIN B., 353 Riverside Drive, New York City.....	1903
HOLLAND, Dr. WILLIAM J., 5th and Bellefield Aves., Pittsburgh, Pa..	1899
HOLLISTER, NED, Delavan, Wis.....	1894
HOLLISTER, WARREN D., Care of Cont. Oil Co., Albuquerque, N. M.	1901
HOLMES, LA RUE KLINGLE, Pine Grove Ave., Summit, N. J.....	1902
HOOVER, Mrs. CHARLES PARKER, 67 Chestnut St., Springfield, Mass.	1903
HORNADAY, W. T., N. Y. Zoölogical Park, New York City.....	1888
HORTON, Mrs. FRANCES B., 13 Brook St., Brattleboro, Vt.....	1900
HOWARD, OZORA WILLIAM, 853 S. Olive St., Los Angeles, Cal.....	1898

HOWE, CARLTON D., Essex Junction, Vt.....	1901
HOWE, REGINALD HEBER, Jr., Longwood, Brookline, Mass.....	1895
HOWES, ARCHIE MILTON, 1109 State St., Erie, Pa.....	1903
HOWLAND, RANDOLPH H., 130 Grove St., Montclair, N. J.....	1903
HUBBARD, Mrs. SARA A., 177 Woodruff Ave., Flatbush, N. Y.....	1891
HUBEL, FREDERICK C., 112 Alexandrine Ave., W., Detroit, Mich....	1903
HUGHES, Dr. WILLIAM E., 3945 Chestnut St., Philadelphia, Pa.....	1891
HULL, WALTER B., Box 1234, Milwaukee, Wis.....	1889
HUNN, JOHN T. SHARPLESS, 1218 Prospect Ave., Plainfield, N. J.....	1895
HUNT, CHRESWELL J., 1306 N. 53rd St., West Philadelphia, Pa.....	1902
HUNTER, Miss SUSAN MORRISON, 51 Hunter Ave., Newport, R. I....	1894
HUNTER, W. D., Box 174, Victoria, Texas.....	1899
HYDE, Miss HAZEL R., 45 Pine St., Waterbury, Conn.....	1902
INGALLS, CHARLES E., East Templeton, Mass.....	1885
INGERSOLL, ALBERT M., 818 5th St., San Diego, Cal.....	1885
IRVING, JOHN, 550 Park Av., New York City.....	1894
ISHAM, C. B., 30 E. 63d St., New York City.....	1891
JACKSON, THOMAS H., 343 E. Biddle St., West Chester, Pa.....	1888
JACOBS, J. WARREN, Waynesburg, Pa.....	1889
JANNEY, NATHANIEL E., 112 Drexel Bldg., Philadelphia, Pa.....	1899
JENKINS, HUBERT OLIVER, Stanford University, Cal.....	1902
JESURUN, Dr. MORTIMER, Douglas, Wyoming.....	1890
JOHNSON, EVERETT EDWIN, East Hebron, Me.....	1896
JOHNSON, FRANK EDGAR, 747 Warburton Ave., Yonkers, N. Y.....	1888
JOHNSON, JAMES HOWARD, Bradford, N. H.....	1894
JOHNSON, WALTER ADAMS, 1 Rutherford Place, New York City....	1898
JOHNSON, WILLIAM S., Boonville, N. Y.....	1893
JORDAN, A. H. B., Lowell, Wash.....	1888
JUDD, ELMER T., Cando, N. Dakota.....	1895
KEYS, JAMES EDWARD, 328 St. George St., London, Ontario.....	1899
KEIM, THOMAS DANIEL, 405 Radcliffe St., Bristol, Pa.....	1902
KELKER, WILLIAM A., Box 114, Harrisburg, Pa.....	1896
KELLOGG, Prof. VERNON L., Stanford University, Cal.....	1888
KENDALL, Dr. WILLIAM C., U. S. Fish Comm., Washington, D. C..	1886
KENNARD, FREDERIC HEDGE, Brookline, Mass.....	1892
KEYSER, Rev. LEANDER S., 108 Third St., Canal Dover, Ohio.....	1891
KING, GEORGE GORDON, 16 E. 84th St., New York City.....	1888
KING, LE ROY, 20 E. 84th St., New York City.....	1901
KIRKWOOD, FRANK C., 1811 Maryland Ave., Baltimore, Md.....	1892
KNETSCH, ROBERT, Nunda, Ill.....	1898
KNIGHT, ORA WILLIS, 84 Forest Ave., Bangor, Me.....	1893
KNOLHOFF, FERDINAND WILLIAM, 28 Winans St., East Orange, N. J.	1897
KNOX, JOHN C., 14 State St., Auburn, N. Y.....	1897
KNOX, JOHN COWING, Jackson, Minn.....	1899
KOBBÉ, WILLIAM H., 125 High St., New Haven, Conn.....	1898
KOCH, Prof. AUGUST, Williamsport, Pa.....	1891

KOHN, GUSTAVE, 136 Carondelet St., New Orleans, La.....	1886
KOPMAN, HENRY HAZLITT, 5509 Hurst St., New Orleans, La.....	1899
LACEY, HOWARD GEORGE, Kerrville, Texas.....	1899
LANO, ALBERT, Aitkin, Minn.....	1890
LANTZ, Prof. DAVID ERNEST, Agl. Exper. Station, Manhattan, Kan..	1885
LARABEE, AUSTIN P., Gardiner, Me.....	1902
LARKIN, HARRY H., 237 North St., Buffalo, N. Y.....	1903
LATIMER, Miss CAROLINE P., 19 Pierpont St., Brooklyn, N. Y.....	1898
LAURENT, PHILIP, 31 E. Mt. Airy Ave., Philadelphia, Pa.....	1902
LEE, Prof. LESLIE ALEXANDER, 3 Bath St., Brunswick, Me.....	1903
LEE, Miss MARY, 241 W. Seymour St., Germantown, Pa.....	1898
LEUTLOFF, HERMAN C. A., 626 E. 135th St., New York City.....	1896
LEVERING, THOMAS HENRY, 3327 17th St., Washington, D. C.....	1898
LEVERSON, Dr. MONTAGUE R., 81 Lafayette Ave., Brooklyn, N. Y...	1901
LIBBY, ORIN GRANT, Grand Forks, N. Dakota.....	1900
LINN, Miss HENRIETTA, 2378 N. 42nd Court, Chicago, Ill.....	1903
LINTON, Miss M. J., 163 East St., Pittsfield, Mass.....	1903
LLOYD, ANDREW JAMES, 308 Newbury St., Boston, Mass.....	1900
LOOMIS, JOHN A., Mereta, Texas.....	1887
LORD, Rev. WILLIAM R., 9 Park St., Boston, Mass.....	1901
LORING, J. ALDEN, Owego, New York.....	1889
LOUCKS, WILLIAM E., Care of J. K. Armsby Co., 134' Market St., San Francisco, Cal.....	1902
LOWE, WILLOUGHBY P., Okehampton, Devon, England.....	1893
LYMAN, Miss EMILY R., 121 N. 18th St., Philadelphia, Pa.....	1903
MACDOUGALL, GEORGE R., 131 W. 73rd St., New York City.....	1890
MAHER, J. E., Windsor Locks, Conn.....	1902
MANN, JAMES R., Arlington Heights, Mass.....	1903
MARCH, Prof. JOHN LEWIS, Union College, Schenectady, N. Y.....	1903
MARRS, Mrs. KINGSMILL, Maitland, Fla.....	1903
MARTIN, Mrs. MARIA ROSS, Box 365, New Brunswick, N. J.....	1902
MADDOCK, Miss EMELINE, 2025 DeLancey Pl., Philadelphia, Pa.....	1897
MAITLAND, ROBERT L., 30 Broad St., New York City.....	1889
MARSH, DANIEL J., Springfield, Mass.....	1894
MASTERMAN, ELMER ELLSWORTH, New London, Ohio.....	1895
MATHEWS, Miss CAROLINE, 41 Cool St., Waterville, Me.....	1898
MAYNARD, HENRY W., Dept. of Agriculture, Washington, D. C....	1901
MCATEE, WALDO LEE, Dept. of Agriculture, Washington, D. C....	1903
MCCLINTOCK, NORMAN, Amberson Ave., Pittsburgh, Pa.....	1900
MCCOOK, PHILIP JAMES, 32 E. 45th St., New York City.....	1895
MCEWEN, DANIEL C., 160 Stirling Pl., Brooklyn, N. Y.....	1901
MCHATTON, Dr. HENRY, Macon, Ga.....	1898
MCILHENNY, EDWARD AVERY, Avery's Island, La.....	1894
MCKECHNIE, FREDERICK BRIDGHAM, Ponkapog, Mass.....	1900
MCLAIN, ROBERT BAIRD, cor. Market & 12th Sts., Wheeling, W. Va...	1893
McMILAN, Mrs. EDITH E., Gorham, N. H.....	1902

McNULTY, HENRY A., Gen. Theol. Seminary, Chelsea Sq., N. Y. City.	1900
MEARNS, LOUIS DI ZEREGA, 313 S. Court St., Circleville, Ohio.	1899
MEEKER, JESSE C. A., 746 E. Main St., Bridgeport, Conn.	1899
MERRILL, HARRY, Bangor, Maine.	1883
MILLER, ANDREW JAMES, 18 Washington St., Montgomery, Ala.	1903
MILLER, Frank M., 309 Hibernia Bank, New Orleans, La.	1901
MILLER, GERRIT SMITH, Jr., U. S. Nat. Mus., Washington, D. C.	1886
MILLER, Miss MARY MANN, 827 De Kalb Ave., Brooklyn, N. Y.	1898
MILLER, WALDRON DE WITT, 309 E. 7th St., Plainfield, N. J.	1896
MILLS, HARRY C., Box 218, Unionville, Conn.	1897
MILLS, Prof. WILLIAM C., Ohio State Univ., Columbus, O.	1900
MITCHELL, Mrs. MINA BAKER, Care of Plow Co., Chattanooga, Tenn.	1898
MITCHELL, Dr. WALTON I., Metropolitan Hospital, Blackwells Island, New York City.	1893
MONTGOMERY, THOMAS H., Jr., Univ. of Texas, Austin, Texas.	1899
MOORE, ROBERT THOMAS, 67 Dana St., Cambridge, Mass.	1898
MOORE, WILLIAM HENRY, Scotch Lake, New Brunswick.	1900
MORCOM, G. FREAN, Care of C. O. Davey, 18 Endsleigh Place, Ply- mouth, England.	1886
MORGAN, ALBERT, Hartford Fire Insurance Co., Hartford, Conn.	1903
MORRIS, ROBERT O., Springfield, Mass.	1888
MORSE, GEORGE W., Box 230, Ashley, Ind.	1898
MORTON, Dr. HOWARD McILVAIN, 316 Clifton Av., Minneapolis, Minn.	1900
MUMMERY, EDWARD G., 24 E. Atwater St., Detroit, Mich.	1902
MURPHY, Dr. EUGENE E., 444 Telfair St., Augusta, Ga.	1903
MYERS, Miss LUCY F., "Brookside," Poughkeepsie, N. Y.	1898
NASH, HERMAN W., Box 264, Pueblo, Colo.	1892
NELSON, JAMES ALLEN, Biol. Hall, Univ. of Pa., W. Philadelphia, Pa.	1898
NEWMAN, Rev. STEPHEN M., 1818 M. St., N. W., Washington, D. C.	1898
NICHOLAS, ROSS, Abington Bldg., Portland, Oregon.	1901
NICHOLS, JOHN TREADWELL, 42 W. 11th St., New York City.	1901
NICHOLS, JOHN M., 46 Spruce St., Portland, Me.	1890
NOLTE, Rev. FELIX, St. Benedict's College, Atchison, Kan.	1903
NORRIS, J. PARKER, 723 Walnut St., Philadelphia, Pa.	1886
NORTON, ARTHUR HENRY WHITELEY, Box 918, San Antonio, Texas.	1894
NOWELL, JOHN ROWLAND, Union College, Schenectady, N. Y.	1897
O'CONNOR, HALDEMAN, 25 N. Front St., Harrisburg, Pa.	1896
ODGEN, Dr. HENRY VINING, 141 Wisconsin St., Milwaukee, Wis.	1897
OLCOTT, THEODORE F., Box 176, New Dorp, N. Y.	1901
OLDYS, HENRY, Dept. of Agriculture, Washington, D. C.	1896
OLIVER, DANIEL LEET, 701 Ridge Ave., Allegheny, Pa.	1902
OLIVER, HENRY KEMBLE, 2 Newbury St., Boston, Mass.	1900
O'NEIL, EDWARD, Sewickley, Pa.	1893
OSBURN, RAYMOND CARROLL, Columbia Univ., Dep't. Zoöl., New York City.	1899
OSBURN, Rev. WILLIAM, Belmont Ave., Station K, Cincinnati, O.	1890

OSGOOD, HENRY W., Pittsfield, N. H.....	1901
OWEN, Miss JULIETTE AMELIA, 306 N. 9th St., St. Joseph, Mo.....	1897
PAGE, Mrs. ALICE WILSON, Englewood, N. J.....	1896
PAINE, AUGUSTUS G., Jr., 311 W. 74th St., New York City.....	1886
PALMER, SAMUEL COPELAND, Swarthmore, Pa.....	1899
PARDEE, Dr. LUCIUS CROCKER, Highland Park, Ill.....	1902
PARKE, LOUIS T., 4038 Spruce St., Philadelphia, Pa.....	1903
PATTEN, Mrs. JEANIE MAWRY, 2212 R St. N. W., Washington, D. C.....	1900
PAULMIER, FREDERICK CLARK, State Museum, Albany, N. Y.....	1902
PEABODY, Rev. P. B., New Castle, Wyo.....	1903
PEABODY, WILLIAM RODMAN, 70 State St., Boston, Mass.....	1890
PEAVEY, ROBERT W., 497 Franklin Ave., Brooklyn, N. Y.....	1903
PERRY, ELTON, 110 Baylor St., Austin, Texas.....	1902
PETTIS, Miss GRACE L., Museum Nat. Hist., Springfield, Mass.....	1903
PHELPS, Mrs. ANNA BARDWELL, Box 36, Northfield, Mass.....	1899
PHILLIPS, ALEXANDER H., Princeton, N. J.....	1891
PIERCE, A. K., Renovo, Pa.....	1891
POE, Miss MARGARETTA, 1500 Park Ave., Baltimore, Md.....	1899
POMEROY, HARRY KIRKLAND, Kalamazoo, Mich.....	1894
POOLE, ALFRED D., 401 W. 7th St., Wilmington, Delaware.....	1901
PORTER, LOUIS H., Stamford, Conn.....	1893
PRAEGER, WILLIAM E., 5535 Monroe Ave., Chicago, Ill.....	1892
PROCTOR, Miss MARY A., Franklin Falls, N. H.....	1900
PURDUM, Dr. C. C., Tyler Bldg., Pawtucket, R. I.....	1901
PURDY, JAMES B., Plymouth, Mich.....	1893
RANN, Mrs. MARY L., Manchester, Iowa.....	1893
RAUB, Dr. M. W., Board of Health, Lancaster, Pa.....	1890
RAWSON, CALVIN LUTHER, Box 33, Norwich, Conn.....	1885
READ, ALBERT M., 1140 15th St. N. W., Washington, D. C.....	1895
REAGH, Dr. ARTHUR LINCOLN, 39 Maple St., West Roxbury, Mass.....	1896
REDFIELD, Miss ELISA WHITNEY, Seal Harbor, Me.....	1897
REDINGTON, ALFRED POETT, Box 66, Santa Barbara, Cal.....	1890
REED, J. HARRIS, Aldan, Pa.....	1890
REED, HUGH DANIEL, Cornell Univ., Ithaca, N. Y.....	1900
REHN, JAMES A. G., Acad. Nat. Sciences, Philadelphia, Pa.....	1901
RHOADS, CHARLES J., Bryn Mawr, Pa.....	1895
RIBYN, ALBERT L., 219 E. Boston St., Michigan City, Ind.....	1903
RICHARDS, Miss HARRIET E., 36 Longwood Ave., Brookline, Mass.....	1900
RICHARDS, JOHN BION, Box 32, Fall River, Mass.....	1888
RICHARDSON, C. H., Jr., 435 S. El Molino Ave., Pasadena, Cal.....	1903
RICHARDSON, JOHN KENDALL, Wellesley Hills, Mass.....	1896
RICKER, EVERETT WILDER, Box 5083, Boston, Mass.....	1894
RIDGWAY, JOHN L., Chevy Chase, Md.....	1890
RIKER, CLARENCE B., 48 Vesey St., New York City.....	1885
RILEY, JOSEPH H., Falls Church, Va.....	1897
RITCHIE, SANFORD, Dover, Me.....	1900

ROBBINS, REGINALD C., 373 Washington St., Boston, Mass.....	1901
ROBINS, MRS. EDWARD 114 S. 21st St., Philadelphia, Pa.....	1895
ROBINSON, ANTHONY W., 409 Chestnut St., Philadelphia, Pa.....	1903
ROBERTS, WILLIAM ELY, Swarthmore College, Swarthmore, Pa....	1902
ROBERTSON, HOWARD, Station A, Box 55, Los Angeles, Cal.....	1901
RODDY, Prof. H. JUSTIN, State Normal School, Millersville, Pa.....	1891
ROOSEVELT, FRANKLIN DELANO, Hyde Park, N. Y.....	1896
ROOSEVELT, THEODORE, Jr., White House, Washington, D. C.....	1902
ROTZELL, DR. W. E., Narberth, Pa.....	1893
ROWLAND, MRS. ALICE STORY, Public Library, Plainfield, N. J.....	1897
ROWLEY, JOHN, Jr., Hastings-on-Hudson, N. Y.....	1889
SABINE, GEORGE K., Brookline, Mass.....	1903
SAGE, HENRY M., Care of H. S. Sage & Co., Albany, N. Y.....	1885
SAMPSON, WALTER BEHRNARD, 921 N. Monroe St., Stockton, Cal....	1897
SAMUEL, JOHN HUGHES, 58 Church St., Toronto, Ontario.....	1902
SAND, ISABELLA LOW, Ardsley-on-Hudson, N. Y.....	1902
SANDS, AUSTIN LEDYARD, Greenough Place, Newport, R. I.....	1902
SANFORD, DR. LEONARD C., 216 Crown St., New Haven, Conn.....	1902
SARGENT, HARRY CLEVELAND, Chocorua, N. H.....	1900
SAVAGE, JAMES, 134 Abbott St., Buffalo, N. Y.....	1895
SAVAGE, WALTER GILES, Monteer, Mo.....	1898
SCHMITT, DR. JOSEPH, Laval Univ., Quebec.....	1901
SCHMUCKER, DR. S. C., 610 S. High St., West Chester, Pa.....	1903
SCHOENEBECK, AUGUST JOHN, Kelley Brook, Wis.....	1898
SCHURR, Prof. THEODORE A., 164 Linden St., Pittsfield, Mass.....	1888
SCHUTZE, ADOLPH E., 2306 Guadalupe St., Austin, Texas.....	1903
SEALE, ALVIN, Bishop Museum, Honolulu, H. I.....	1900
SEISS, COVINGTON FEW, 1338 Spring Garden St., Philadelphia, Pa....	1898
SEVERSON, HENRY P., Winneconne, Wis.....	1902
SHATTUCK, EDWIN HAROLD, Granby, Conn.....	1898
SHAW, HOLTON A., 610 4th Ave., Grand Forks, N. Dakota.....	1898
SHAW, LOUIS AGASSIZ, Chestnut Hill, Mass.....	1901
SHEIBLEY, S. B., Dept. of Justice, Washington, D. C.....	1903
SHERRILL, W. E., Haskell, Texas.....	1896
SHIELDS, GEORGE O., 23 W. 24th St., New York City.....	1897
SHOEMAKER, FRANK H., Care of Gen. Auditor U. P. R. R. Co., Omaha, Neb.....	1895
SHROSBREE, GEORGE, Public Museum, Milwaukee, Wis.....	1899
SILLIMAN, HARPER, 562 5th Ave., New York City.....	1902
SMITH, CHARLES PIPER, 2106 Central Ave., Indianapolis, Ind.....	1898
SMITH, Rev. FRANCIS CURTIS, Boonville, N. Y.....	1903
SMITH, HORACE G., 2918 Lafayette St., Denver, Colo.....	1888
SMITH, DR. HUGH M., 1209 M St. N. W., Washington, D. C.....	1886
SMITH, LOUIS IRVIN, Jr., 3908 Chestnut St., Philadelphia, Pa.....	1901
SMITH, PHILO W., 209 W. 6th St., St. Louis, Mo.....	1903
SMITH, ROBERT WINDSOR, Kirkwood, Ga.....	1895

SMITH, THEODORE H., 58 William St., New York City.....	1896
SMYTH, Prof. ELLISON A., Jr., Polytechnic Inst., Blacksburg, Va.....	1892
SNOW, Prof. FRANCIS H., Lawrence, Kan.....	1903
SNYDER, WILL EDWIN, Beaver Dam, Wis.....	1895
SOELNER, GEORGE W. H., 1513 Meridian St., N. W., Washington, D. C.....	1903
SPAID, Prof. ARTHUR R., 1819 Delaware Ave., Wilmington, Del.....	1901
SPAUDING, FRED B., Lancaster, N. H.....	1894
SPINNEY, HERBERT L., Seguin Light Station, Popham Beach, Me...	1900
SPRAGUE, LYNN TEW, 16 W. 5th St., Jamestown, N. Y.....	1903
SPROULL, Mrs. GRACE H., Greeley, Colo.....	1903
STACK, FREDERICK WILLIAM, 824 Park Ave., Plainfield, N. J.....	1900
STANTON, Prof. J. Y., Bates College, Lewiston, Me.....	1883
STEBBINS, Miss FANNIE A., 480 Union St., Springfield, Mass.....	1903
STEPHENSON, Mrs. LOUISE MCGOWN, Helena, Ark.....	1894
STONE, CLARENCE F., Branchport, N. Y.....	1903
STONE, DWIGHT D., R. F. D. 3, Owego, N. Y.....	1891
STURTEVANT, EDWARD, St. George School, Newport, R. I.....	1896
STYER, Mrs. KATHARINE R., Concordville, Pa.....	1903
SURBER, SHERRARD McCLURE, Taos, N. M.....	1902
SURFACE, HARVEY ADAM, Dept. of Agric., Harrisburg, Pa.....	1897
SWAIN, JOHN MERTON, Skowhegan, Me.....	1899
SWALES, BRADSHAW HALL, 46 Larned St., W., Detroit, Mich.....	1902
SWARTH, HARRY S., 356 Belden Ave., Chicago, Ill.....	1900
SWEZEY, GEORGE, 61 Polk St., Newark, N. J.....	1901
TALLEY, Prof. THOMAS WASHINGTON, Tuskegee, Ala.....	1896
TAVERNER, PERCY A., 95 N. Grand Boulevard W., Detroit, Mich.....	1902
TAYLOR, ALEXANDER O'DRISCOLL, 132 Bellevue Ave., Newport, R. I.....	1888
TEST, Dr. FREDERICK CLEVELAND, 4401 Indiana Ave., Chicago, Ill.....	1892
THAYER, JOHN ELIOT, Lancaster, Mass.....	1898
THOMAS, Miss EMILY HINDS, Bryn Mawr, Pa.....	1901
THOMPSON, Miss CAROLINE Burling., W. Clapier St., Germantown, Philadelphia, Pa.....	1900
TOPPAN, GEORGE L., 18 E. 23d St., New York City.....	1886
TOWNSEND, Dr. CHAS. WENDELL, 76 Marlborough St., Boston, Mass.....	1901
TOWNSEND, WILMOT, 3d Ave. and 75th St., Bay Ridge, N. Y.....	1894
TROTTER, WILLIAM HENRY, 36 No. Front St., Philadelphia, Pa.....	1899
TUDBURY, WARREN C., 47 W. 126th St., New York City.....	1903
TUFTS, LA ROY MELVILLE, Farmington, Me.....	1903
TURNER, HOWARD M., 10 Francis Ave., Cambridge, Mass.....	1903
TUTTLE, Dr. CARL, Berlin Heights, Ohio.....	1890
TWEEDY, EDGAR, 336 Main St., Danbury, Conn.....	1902
UNDERWOOD, WILLIAM LYMAN, Mass. Inst. Technology, Boston, Mass.....	1900
VAN CORTLANDT, Miss ANNE S., Croton-on-Hudson, N. Y.....	1885
VAN DENBURGH, Dr. JOHN, 1626 Turk St., San Francisco, Cal.....	1893
VAN NAME, WILLARD GIBBS, 121 High St., New Haven, Conn.....	1900

VAN NORDEN, WARNER MONTAGNIE, Rye, New York.....	1899
VAN SANT, Miss ELIZABETH, 717 N. Y. Life Bldg., Omaha, Neb....	1896
VARICK, Mrs. JOHN B., 1015 Chestnut St., Manchester, N. H.....	1900
VETTER, Dr. CHARLES, 152 Second St., New York City.....	1898
WALCOTT, FREDERICK COLLIN, New York Mills, N. Y.....	1903
WALES, EDWARD H., Hyde Park, N. Y.....	1896
WALKER, Dr. R. L., 355 Main St., Carnegie, Pa.....	1888
WALLACE, Miss LOUISE BAIRD, Mt. Holyoke College, South Hadley, Mass.....	1903
WALTER, HERBERT E., Lyndonville, Vt.....	1901
WALTERS, FRANK, 7 W. 103d St., New York City.....	1902
WARREN, Dr. B. H., Box 245, Westchester, Pa.....	1885
WARREN, EDWARD ROYAL, 20 W. Caramillo St., Colorado Springs, Colo.....	1902
WATSON, Miss SARAH R., Clapier St., Germantown, Philadelphia, Pa.	1900
WEBSTER, Mrs. MARY P., 1025 5th St., S. E., Minneapolis, Minn....	1900
WEIR, J. ALDEN, 11 E. 12th St., New York City.....	1899
WELLS, FRANK S., 916 Grant Ave., Plainfield, N. J.....	1902
WENTWORTH, IRVING H., Matehuala, E. de S. L. P., Mexico.....	1900
WEST, JAMES A., 706 S. Morris Ave., Bloomington, Ill.....	1896
WEST, LEWIS H., Roslyn, N. Y.....	1887
WESTFELDT, GUSTAF REINHOLD, Box 601, New Orleans, La.....	1902
WETMORE, Mrs. HELEN H., 343 Lexington Ave., New York City....	1902
WHEELER, EDMUND JACOB, 84 Pequot Ave., New London, Conn....	1898
WHEELER, JOHN B., East Templeton, Mass.....	1897
WHELOCK, Mrs. IRENE G., 1040 Hinman Ave., Evanston, Ill.....	1902
WHITCOMB, Mrs. ANNABELL C., 721 Franklin St., Milwaukee, Wis....	1897
WHITE, FRANCIS BEACH, 6 Phillips Place, Cambridge, Mass.....	1891
WHITE, GEORGE R., P. O. Dept., Ottawa, Quebec.....	1903
WHITE, W. A., 158 Columbia Heights, Brooklyn, N. Y.....	1902
WICKERSHAM, CORNELIUS W., 5 Linden St., Cambridge, Mass.....	1902
WICKS, M. L., Jr., Hellman Block, Los Angeles, Cal.....	1890
WILBUR, ADDISON P., 4 Gibson St., Canandaigua, N. Y.....	1895
WILCOX, T. FERDINAND, 115 W. 75th St., New York City.....	1895
WILDE, MARK L. C., 315 N. 5th St., Camden, N. J.....	1893
WILLARD, JOHN MELVILLE, Univ of California, San Francisco, Cal.	1902
WILLIAMS, J. BICKERTON, 24 Ann St., Toronto, Ontario.....	1889
WILLIAMS, RICHARD FERDINAND, Box 521, New York City.....	1902
WILLIAMS, ROBERT STATHAM, Botanical Gardens, New York City..	1888
WILLIAMS, ROBERT WHITE, Jr., Tallahassee, Fla.....	1900
WILLIAMS, W. J. B., Holland Patent, N. Y.....	1893
WILLIAMSON, E. B., Bluffton, Ind.....	1900
WILSON, SIDNEY S., 310 S. 11th St., St. Joseph, Mo.....	1895
WINKENWERDER, HUGO AUGUST, High School, Sheboygan, Wis....	1900
WISLER, J. JAY, Columbia, Pa.....	1903
WOLFE, WILLIAM EDWARD, Wray, Colo.....	1900

WOOD, J. CLAIRE, 179 17th St., Detroit, Mich.....	1902
WOOD, NELSON R., Smithsonian Institution, Washington, D. C.....	1895
WOODCOCK, ARTHUR ROY, Corvallis, Oregon.....	1901
WOODRUFF, EDWARD SEYMOUR, 14 E. 68th St., New York City.....	1899
WOODRUFF, LEWIS B., 14 E. 68th St., New York City.....	1886
WOODWORTH, Mrs. NELLY HART, 41 Bank St., St. Albans, Vt.....	1894
WORTHEN, CHARLES K., Warsaw, Ill.....	1891
WORTHINGTON, WILLIS W., Shelter Island Heights, N. Y.....	1889
WRIGHT, FRANK S., 51 Genesee St., Auburn, N. Y.....	1894
WRIGHT, HORACE WINSLOW, 82 Myrtle St., Boston, Mass.....	1902
WRIGHT, Mrs. JANE ATHERTON, 2 Main St., Greenfield, Mass.....	1902
WRIGHT, SAM, Conshohocken, Pa.....	1895

DECEASED MEMBERS.

FELLOWS.

	<i>Date of Death</i>
BAIRD, SPENCER FULLERTON.....	Aug. 19, 1887
BENDIRE, CHARLES E.....	Feb. 4, 1897
COUES, ELLIOTT.....	Dec. 25, 1899
Goss, N. S.....	March 10, 1891
HOLDER, JOSEPH B.....	Feb. 28, 1888
JEFFRIES, JOHN AMORY.....	March 26, 1892
McILWRAITH, THOMAS.....	Jan. 31, 1903
MERRILL, JAMES C.....	Oct. 27, 1902
SENNETT, GEORGE BURRITT.....	March 18, 1900
TRUMBULL, GURDON.....	Dec. 28, 1903
WHEATON, JOHN M.....	Jan. 28, 1887

HONORARY FELLOWS.

BURMEISTER, HERMANN.....	May 1, 1892
GÄTKE, HEINRICH.....	Jan. 1, 1897
GUNDLACH, JUAN.....	March 14, 1896
GURNEY, JOHN HENRY.....	April 20, 1890
HARTLAUB, GUSTAV.....	Nov. 20, 1900
HUXLEY, THOMAS H.....	June 29, 1895
KRAUS, FERDINAND.....	Sept. 15, 1890
LAWRENCE, GEORGE N.....	Jan. 17, 1895
MILNE-EDWARDS, ALPHONSE.....	April 21, 1900

PARKER, WILLIAM KITCHEN.....	July 3, 1890
PELZELN, AUGUST VON.....	Sept. 2, 1891
SALVIN, OSBERT.....	June 1, 1898
SCHLEGEL, HERMANN.....	Jan. 17, 1884
SEEBOHM, HENRY.....	Nov. 26, 1895
TACZANOWSKI, LADISLAS.....	Jan. 17, 1890

CORRESPONDING FELLOWS.

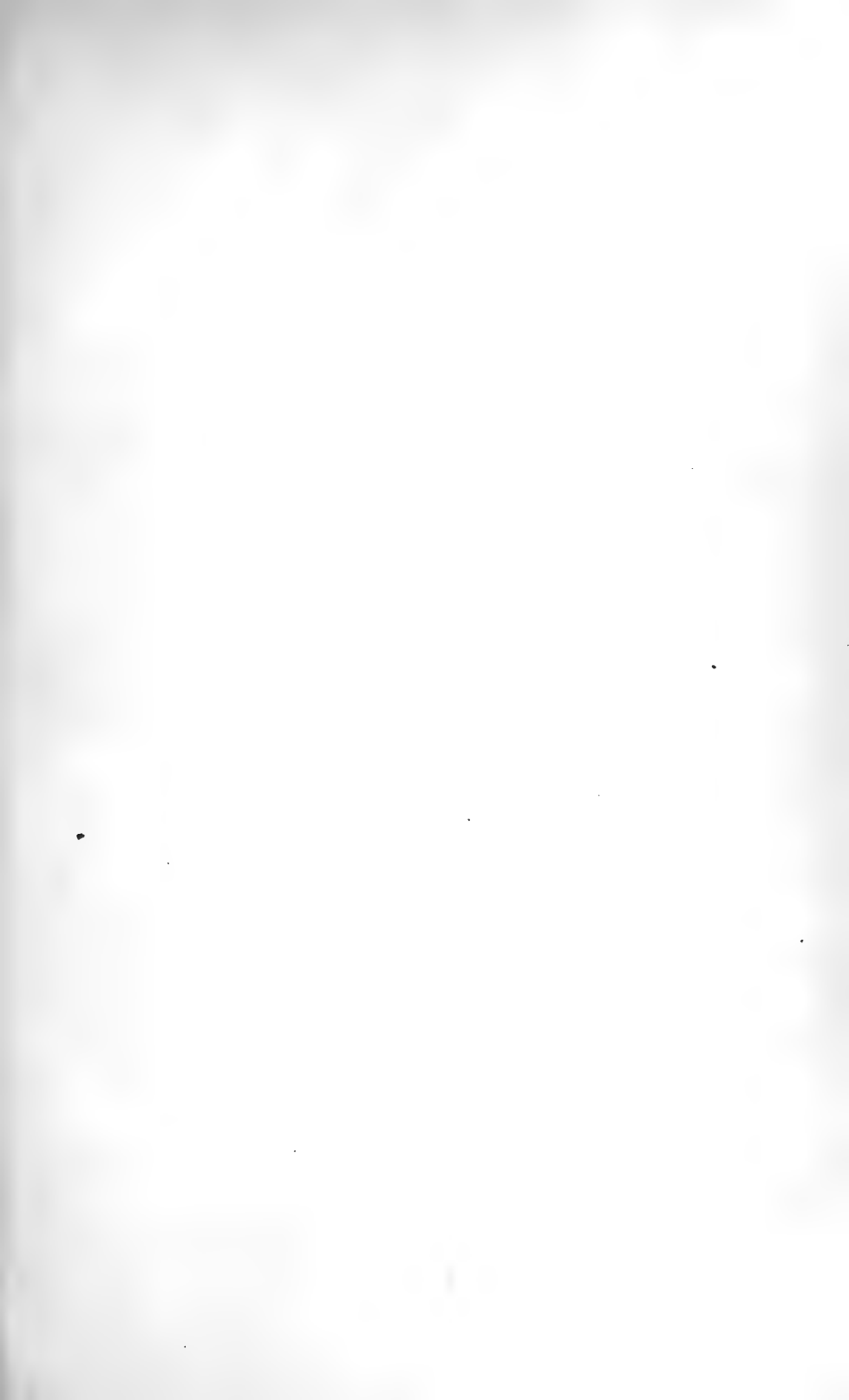
ALTUM, C. A.....	Jan. 1, 1900
ANDERSON, JOHN.....	Aug. 16, 1900
BALDAMUS, EDUARD.....	Oct. 30, 1893
BLAKISTON, THOMAS W.....	Oct. 15, 1891
BOGDANOW, MODEST N.....	March 4, 1888
COOPÉR, JAMES G.....	July 19, 1902
CORDEAUX, JOHN.....	Aug. 1, 1899
DAVID, ARMAND.....	Nov. 10, 1900
HAAST, JULIUS VON.....	Aug. 15, 1887
HARGITT, EDWARD.....	March 19, 1895
HOLUB, EMIL.....	Feb. 21, 1902
HOMEYER, E. F. VON.....	May 31, 1889
LAYARD, EDGAR LEOPOLD.....	Jan. 1, 1900
LYTTLETON, THOMAS, LORD LILFORD.....	June 17, 1896
MARSCHALL, A. F.....	Oct. 11, 1887
MALMGREN, ANDERS JOHAN.....	April 12, 1897
MIDDENDORFF, ALEXANDER THEODOR VON.....	Jan. 28, 1894
MOSJISOVICS, F. G. HERMANN AUGUST.....	Aug. 27, 1897
PHILIPPI, R. A.....	Aug. — 1904
PREJEVALSKI, N. M.....	Oct. 20, 1887
PRENTISS, D. WEBSTER.....	Nov. 19, 1899
PRYER, HARRY JAMES STOVIN.....	Feb. 17, 1888
RADDE, GUSTAV FERDINAND.....	— 1903
SCHRENCK, LEOPOLD VON.....	Jan. 20, 1894
SÉLEYS-LONGSCHAMPS, EDMOND DE.....	Dec. 11, 1900
SEVERTZOW, N.....	Feb. 8, 1885
STEVENSON, HENRY.....	Aug. 18, 1888
WHARTON, HENRY T.....	Sept. —, 1895

MEMBERS.

ADAMS, CHARLES F.....	May 20, 1893
ALLEN, CHARLES SLOVER.....	Oct. 15, 1893
ATKINS, H. A.....	May 19, 1885
AVERY, WILLIAM CUSHMAN.....	March 11, 1894

BARLOW, CHESTER.....	Nov. 6, 1902
BAUR, GEORGE.....	June 25, 1898
BECKHAM, CHARLES WICKLIFFE.....	June 8, 1888
BILL, CHARLES.....	April —, 1897
BIRTWELL, FRANCIS JOSEPH.....	June 29, 1901
BOARDMAN, GEORGE A.....	Jan. 11, 1901
BOLLES, FRANK.....	Jan. 10, 1894
BRACKETT, FOSTER H.....	Jan. 5, 1900
BREESE, WILLIAM L.....	Dec. 7, 1889
BROKAW, L. W.....	Sept. 3, 1897
BROWN, JOHN CLIFFORD.....	Jan. 16, 1901
BROWNE, FRANCIS CHARLES.....	Jan. 9, 1900
CAIRNS, JOHN S.....	June 10, 1895
CALL, AUBREY BRENDON.....	Nov. 20, 1901
CAMPBELL, ROBERT ARGYLL.....	April —, 1897
CANFIELD, J. B.....	Feb. 18, 1904
CARTER, EDWIN.....	——— 1900
CLARK, JOHN N.....	Jan. 13, 1903
COLBURN, W. W.....	Oct. 17, 1899
COLLETT, ALONSO M.....	Aug. 22, 1902
CORNING, ERASTUS, Jr.....	April 9, 1893
COE, W. W.....	April 26, 1885
DAFFIN, WM. H.....	April 21, 1902
DAKIN, JOHN A.....	Feb. 21, 1900
DEXTER, NEWTON.....	July 27, 1901
ELLIOTT, S. LOWELL.....	Feb. 11, 1889
FAIRBANKS, FRANKLIN.....	April 24, 1895
FANNIN, JOHN.....	June 20, 1904
FOWLER, J. L.....	July 11, 1899
GESNER, A. H.....	April 30, 1895
GOSS, BENJAMIN F.....	July 6, 1893
HATCH, JESSE MAURICE.....	May 1, 1898
HOADLEY, FREDERIC H.....	Feb. 26, 1895
HOOPES, JOSIAH.....	Jan. 16, 1904
HOWLAND, JOHN SNOWDON.....	Sept. 19, 1885
INGERSOLL, JOSEPH CARLETON.....	Oct. 2, 1898
JENKS, JOHN W. P.....	Sept. 27, 1894
JOUY, PIERRE LOUIS.....	March 22, 1894
KNIGHT, WILBUR CLINTON.....	July 8, 1903
KUMLIEN, LUDWIG.....	Dec. 4, 1902
KUMLIEN, THURE.....	Aug. 5, 1888
LAWRENCE, ROBERT HOE.....	April 27, 1897
LINDEN, CHARLES.....	Feb. 3, 1888
MABBETT, GIDEON.....	Aug. 15, 1900
MARBLE, CHARLES C.....	Sept. 25, 1900
MARCY, OLIVER.....	March 19, 1899

MARIS, WILLARD LORRAINE.....	Dec. 11, 1895
McKINLAY, JAMES.....	Nov. 1, 1899
MEAD, George S.....	June 19, 1901
MINOT, HENRY DAVIS.....	Nov. 13, 1890
MORRELL, CLARENCE HENRY.....	July 15, 1902
NICHOLS, HOWARD GARDNER.....	June 23, 1896
NIMS, LEE.....	March 12, 1903
NORTHROP, JOHN I.....	June 26, 1891
PARK, AUSTIN F.....	Sept. 22, 1893
RAGSDALE, GEORGE H.....	March 25, 1895
READY, GEORGE H.....	March 20, 1903
RICHARDSON, JENNESS.....	June 24, 1893
SELOUS, PERCY SHERBORN.....	April 7, 1900
SLATER, JAMES H.....	Feb. —, 1895
SLEVIN, THOMAS EDWARDS.....	Dec. 23, 1902
SMALL, EDGAR A.....	April 24, 1884
SMITH, CLARENCE ALBERT.....	May 6, 1896
SOUTHWICK, JAMES M.....	June 3, 1904
STOWE, W. H.....	March —, 1895
THORNE, PLATTE M.....	March 16, 1897
THURBER, E. C.....	Sept. 6, 1896
VENNOR, HENRY G.....	June 8, 1884
WATERS, EDWARD STANLEY.....	Dec. 26, 1902
WILLARD, SAMUEL WELLS.....	May 24, 1887
WOOD, WILLIAM.....	Aug. 9, 1885
YOUNG, CURTIS C.....	July 30, 1902





Yours truly
J. M. Swain

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No. 1.

IN MEMORIAM: THOMAS McILWRAITH.¹

BORN 25th DECEMBER, 1824.—DIED 31st JANUARY, 1903.

BY A. K. FISHER.

With Portrait.

SINCE the last memorial address was delivered the American Ornithologists' Union has lost two of its Fellows. Scarcely had it recovered from the shock caused by the death of Doctor Merrill when the sad announcement came that our venerable Canadian Fellow, one of the Founders of the Union, Thomas McIlwraith, had passed away at his home in Hamilton. For a year or more there had been a gradual breaking down of the system and while many at a distance had no idea that he was seriously ill those close to him felt assured that the final dissolution was inevitable, and it came quietly and peacefully. Four sons and three daughters survive: Thomas F. McIlwraith of Hamilton, H. P. McIlwraith of Newcastle, Penn., J. G. McIlwraith of Anderson, Ind., Dr. K. C. McIlwraith of Toronto, Mrs. Service of Detroit, Mrs. Holt of Quebec, and Miss Jean McIlwraith, the authoress. Another daughter died in infancy, in 1864, and death did not again enter

¹An address delivered at the Twenty-first Congress of The American Ornithologists' Union, Philadelphia, Penn., Nov. 17, 1903.

this happy household until 1901 when his good wife passed away—a calamity from which he never fully recovered.

The genial influence of Mr. McIlwraith's life has been associated with my own for many years. Early in the seventies, while the nucleus of my natural history library was forming, there came into my possession a paper entitled 'A list of Birds observed near Hamilton, Canada West,' by Thomas McIlwraith. This publication, although not exhaustive, for some reason appealed to me and I often wondered about the personality of its author, then a stranger. I was much impressed with his account of the capture of a fine Eagle having the bleached and weathered skull of a weasel attached to the skin of the throat by its locked teeth, and shared the interest and surprise he must have experienced when this odd memento of a former struggle came to his notice. Later when this genial-hearted Scotch-Canadian came to New York in 1883 to assist in organizing the American Ornithologists' Union, this early association, simple as it was, had the effect of bringing us together and soon paved the way to lasting friendship.

Mr. McIlwraith was born in Newton, Ayrshire, Scotland, on Christmas day, 1824, and therefore at the time of his death, January 31, 1903, was a little over 78 years old. Early in 1846, soon after he became of age, he went to live in Edinburgh where he remained for nearly three years completing his education and fitting himself for the varied duties of life. At the end of this period he returned to his native town to assume the management of the gas works.

In October, 1853, he married Miss Mary Park, daughter of Baillie Hugh Park, and sailing with his bride for America reached Hamilton, Canada, on November 9. He was called to that city to superintend the gas works, as manager of the corporation, and served in that capacity until 1871, when he bought the Commercial Wharf with the coal and forwarding business connected with it. He continued in this business until about ten years ago, when he retired and was succeeded by his eldest son, Thomas F. McIlwraith. Besides being successful in private business, he held prominent positions on the boards of directors of banks and insurance companies, and was for many years president of the Mechanics Institute. Mr. McIlwraith was a Liberal in politics and in 1878 took an active part in municipal affairs, representing his ward in

the city Council. He was a prominent member of the Central Presbyterian Church of Hamilton. When the American Ornithologists' Union established the Committee on the Migration of Birds he became a member and was appointed Superintendent of the Ontario District, which position he held for a number of years. In 1889 he was elected a member of the Council of the Union for that year.

It is stated that his early interest in Canadian ornithology was aroused by seeing some stuffed specimens, including a Flicker and a Kingfisher, which had been brought from the Provinces to Scotland. Although actively engaged in business enterprises of various kinds he nevertheless was able to devote odd moments to his favorite study of ornithology, and before he had been long in Hamilton had formed quite an extensive collection of mounted birds. This collection, which grew to be a representative one, is said to have been made up of selected specimens and included many birds that are very rare or no longer found in Ontario at the present day.

Mr. McIlwraith's home, 'Cairnbraë,' was situated on the shores of the bay, and, surrounded as it was by extensive grounds filled with trees and shrubbery, formed an ideal home for a student of ornithology. It was a natural resting place for numerous migrants, and there in the early morn or cool of evening he secured many rare specimens with which to enrich his cabinet. There on May 16, 1884, he found the remains of a Yellow-breasted Chat, and thus added a new bird to the list of Ontario species. But though much of his material was drawn from this place, yet it must not be understood that other collecting grounds were neglected because they were less promising or more difficult of access, for he knew every nook and corner of the surrounding country where the rarest species might be found, and he did not hesitate to brave exposure and fatigue in search of them. It was not until his youngest son, Kennedy C. McIlwraith, became interested in ornithology and accompanied him in field excursions that the collection of bird skins reached any considerable proportion. Association with his young companion increased his enthusiasm for collecting and made field excursions much more attractive to him.

Mr. McIlwraith evidently worked out his early ornithological problems alone and had to depend largely on his own resources for the identification of the specimens he was collecting and mounting. His 'List of Birds of Hamilton, C. W.,' published in the *Canadian Journal*, in July, 1860, was arranged after the system of Audubon, showing pretty conclusively that the personal aid and encouragement of Professor Baird, that great man to whom so many naturalists are profoundly indebted, had not reached him, though he probably had some of Professor Baird's publications in his library. The absence of published records of the birds of Ontario, and of ornithological companions did not discourage him, for with patient observation and study he soon was able to outline a list which served as a foundation for his later works. This experience, coupled with his genial, friendly nature, made him ever anxious to give encouragement and advice, and many there are who will miss his long and instructive letters. My own correspondence with him commenced in the winter of 1884. In the course of time his letters came with a good deal of regularity and were always interesting whether they related to field experiences, the routine of everyday life or were more strictly personal in their character. Our intercourse closed with a letter which I wrote about a month before his death, for on the double anniversary of Christmas and his birthday I rarely neglected to write to wish him the compliments of the season. I afterwards heard through his son that he was pleased when he received the letter but was too indisposed to pen even a brief acknowledgment.

His style was always lucid and entertaining, whether in private correspondence or in published papers, and it is much to be regretted that his publications were not more numerous. His earliest contribution to ornithological literature appeared in the '*Canadian Journal of Industry, Science and Art*,' for July, 1860, under the title 'List of Birds observed in the vicinity of Hamilton, C. W., arranged after the system of Audubon.' "The object," he says, "in preparing the following list, has been to afford such information as may be of use, should inquiry at any future period be made regarding the birds frequenting this part of the country. In its present state, the list has been drawn up from observations made during occasional excursions within a period of four years.

Those who are acquainted with the subject will see that it is necessarily incomplete; but it will be easy to add the names of such species as may yet be found. In order that the list may be strictly local, no species has been mentioned which has not been found within six miles of the city limits."

The list included 202 species, which speaks well for his ornithological activity during the four years prior to its appearance. Many of the annotations are of interest from the standpoint of distribution and abundance forty years ago. Under the capture of *Lanius ludovicianus* he says: "Two individuals shot in April, 1860. Not observed prior to that date." In a footnote he makes the following statement: "It is possible that this may prove to be the *Collyrio excubitoroides* of Baird, as, according to that author, *L. ludovicianus* is found only in the South Atlantic and Gulf States; while *C. excubitoroides* has been gradually advancing from the west, and might be expected to occur about this time. Without comparing specimens, it is difficult to distinguish between the two."

It is of interest to note that the only trinomial appearing in the list (in the case of the Lesser Scaup Duck) is written in the recent approved style, without the interpolation of var., comma, or Greek letter. In the 'Canadian Journal' for January (pp. 6-18) and March, 1861 (pp. 129-138), appeared 'Notes on the Birds observed near Hamilton, C. W.' In these notes Mr. McIlwraith gives a most entertaining account of the birds found in the vicinity of his home, treated in groups and prefaced by remarks on Wilson, Audubon and the recent ornithological activity in the United States.

The following extract relating to Grebes is of interest at the present time: "In some parts of the European continent the skin of the Grebe is much prized as trimming for ladies' dresses; and in olden time, when the fowling piece was a less perfect instrument than at present, considerable difficulty was found in supplying the demand, as the Grebe being a most expert diver, disappeared at the first flash of the gun, and was under water ere the shot could reach it. Since the invention of the percussion cap, however, they are more readily killed, and were any of our Hamilton ladies desirous of having a dozen or two of Grebes skins for trimming, I have no doubt the birds would be forthcoming. At present there

being no demand for the *skins*, and the *flesh* being unsuitable for the table, they are not much disturbed."

In 1866 he published in the 'Proceedings of the Essex Institute' (Vol. V, pp. 79-96) an annotated 'List of Birds observed near Hamilton, Canada West,' which included 241 species. This list was prepared in the same careful manner as his previous papers, and its wide distribution brought Mr. McIlwraith more prominently to the notice of leading ornithologists in the United States, with many of whom he maintained a life-long correspondence that proved of mutual benefit. A few notes followed in the 'Bulletin of the Nuttall Ornithological Club,' Vol. VIII, pp. 143-147, in 'The Auk,' Vol. I, pp. 389, 395, and in the 'Canadian Sportsman and Naturalist,' Vol. III, pp. 198-200, 207. Finally in 1887 he published his most important work, 'The Birds of Ontario.' On April 2, 1885, he had read before the Hamilton Association a paper entitled 'On Birds and Bird Matters' which was most enthusiastically received and the Association at once requested the privilege of publishing the communication with any additions which he cared to furnish. Accepting the offer he promptly prepared the manuscript, but delayed publication so that the new arrangement of the American Ornithologists' Union Check-List, then in press, might be adopted. In the twenty-one years that had elapsed since the previous list was prepared 61 species of birds had been added to the fauna of Ontario, making a total of 302 species for the Province. This publication was so highly appreciated, and the consequent demand for copies so great, that the edition was speedily exhausted and a new one was of necessity planned. Thus was evolved the enlarged and revised edition of the 'Birds of Ontario,' covering 317 species, which appeared in 1894 and formed a most fitting and lasting monument.

A reviewer in 'The Auk' speaks of this work as follows: "It is with great pleasure that we welcome this valuable handbook, revised to date, much enlarged, and in a dress more befitting its scientific importance and popular interest. In place of the introductory essay 'On Birds and Bird Matters' of the first edition, we have here a few pages on the general subject, with special reference to migration, followed by a dozen pages of directions as to how to collect and prepare specimens for the cabinet.

“The species treated number 317 as against 302 in the first edition, to which nearly 400 pages of the work are formally devoted, giving about a page and a quarter to each species. The technical, descriptive portion of the text is printed in small type, the biographical in much larger type. The whole has evidently been carefully revised, and much new matter added to the biographies, which in many instances have been to a large extent rewritten, the recent literature of the subject having been placed under contribution. As the author himself says: ‘In the present edition, it has been my object to place on record, as far as possible, the name of every bird that has been observed in Ontario; to show how the different species are distributed throughout the Province; and especially, to tell where they spend the breeding season. To do this, I have had to refer to the notes of those who have visited the remote homes of the birds, at points often far apart and not easy of access, and to use their observations, published or otherwise, when they tend to throw light on the history of the birds observed in Ontario.’ Credit is of course duly given for the information thus obtained.

“As ornithologists well know, the author of the ‘Birds of Ontario’ is well equipped for his task, and, as would be expected, has done his work well, the second edition being fully abreast of the subject, the few faults of the first edition having been corrected, and the more important recent discoveries in the field here covered being duly incorporated. The text is illustrated with numerous cuts, though none of them appear to be here for the first time published. An excellent portrait of the author forms a fitting frontispiece to the volume, which will doubtless prove a boon to the bird lovers of Ontario and adjoining Provinces and States.”

ON THE HABITS OF THE LAYSAN ALBATROSS.

BY WALTER K. FISHER, STANFORD UNIVERSITY, CALIFORNIA.

Plates II-VII.

THE magic name of Laysan¹ will ever bring to my mind the picture of innumerable Albatrosses thickly scattered in reposeful attitudes over a broad stretch of bare phosphate rock, near the southern extremity of the islet. Here in years past the indefatigable Japanese laborers had scraped a plain quite free of all the marketable phosphate rock, and had left about the borders several piles of the valuable mineral. Since then the gonies have made themselves at home, and have completely preëmpted the site. From the top of one of these hillocks I spent odd breathing moments, watching the life in this largest rookery of the island, because even the slight advantage of fifteen feet would bring much into view that before was hidden. We were agreed in calling this *the* rookery, since here in a given space were more birds than elsewhere on the island. And besides a very convenient road led to it from Mr. Schlemmer's quarters. One might ask, "Why mention the road?" The Bonin Petrels (*Æstrelata hypoleuca*) tunnel in the soft soil in countless numbers, and if one crosses the upper slopes of the island he must walk at least one half mile before gaining the solid ground near the lagoon. Nearly every other step through this area will carry him abruptly into the subterranean tunnels of these sobbing birds, and as one of our party suggested the novelty quickly wears off in the midday sunshine. So it happened we patronized the road, and our eager strolls often either ended or began near the rookery, where also there was a brackish water pond much frequented by curlews and ducks.

¹ Although the notes which form the basis of this paper have already been published in 'Birds of Laysan and the Leeward Islands, Hawaiian Group' (U. S. Fish Commission Bulletin for 1903, pp. 1 to 39, plates 1 to 10), the writer believes an account of the peculiar habits of the Albatross, with illustrative photographs, will be of interest to readers of 'The Auk.' For a short note descriptive of Laysan and its bird life the reader is referred to the October, 1903, issue of this journal, page 384. Unless otherwise stated the plates refer to *Diomedea immutabilis* Rothschild.



FINALE OF ALBATROSS DANCE — THE DUET.

The Laysan Albatross (*Diomedea immutabilis*), however, is distributed all over the island with the single exception of the sea beaches, which on all sides saving the west are colonized by the Black-footed Albatross (*D. nigripes*). The former species far outnumbers *nigripes*, and if actually not the most numerous inhabitant of the island is at any rate the most conspicuous and interesting. The Laysan Gony, or 'Gooney' as sailors pronounce it, very evidently prefers the open to the bushy area, for the flat plain surrounding the lagoon is its favorite habitat, and we found the young here in far the greatest numbers. This great colony extended all the way around the lagoon, but certain portions were more congested than others, as 'the rookery' for example, spoken of above. Young *immutabilis* were also found sprinkled rather thickly over the remainder of the island through the bushy grass area, preëmpted by petrels, and they even affected the windy slopes above the beaches. Only a very few *nigripes*, however, were detected in the central portion of the island, and these of course were widely scattered among *immutabilis*.

The rookeries present a very lively scene. At certain times of day the greater number of the adults are off to sea fishing, but there are always enough left at home to constitute about one third of the total number, the remainder being the young. If these are not disporting themselves in ridiculous attitudes, the old birds form a sufficient diversion with their endless dance and song. In Plate III, figure 1, a view is given looking over the rookery. Most of the birds here are young, the old ones being away at sea. Figure 2 is a characteristic scene on the shore of the lagoon, the picture having been taken in the afternoon when most of the old birds had returned from their morning's fishing. The dark area to the left is covered with beautiful purplish-pink flowered *Sesuvium portulacastrum*.

At the time of our visit the young were nearly four months old, and were quite as heavy as the adults, although the permanent feathering was present only on the lower parts. They were everywhere. My impression every time I crossed the petrel cities was that each great tussock of grass harbored a young Gony in its shadow, ready to dart forward and try the quality of my trousers. Mr. R. H. Beck has suggested segments of stove pipe as an effective armor in crowded bird colonies, especially as proof

against boobies, and I am inclined to agree with him. If we brushed too near the young Gonies they were quick to resent the intrusion, and flew into a rage, leaned forward and snapped their beaks rapidly in an attempt to strike terror to our hearts. Or frequently they would waddle out of their shady retreat and attack us, as it were, on our own ground, stumbling forward in wobbly efforts to reach us. Sometimes they would trip up in a petrel's hole or fall clumsily forward on their chins, and promptly disgorge their breakfast at us. Unless my observation is lacking, they always seemed to stumble preparatory to this fusillade, which once delivered left them looking very dejected indeed, as hunger is their chief trouble. Usually after the first paroxysm is over one can stroke them with little danger of scratched hands. They maintain a small fire of objection, with impotent nips, or try to sidle off. But occasionally a youngster is fully aware of his powers.

When undisturbed these absurd creatures sit for hours on their heels with their feet tilted in air, gazing stupidly ahead, with little intelligence in their stolid countenances. (Plate VI, Fig. 2.) They are peaceable as a rule, but sometimes engage in mild squabbles with youthful neighbors. The shallow basin-like hollow in which the egg is deposited is the young Albatross's home, and it usually does not stray far, except on these little forays. But later the same feeling of growing strength leads them to slowly fan their wings from time to time. During a light shower we saw a considerable colony thus engaged, the wave of motion passing far away, as new companies caught the enthusiasm. The movements were kept up for some minutes and proved a novel sight. I have seen young birds collect dried grass and similar material, which happened to be within reach, and carefully cover the hollow in which they were sitting, as if trying to form some sort of cushion.

A spirit of inquiry also sometimes leads the young Gony into trouble. We found one buried to its neck in a collapsed petrel burrow, yet still living. From the condition of the surrounding soil it was evident that the creature had been in this predicament for some time, and had been faithfully tended by its parents. Nor did it fancy being dug out, but objected most vigorously to our interest. When finally restored to a normal position, it took a



FIG. 1. ROOKERY OF LAYSAN ALBATROSS.



FIG. 2. NEAR THE LAGOON, LAYSAN.

better view of matters and began to preen its feathers. But even with these vicissitudes, and the persecution of jealous mothers of other young (to be related presently) they have few amusements to vary the monotony of the long day, for in this topsy-turvy land it is the grown-up folks who play while the young are grave and demure.

The old birds received us at once on equal terms with any feathered inhabitant of the island. They did not care a whit for our presence, and continued their domestic occupations and amusements as if we were part and parcel of the community. They would not tolerate any familiarity, however, and if we attempted to stroke their plumage they backed off with agility, unless hindered by some obstructing grass tussock, when their surprise was amusing to witness. They have a half-doubting inquisitiveness, and if we sat quietly among them, they would sooner or later walk up to examine us. (Plate IV, Fig. 2.) One bird became greatly interested in the bright aluminum top to my tripod, which it carefully examined from all sides. Finally it tested the cap with its beak, and appeared much surprised, yet pleased, with the jingling sound, repeating the experiment until satisfied.

The old birds have an innate objection to idleness, and so for their diversion they spend much time in a curious dance, or perhaps more appropriately a 'cake-walk.' This game or whatever one may wish to call it, very likely originated in past time during the courting season, but it certainly has long since lost any such significance. I believe the birds now practise these antics for the pure fun they derive, and should anyone challenge my belief that birds are capable of such a high degree of intelligence as to discriminate so finely, I would be tempted to answer: "Go to Laysan and be convinced." Let us imagine we are on the island, and can stop for a moment to watch a pair of Gories close at hand. We will have some difficulty in choosing, for from where we are seated, among the grass, near the edge of the plain, we can easily count twenty-five couples hard at play. This is what we see.

At first two birds approach one another, bowing profoundly and stepping heavily. They swagger about each other, nodding and

courtesying solemnly, then suddenly begin to fence a little, crossing bills and whetting them together, sometimes with a whistling sound, meanwhile pecking and dropping stiff little bows. (Plate V, Fig. 1.) All at once one lifts its closed wing and nibbles at the feathers beneath, or rarely, if in a hurry, quickly turns its head. The partner during this short performance, assumes a statuesque pose, and either looks mechanically from side to side, or snaps its bill loudly a few times. (Plate V, Fig. 2.) Then the first bird (to the left of the picture) bows once, and pointing its head and beak straight upward, rises on its toes, puffs out its breast, and utters a prolonged, nasal, *Ah-h-h-h*, with a rapidly rising inflection, and with a distinctly 'anserine' and 'bovine' quality, quite difficult to describe. While this 'song' is being uttered the companion loudly and rapidly snaps its bill. (Plate VI, Fig. 1.) Often both birds raise their heads in air as shown by Plate II, and either one or both favor the appreciative audience with that ridiculous, and indescribable bovine groan. When they have finished they begin bowing to each other again, rapidly and alternately, and presently repeat the performance, the birds reversing their rôle in the game or not. In the most successful dances the movements are executed in perfect unison, and this fact much enhances the extraordinary effect. The pictures convey but a poor likeness of the actual scene; the wonderful sky and sunshine, the spotless and shining plumages, the droll cries, and most important the actual living presence of the splendid birds themselves. It is an experience never to be forgotten.

There seems to be no very hard and fast lines to these antics, but variations occur, and certain stages may be abbreviated or prolonged to suit the whim of the individual. The majority of cases, however, follows the sequence I have indicated. The attention of the reader is called to the fact that Plate V, Figs. 1 and 2, together with Plate II, form a series, taken in rapid succession, of the same pair of individuals. Plate VI, Fig. 1, representing the more usual finale of the dance, is from a pair of birds very near the above, and was taken a few moments later. The pair represented in Plate II, after their splendid exhibition, as if having knowingly done their best for me, quit entirely and walked deliberately away. It is possible that this figure represents the 'grand finale' of the whole performance, but I have only this observation



FIG. 1. A CORNER IN ONE OF THE COLONIES.



FIG. 2. AMONG THE LAYSAN ALBATROSSES.

to offer. In the numerous other cases in which I saw *both* birds 'sing,' I do not remember whether they continued thereafter or not.

It is very amusing to watch three engage in the dance, one attempting to divide its attention between two. This 'odd' bird starts by bowing to the first partner, whom he suddenly forsakes with a final deprecatory nod, and takes up the thread of the dance with the second. The latter always seems ready to join in, since he has been keeping up a sort of mark-time in the movements. Thus the single one keeps switching back and forth, trying as it were, to be on good terms with both partners at once. Three do not keep this up very long, however, since the odd bird either shows a preference for one of the partners and ignores the other entirely, or walks off to seek a new acquaintance. But throughout it all they are always exceedingly polite, and never lose their temper in any way.

Occasionally while 'cake-walking' one will lightly pick up a straw or twig, and present it to the other, who does not accept the gift, however, but thereupon returns the compliment, when straws are promptly dropped, and all hands begin bowing and walking about as if their very lives depended upon it.

Several times at this stage of affairs I have walked quietly among a group of the busy creatures, and have begun to bow very low, imitating as nearly as possible the manner of the Gonies. They would all stop and gaze at me in astonishment, but recovering their usual equanimity almost at once would gravely return my bows and walk around me in puzzled sort of way, as if wondering what kind of a bird I might be. I thought of trying this because in Rothschild's 'Avifauna of Laysan' (which we had taken with us on the steamer 'Albatross') the following extract is given from Kittlitz's notes on the birds of Laysan.

"When Herr Isenbeck met one he used to bow to it and the Albatrosses were polite enough to answer, bowing and cackling. This could easily be regarded as a fairy tale; but considering that these birds, which did not even fly away when approached, had no reason to change their customs, it seems quite natural."¹

¹ Extract from *Avifauna of Laysan, etc.*, p. iii, (F. H. v. Kittlitz in: *Museum Senckenbergianum*, I, pp. 117 et seq.)

I found that in most cases the birds would bow to me if they were interrupted in their dance, or if they had very recently been playing, but would not bow at all if accosted near their young, or when standing idle. Unusual as this trait may appear it exemplifies again what extraordinary birds Albatrosses really are.

I saw the Black-footed Albatrosses (*D. nigripes*) rather seldom engaged in the dance, and indeed they impress one as more matter-of-fact creatures. The only difference which was observed in the ceremony as carried out by the two species, is that *nigripes* spreads its wings slightly (the metacarpus or 'hand' being folded closed) when it lifts its head to utter the nasal song.

If we wander over the island on a moonlight night a strange scene greets us. Nocturnal petrels and shearwaters are wide-awake and are sobbing and yowling as if all the cats in a great city had tuned up at once. Back and forth in the weird light flutter shadowy forms, and from beneath our feet dozing young Gonies bite at us in protest. Down by the lagoon where the herbage is short we can see for some distance, and the ghostly forms of Albatrosses shine out on all sides, busily bowing and fencing, while the nasal sounds of revelry are borne to us from far across the placid lagoon, and we know that in other parts of the island the good work is still progressing. And so in the leisure moments of the long summer days, and far into the night, these pleasure-loving creatures seem to dance for the joy of dancing and only work because they must.

But in their hours of toil they hie themselves off to sea, and scour the waves for the elusive squid, which is a staple article of diet for the larger members of the vast bird population, the gannets, perhaps, excepted. About sunrise the main body of the white company begins to return, and for several hours they straggle in, tired but full, and seek their sleepy children, who are soon very much awake. Although the Laysan Albatrosses undoubtedly do a small part of their fishing during the day, I cannot help but feel, from the nocturnal or crepuscular habits of their food — certain cephalopods — and the prevalent feeding hours, that the major portion is done in the very early morning, perhaps from just preceding dawn till light. I noted particularly during the one day I was on the steamer, while she was dredging in the

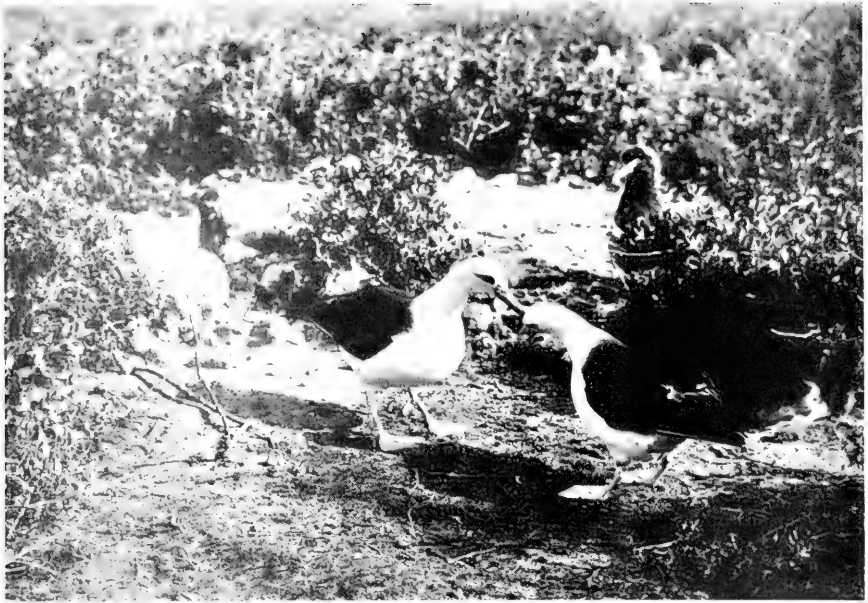


FIG. 1. FIRST STAGE IN DANCE, FENCING.



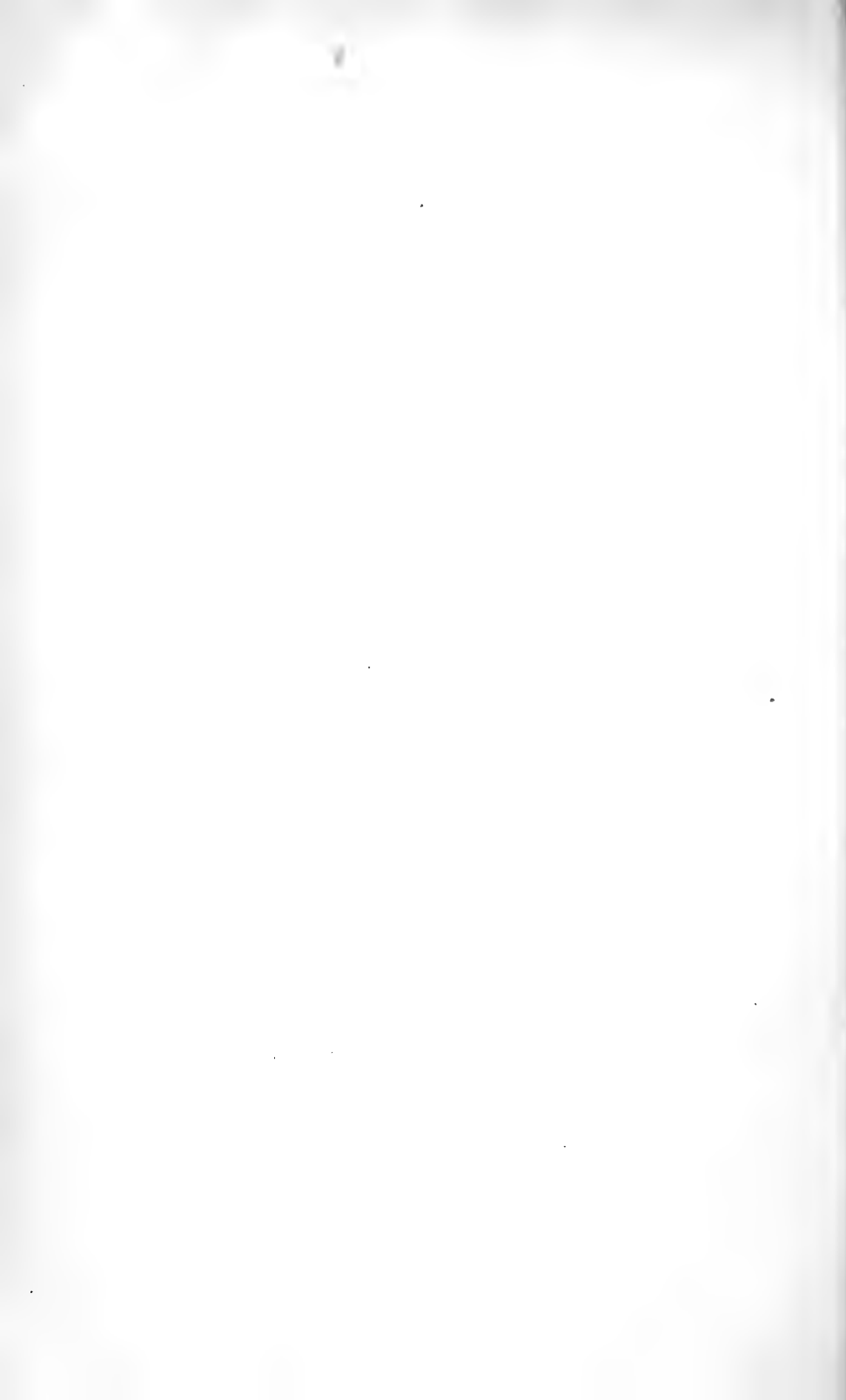
FIG. 2. SECOND STEP IN DANCE.



FIG. 1. LAST STAGE IN DANCE—ONE SINGING, THE OTHER SNAPPING BEAK.



FIG. 2. PORTRAIT OF YOUNG LAYSAN ALBATROSS.



vicinity of Laysan, that very few Laysan Gonies were seen at sea after about 9 A. M. That same day we sighted the island about 5 A. M., and when I arrived on deck about 5.30 I distinctly remember seeing many of the white species (*immutabilis*) circling about the vessel. Later in the morning *immutabilis* almost entirely disappeared, but some *nigripes* remained with us all day. On the following morning we landed and I had no further opportunity to observe.

As Prof. C. C. Nutting, one of the naturalists of the expedition, has said,¹ "the most conservative estimate of the necessary food supply yields almost incredible results. Cutting Mr. Schlemmer's estimate [of the total number of albatrosses on the island] in two, there would be 1,000,000 birds, and allowing only half a pound a day for each, surely a minimum for these large, rapidly growing, birds they would consume no less than 250 tons daily." From rather extended observations on the feeding habits I would place the quantity fed each young bird every morning at nearer one or one and a half pounds of squid (*Ommastrephes oualaniensis* Less., *O. sloanei* Gray, and *Onychoteuthis banksi* Fér.²). I believe Prof. Nutting's estimate of a million birds is not too great. Thus in one day the Albatrosses alone would consume nearer 600 tons of squid. Think of the amount all the shearwaters must consume, and the tons of fish, large and small, eaten by boobies, frigate birds, noddies, terns, and tropic birds!

As indicated above, breakfast may be ready almost anytime during the early forenoon, for the mother does not invariably feed the baby immediately on returning. However, when all is ready she alights near the impatient and greedy child, who immediately takes the initiative by waddling up and pecking or biting gently at her beak. (Plate VII, Fig. 1.) This petitioning always takes place, and acts perhaps as some sort of stimulus, for in a few moments she stands up, and with head lowered and wings held loosely at the sides (Plate VII, Fig. 2) regurgitates a bolus of squids and oil. Just as she opens her beak, the young one who has been standing ready, inserts its own crosswise, and skilfully catches every morsel, which it bolts with evident relish. (Plate

¹ Popular Science Monthly, Aug., 1903, p. 324.

² Schauinsland: Drei Monate auf einer Koralleninsel, p. 92.

VIII, Fig. 1). After the process is repeated at intervals of a few minutes, some eight or ten times, the meal is over. The last two or three ejections of this oily pabulum cost the Albatross considerable muscular effort, and the last time nothing came but a little oil and stomach juices. As Prof. Nutting aptly expressed it, "she pumped herself quite 'dry.'" The attention of the reader is again called to the fact that this series of three pictures, illustrating the process of feeding, is taken from the same pair of birds.

This domestic duty was one of the common morning sights on the island, and we had not been ashore but a few moments before we witnessed it close to the lighthouse. The mother bird seemed to take quite kindly to the circle of interested men, and fed her offspring, as if it were the most natural thing in the world to have an audience. In fact, I may mention in this connection that the Albatrosses nest all around Mr. Schlemmer's door yard, and from a little distance appear like unwieldy goslings before the door-step. The petrels, also, burrow in front of the house, but of course are not evident in the daytime; and if one strolls out in the wonderfully soft tropical moonlight, he can see the little fiddler crabs scuttling here and there, resuming the work of 'autographing' the white coral sand where the numerous finches, honey-eaters, and rails have left off at sundown. Through the night the island is nearly as lively as at sunrise.

After the Albatross has finished feeding, the young bird is not at all backward in asking for more, but keeps on petitioning and working its head back and forth as if suggesting to its mother a further means of obtaining food. The old one now pecks back in an annoyed manner, and if the baby still urges, she rises from her sitting posture and walks off, usually to vent her morning ill humor on some neighboring young. Often I have seen her dash over to an inoffensive and unprotected 'Gonylet,' and give it a most undeserved trouncing, mauling and 'wooling' it in a pitiful manner. The unfortunate thing never knows what to do, so it tries to peck back, but is soon worsted, and cries in a plaintive squeak for relief. After a while the ill-natured creature returns to its own exacting offspring, sometimes to feed it again, or only to start off for another strange baby. Although the Albatrosses are gentle in their demeanor, this punishment is not carried on in a playful

spirit, but is a thoroughly ruffian-like proceeding. We were all agreed that *nigripes* indulged in it rather more than *immutabilis*, and was likewise more savage. Dr. Gilbert observed a Black-footed Albatross take in a circle of about twenty young *immutabilis* and wool them soundly. Finally, however, the bully arrived at a youngster whose parent, being unexpectedly near by, set upon the persecutor with disastrous effect, and in the ensuing scrimmage put *nigripes* completely to rout. Not a few of the young die as a result of this treatment. I am just now at a loss to suggest an explanation for the prevalence of such heartless behavior.

Near the forms or nests one not infrequently finds solid pellets, disgorged by the Albatrosses, consisting entirely of squid beaks, and the opaque lenses of the eyes. These lenses become very brittle and amber-like under the action of the stomach juices, and show a concentric structure. Candle-nuts, the large seed of *Aleurites molluccana*, were found by Prof. Snyder in the interior of the island and were almost undoubtedly ejected by Albatrosses. As is well known, Albatrosses pick up all sorts of floating material, and candle-nuts are frequently seen on the ocean, having been swept to sea by mountain streams. The nearest trees are on Kauai, about 700 miles east. This suggests a means by which many hard floating seeds might be carried into the interior of islands by albatrosses, shearwaters, petrels, and frigate birds, and thus obtain a foothold, whereas if swept ashore on barren rocks or beaches they would stand little chance of ever germinating.

In large colonies of animals, it has always been something of a problem how a parent is able to find its young among so many of its kind. The voice is probably responsible in some cases, but as birds are extremely keen of sight and evince a positive genius for discriminating landmarks, I believe the Albatrosses must in some way depend upon peculiarities in the surroundings of their young. It is worthy of record, however, that the young often 'sing' in a thin, high squeak, which is kept up continuously for periods, and may be of service in guiding the parent, though I could not distinguish the slightest individuality in tone. I do not know whether they do this when the old birds are present, but remember that very many were engaged in the cricket-like song when we visited a populous colony late one moonlight night.

I frequently saw the young sleeping, their eyes being tightly closed and bill tucked under the wing, the usual bird fashion. At night I was much surprised to walk up to the sleeping youngsters, and see how they slumbered on oblivious to the various distractions of their surroundings — the startled cries of terns, the *Ah-h-h's* of Albatrosses, and caterwauling of shearwaters. The feeling of absolute safety has evidently dulled that characteristic alertness, which we are apt to associate with sleeping wild creatures. I have even succeeded in sitting down beside them, without disturbing their slumber, but when I at last patted their heads they very suddenly came to, and the awakening was highly diverting. They appeared confused for a moment, and would then back off most rapidly, snapping the beak with remarkable speed. The old birds seem to be wide awake at night, but about ten o'clock in the morning they frequently sleep near their young, with the bill and one eye covered by the wing.

Albatrosses are inquisitive creatures, especially on the ocean. Anything unusual will immediately attract them, and on land I have had them come trotting up evidently actuated by some other motive than the search for food. One day the dory, rather overloaded, was making for the beach through a choppy sea. Suddenly a wave curled aboard, and then the boat capsized, leaving the occupants struggling in the water. A Gony at some distance perceived the disturbance, and came flapping in great haste over the waves, hoping perhaps for a tender morsel. It settled near the plump member of the party, and swam about on a little tour of inspection. The look of anticipation on the creature's face was so unmistakable, that the carpenter at length became uneasy, and exclaimed, "Can't you wait till I croak."

The Albatrosses live on Laysan nearly ten months of the year. During the last days of October, before the winter storms set in, the first vanguard of the mighty army appears, and for days they continue to flock in from all points of the compass. Dr. H. Schauinsland, who witnessed their advent, says that in exposed places the island becomes literally white with the countless throng, as if great snow-flakes had suddenly descended upon the scene. So vast is the number of birds that many are obliged to be content with rather unsuitable nesting spots, while late-comers must



FIG. 1. YOUNG ALBATROSS ASKING FOR FOOD.



FIG. 2. OLD BIRD STARTING TO DISGORGE.



FIG. 1. THE ARRIVAL OF BREAKFAST.



FIG. 2. *DIOMEDEA NIGRIPES* PUNISHING STRANGE YOUNG.

leave the overcrowded area. Loving couples defend their rights against the tardy ones, and it is several days before all have settled their respective claims.

The white Albatross lays one egg, on the ground, usually in a slightly raised mound with a shallow basin in the top. We saw numbers of these 'forms' almost worn out by the young birds. According to Mr. Max Schlemmer, the representative of the guano company, the egg is laid about the middle of November. We were of course out of season to secure any, although we saw numerous spoiled ones half buried in the sand. The ground color is usually dirty white, with irregular patches and spots of brownish maroon at the larger end. Eggs of this type usually average 111.5 mm. in length by 62.5 mm. in width. There is another type, very short and thick (100 mm. by 70), uniform brownish buff without any markings whatever¹. The young are not hatched until February (Schlemmer) and then begin the six months of hard work to feed the hungry babies. They grow slowly, for birds, and it is not till the last of July that the most venturesome follow their parents on short flights to sea. A few weeks later all are on the wing, and with the old birds they scatter far and wide over the Pacific. Then for two months at least they take a vacation, as it were, before undertaking the cares of the next nesting season. They have been found in their wanderings as far away as Myiakejima, Japan, and Guadelupe Island off Lower California. Besides on Laysan, *Diomedea immutabilis* makes its home on Midway, Lisiansky, French Frigate Shoal, Necker and Bird, and *D. nigripes* is likewise found on these islands, but very sparingly on the last two.

After the Albatrosses leave Laysan the broad rookeries are bare, and with the advent of the fall rains a fine grass springs up all over the deserted cities, forming delicate verdure where recently the ground was packed hard by busy feet. The ancestral home is now bereft of its greatest attraction, and surely the face of the island must seem entirely changed.

Mr. Dutcher in a recent article on the Herring Gull well says that not even the most facile pen can describe the life and beauty

¹ I am indebted to Rothschild's 'Avifauna of Laysan,' p. 291, for this description of the eggs.

of a great bird colony. Thus in attempting to indicate something of the life of the Albatross I have wholly failed to include the subtle charm which reaches one through the soft tropical sky, the salty breeze, the sparkling lights on waves, now green now purplish, as they break on the coral reef; and the wilder scenes in the tossing surges that assail the eastern shore with booming roars and clouds of flying spray; and the darting, screaming multitude of sea fowl gleaning their living prey from the tumult of waters, or winging their certain way to the expectant nestlings. Every sight and sound leaves a lasting impression, and yet, perhaps, it will be the *mystery* of those myriads of sentient beings that will linger when all else has been forgotten.

NESTING HABITS OF THE HERODIONES IN FLORIDA.

BY A. C. BENT.

Plates IX and X.

DURING the past two seasons, April and May, 1902 and 1903, I have had excellent opportunities to study the nesting habits of all the species of this order known to nest within the limits of the State of Florida, with the exception of the Glossy Ibises and the Reddish Egret, the former being very rare in the regions visited, and the latter being practically confined to the Florida Keys where it is by no means common. The season of 1902 was spent in Brevard County, at various points along the Indian River from Titusville to Sebastian, and in the interior, among the marshes and cypress swamps of the upper St. Johns River, this latter locality proving most fruitful. The river at this point is spread out over a marshy area about three miles wide with a narrow open channel and a series of small lakes or ponds in the center. Except in these open places the water is very shallow, from one

to three feet deep, with a treacherous muddy bottom, making wading impossible. The marsh consists of broad areas of saw grass among which are numerous tortuous channels overgrown with a rank growth of coarse yellow pond lilies, locally known as 'bonnets,' through which we had to navigate by laboriously poling a shallow, pointed skiff. The channels are still further choked by small floating islands, made up of bushes and rank aquatic vegetation, which drift about more or less with the changes of the wind. There are also many permanent islands overgrown with willows which serve as rookeries for thousands of Louisiana Herons, Little Blue Herons, Anhingas, and a few Snowy, Black-crowned and Yellow-crowned Night Herons. Least Bitterns, Red-winged Blackbirds and Boat-tailed Grackles nest in the saw grass, Coots, Purple and Florida Gallinules, frequent the 'bonnets,' and large flocks of White Ibises, Wood Ibises, Cormorants and a few Glossy Ibises fly back and forth over the marshes, especially at morning and evening.

The season of 1903 was spent in the extreme southern part of the State, cruising in a small schooner from Miami to Cape Sable, visiting nearly all of the keys and making several trips inland to the southern edge of the everglades in Monroe County.

The whole of the Bay of Florida, from the outer keys to the mainland, is extremely shallow, so that cruising in a boat drawing more than three feet of water is out of the question; I should say that fully one half of the bay would average less than three feet deep; the bottom is covered with soft, slimy, whitish mud which discolors the water and at certain times makes it quite opaque. There are three types of keys in this region, mud keys, sand keys, and coral keys. The mud keys are by far the commonest type, the natural result of the prevailing conditions, and they are constantly increasing in size and number. They owe their origin and their increase to the agency of the red mangroves and their long-tailed seeds, which float about until they find a foothold in the mud where they germinate and grow to maturity, spreading out from year to year over more and more territory until an incipient key is formed. This incipient key is locally known as a 'bush,' having no dry land under it, the trees growing in water from one to three feet deep. As the key grows older and dry

land forms, the red mangroves in the centre are gradually replaced by black mangroves.

On some of the largest, and probably the oldest, keys there are dry, open areas overgrown with grasses and underbrush, the red mangroves remaining only in a narrow strip, around the shores.

There are very few sand keys, which are merely modified mud keys, having beaches of coarse shelly sand replacing the mangroves for portions of their shore line. Most of the outer and lower keys are of coral formation; they are the most picturesque, the most interesting and the most tropical in appearance of all the keys. They are but scantily covered with a thin, light soil, the coral rock showing through it everywhere, but they generally support a rich tropical vegetation, consisting of cocoanut palms, tamarinds, sapadillos, oranges, lemons, limes, bananas, pine-apples, pawpaws, sisal and various cacti. On the larger keys the edible fruits are largely cultivated by the native 'conchs' and negroes.

The mainland, for many miles into the interior, is low and flat; the lakes and streams are shallow and brackish; and the absence of any good drinking water, together with the omnipresent swarms of mosquitoes, make collecting in the interior anything but a pleasure. Red mangroves line the shores of all the lakes and streams, and the forests consist mainly of black and white 'buttonwoods,' black mangroves and a few rubber trees. There is a narrow strip of prairie along the southern coast of Monroe County, between the muddy shore and the forest, and at Cape Sable there is a long stretch of high, sandy beaches, these two being the only habitable localities on the mainland.

I shall now take up the various species of the Order Herodiones, giving my experience with them, as I found them in Florida, without attempting to describe their habits or distribution elsewhere.

Ajaia ajaja. ROSEATE SPOONBILL.

This beautiful species, which must be seen in life to be appreciated, is confined, during the breeding season at least, to the extreme southern portions of Florida. The Spoonbills are



FIG. 1. NEST AND YOUNG OF ROSEATE SPOONBILL.



FIG. 2. NEST AND EGGS OF ROSEATE SPOONBILL.

fairly abundant on the southern coasts of Florida during the winter, feeding in large flocks in the shallows of the Bay of Florida, in the muddy inlets along the shore, and in the shallow lakes and sloughs in the interior. One of their favorite feeding grounds is a large, so-called 'slough' near Cape Sable, but very different in character from the typical western prairie slough. This is apparently a submerged forest, killed by inundations from the sea, the remains of which are still standing, tall dead trees, many of them of large size, bare and bleached. During the fall and early winter the slough is full of water but at the time we were there, in April, it was partially dry in spots, but mostly soft and boggy, with sluggish streams and numerous shallow muddy pools scattered through it, forming fine feeding grounds for Spoonbills, Ibises and other water birds. There is another favorite resort of the Spoonbills on one of the keys which has a fair sized lake in the centre. Large flocks of 'Pink Curlews', as they are called by the natives, had been seen almost daily flying to and from this lake. Owing to this fact we were lead to suppose that we might find a breeding rookery here, but a day's search failed to reveal even a single bird. I am inclined to infer that they come here only to feed in the shallow muddy waters of the lake or to roost in the mangroves around it.

We found the Roseate Spoonbills breeding in only two localities, in large mixed rookeries with several other species. The first locality was a small island, not over two acres in extent, in the centre of a large lake in the interior, Cuthbert Lake, about seven miles back from the coast and almost on the edge of the everglades. It was covered with a thick growth of black mangroves, mixed with white 'buttonwoods' and a few black 'buttonwoods,' in the centre and surrounded by a wide belt of red mangroves growing in the mud and water up to three feet in depth.

As we approached the island an immense cloud of birds arose, with a mighty roar of wings, and circled about us in a bewildering mass. We estimated that there were at least 4000 birds nesting on the island, principally White Ibises and Louisiana Herons, with a great many Little Blue Herons, Anhingas and Florida Cormorants, and a few American Egrets. But conspicuous among them all was a little party of twelve Roseate Spoonbills;

they perched for a few moments in the mangroves, their gorgeous nuptial plumage showing to advantage against the dark green foliage, then rose, gradually circling higher and higher, the sun illuminating their delicately rose-colored wings, as with outstretched necks and legs they seemed to fade away into the sky. We did not see them again that day.

Though we searched carefully and thoroughly, we found only three of their nests. These were all built in red mangrove trees on the edge of the water among the nests of the White Ibises; they were all on nearly horizontal branches, from 12 to 15 feet from the ground, and were all similar in size and construction, easily distinguishable from the others. They were larger than the Ibises' nests or the smaller Herons' nests and about as large as the Anhingas' nests, but more neatly made than the latter, without the use of dead leaves, which are so characteristic of the Snakebirds' nests; they were well made of large sticks, deeply hollowed and lined with strips of bark and water moss. One nest contained only a single, heavily incubated egg, one a handsome set of three eggs, and the other held two downy young, not quite half grown.

The single egg has a dirty white ground color with only a few irregular blotches of raw umber and mummy brown about the larger end; it measures 2.58 by 1.72 inches, being somewhat elongated ovate in shape. The set of three eggs have a pinkish, creamy white ground color, more or less uniformly covered with dashes and spots of lavender, purple and drab, over which spots of various shades of brown are quite evenly distributed.

The eggs somewhat resemble those of the White Ibis, but can always be easily distinguished by their larger size; they will average one quarter of an inch larger each way.

The two young, in the feeble, helpless stage, unable to stand as yet, were curious looking birds, flabby and fat, with enormous abdomens and soft duck-like bills; their color, including bill, feet, legs and entire skin, was a beautiful, deep, rich salmon pink; they were scantily covered with short white down which was insufficient to conceal the color of the skin; the wing quills were well started, but still in sheaths. The first plumage, acquired before the young leave the nest, is mainly white with a slight suffusion of pink under the wings and tail.



FIG. 1. NEST OF WHITE IBIS



FIG. 2. NEST AND EGGS OF WHITE IBIS.

The principal breeding ground of the Roseate Spoonbills was a great morass on the borders of Alligator Lake, a few miles back from the coast near Cape Sable, where the mangrove islands in which the birds were nesting were well protected by impenetrable jungles of saw grass, treacherous mud holes, and apparently bottomless creeks. The various members of the heron family were nesting here in countless numbers, White Ibises, Roseate Spoonbills, Louisiana Herons, Snowy Herons, and American Egrets; one might toil here for many hours and never get beyond the sea of nests and hosts of young birds in all stages of growth; the area was too vast and the traveling too difficult to arrive at any reasonably accurate estimate of the numbers of birds breeding in this great rookery. The Spoonbills were here in abundance and had eggs and young in their nests in all stages, as well as fully grown young climbing about in the trees. The old birds were tamer here than at Cuthbert Lake, and even allowed themselves to be photographed at a reasonable distance.

The Spoonbills will probably be the next to disappear from the list of Florida water birds; they are already much reduced in numbers and restricted in habitat; they are naturally shy and their rookeries are easily broken up. Their plumage makes them attractive marks for the tourist's gun, and they are killed by the natives for food. But fortunately their breeding places are remote and almost inaccessible; and through the earnest efforts of the A. O. U. wardens they are now protected. It is to be hoped that adequate protection in the future will result in the preservation of this unique and interesting species.

Guara alba. WHITE IBIS.

The White Ibis, or 'White Curlew' as it is called by the natives, is universally abundant throughout all portions of Florida that I have visited, but especially so in the southern portions of the State. Both this and the preceding species are highly esteemed by the natives as food; the old birds are shot at all seasons and the young are taken from the nests in large numbers.

The 'conchs' and negroes of southern Florida also eat the young of all the smaller herons and do not draw the line even at young cormorants.

On the upper St. Johns we saw large flocks of White Ibises daily, flying to and from their feeding grounds at morning and at evening; we also found them feeding in large numbers in the shallow pools in the cypress swamps, but we were not able to locate any breeding rookeries in this region.

In Monroe County they were the most abundant species of the order, breeding in immense colonies of countless thousands. We found them on all the inland lakes and streams, feeding in the shallow, muddy lakes and flying out ahead of us as we navigated the narrow creeks.

The first breeding colony we found was in the Cuthbert Lake rookery referred to above; as we approached the little island the Ibises arose in a great white cloud from the red mangroves and circled about over our heads, uttering their peculiar grunting notes of protest. We estimated that there were about 1000 Ibises in the colony. They soon settled down into the trees again where we landed and were constantly peering at us through the foliage while we were examining their nests.

The Ibises' nests occupied the intermediate belt, on the outer edge of the larger trees on the dry land and on the inner edge of the red mangroves over the mud and shallow water, the interior of the island being occupied by the herons and the outer edge of the mangroves by the cormorants.

The nests were rather closely grouped, at heights varying from 8 to 15 feet, on the horizontal branches of the mangroves, often on very slender branches; only a few were placed in the white 'buttonwoods.' They were very carelessly and loosely made of dry and green leaves of the mangroves, held together with a few small sticks and lined with fresh green leaves. The nests are probably added to as the eggs are laid or as incubation advances.

The nests which contained only one egg were very small, flimsy structures, hardly large enough to hold the egg, often measuring only 6 inches across, while those with three eggs were larger, 10 inches or more across, and better made. They generally lay four or five eggs, and in such cases have large and well built nests. At the time of our visit, May 1, 1903, the Ibises in this rookery were only just beginning to lay, as most of the nests contained one or two eggs, none more than three, and all the eggs we collected were fresh.

This was rather remarkable, considering that fifteen days later, at Alligator Lake, where these Ibises were breeding in immense numbers, they had young of all ages, many of them able to fly.

There are several very large breeding rookeries of White Ibises on the lower west coast of Florida which we did not have time to visit, but we were told by our guides that they are much larger than any we had seen.

The eggs of the White Ibis are subject to great variation in size, shape, and color, making a handsome series. The ground color varies from pale blue to dull white or deep cream color. Some of the eggs are nearly immaculate, with a few small spots or blotches of various shades of brown. Some are boldly spotted or heavily blotched with chestnut or chocolate brown, and some profusely washed or stained with russet or burnt sienna. In shape they vary from ovate to elongate ovate.

A series of six sets selected at random exhibit the following measurements: length, 2.47 to 2.17; breadth, 1.61 to 1.47; average, 2.33 by 1.53 inches.

The White Ibises are so extremely abundant that there seems to be but little danger of their extermination, at least for a long time to come, in spite of the fact that they are shot in large numbers by sportsmen and tourists, as well as by the residents for food. Their rookeries are generally difficult of access, and they are not sought after by the plume hunters.

Tantalus loculator. WOOD IBIS.

This interesting species is fairly common in nearly all the fresh water lakes and marshes in the interior of Florida, and, owing to its large size and striking colors, is always conspicuous. During the winter months it is abundant all along the Indian River, where it may be seen in large flocks along the muddy shores feeding on small crustacea and batrachians; its actions at such times are grotesque and amusing as it dances along over the mud, beating the ground with its feet to drive the little crabs from their holes. As the breeding season approaches the Wood Ibises disappear from their winter feeding grounds and resort to the cypress swamps in the interior to breed. There are several small breeding rookeries

a few miles back from the coast along the Indian River in Brevard County, where they nest in small cypress swamps.

In the big cypress swamps in the upper St. Johns region there are more extensive rookeries. We saw the birds here frequently flying to and from their rookeries, especially at morning and at night, in long lines high in the air, alternately flapping their wings or sailing, all in perfect unison, and all following their leader with military precision. Their pure white plumage, contrasted with their jet black remiges served to identify them at a long distance.

Sometimes we saw them sailing about in great circles high above us, their necks and legs outstretched and their long wings motionless, giving a fine example of their wonderful wing power.

They were extremely wary, and, except in their breeding rookeries, they never came near us or allowed us to approach within gunshot. Their nests were placed in the tops of the tallest cypresses, and far out on the horizontal limbs, in the very heart of the big cypress swamp. The trees here were the largest I have ever seen, measuring six feet or more in diameter at the base, tapering rapidly to about three feet in diameter, and then running straight up at about that size for seventy-five or one hundred feet to the first limb. The nests were practically inaccessible by any means at our disposal, so we remained in ignorance as to their contents.

In Monroe County we were more fortunate, as the absence of cypress swamps in this region compelled the Wood Ibises to nest in smaller trees. We found a small colony of Wood Ibises breeding on an island in Bear Lake, about two miles back from the coast. The birds were very shy, leaving the island when we were about one hundred yards away, and not coming within gunshot afterwards. There were about twenty nests in the tops of the red mangroves, from twelve to fifteen feet from the ground; they were large nests, about three feet in diameter, made of large sticks, very much like the nests of the larger herons, and were completely covered with excrement. All the nests held young birds in various stages of growth, covered with white down; only the foreheads were naked. The bills were pale yellow, the eyes dark and the feet pale flesh color. They were grotesque looking objects, squawking loudly to be left alone. A party of Fish

Crows made their lives miserable as long as their parents were away.

The Wood Ibises are not in need of protection; they are extremely shy and wary and well able to take care of themselves; they are not sought after by the plume hunters and are useless for food.

Plegadis autumnalis. GLOSSY IBIS.

I have very little to add to the life history of this species in Florida where it is undoubtedly rare and of local distribution. We saw a few Glossy Ibises flying over the marshes of the upper St. Johns, but found no evidence of their breeding there.

The White-faced Glossy Ibis has been once recorded from this vicinity near Lake Washington, where a female was shot on a nest containing three eggs (see Brewster, *Auk*, III, 1886, p. 481). We were unable to shoot any of the birds we saw and therefore could not determine the species with certainty. In Monroe County we saw only one flock of five birds flying over, high in the air, at Lowes Lake near Cape Sable. Our guides told us that they were rarely seen, and none of the guides with whom I corresponded seemed to know them at all.



SUMMER BIRDS OF THE LEECH LAKE REGION, MINNESOTA.

BY EDMONDE S. CURRIER.

IN 1902 I was in this region from May 26 to June 10, and again, in 1903, from May 22 to June 8. Almost the entire time was devoted to the birds, particular attention being given to the breeding species.

I made my headquarters in the little city of Walker during both visits. In 1902 I was by myself the greater part of the time, but

was accompanied frequently by my friend Mr. Thompson who, although not particularly interested in birds, helped me in many ways and was good company. In 1903 Mr. Phila W. Smith, Jr., of St. Louis was with me, and we lost little time. Mr. Smith is an experienced field man, and being also energetic and tireless we covered the immediate country around Walker thoroughly. Our time was too limited to allow us to explore the entire lake as we desired to do, so we confined ourselves to the western end.

The town of Walker is on Walker Bay, the latter forming the western extension of Leech Lake proper. Walker Bay, itself, is no inconsiderable body of water, as it is from ten to fifteen miles in length, by one to three in width. Leech Lake is one of the largest lakes in Minnesota and has over five hundred miles of shore line. It is in the north-central part of the State, just north of the 47th parallel, and between 94° and 95° west longitude— not far from the source of the Mississippi.

The lake is a beautiful body of water, clear, cold, and pure, with sandy shores and bottom, the former rippapped with great granite boulders. Many beautiful forest-clad headlands project out into the lake, forming protected bays of varying size. Several small rivers, such as the Shinobie, Kabakona, Steamboat, and Benedict, enter Walker Bay, carrying the surplus water from numerous small lakes and ponds back in the hills. At the mouths of these streams, and in places along their course, are marshes of greater or less extent, with beds of wild rice and cane.

The Leech Lake Indian Reservation, occupied by the Pilger tribe of the Chippewas, takes up the greater part of the lake and surrounding country, and on their lands the forest is in its natural beauty. Where the land is not thus protected the destructive lumberman has left nothing but unsightly pine stumps and mutilated standing trees; and as this section was only cut over from three to five years ago, nature has not had time to cover the scars. In many places great fires have swept through in the wake of the lumbermen leaving nothing but desolation. Some of the places are so recently burned over that nothing green has started from the crisp, ash covered ground, and such localities are shunned by birds and insects.

Back from the lake is a succession of hills, with small lakes or

'pot-holes' between. On many of the larger hills are depressions, some water-filled, forming lakes of several acres. Another peculiarity of the country is the great number of boulders of different sizes scattered haphazard over the landscape. The lake beds and shores are strewn with them, they protrude from the marshes and swamps, and are plentiful on the hilltops. In places they are piled up as if they had drifted there.

In its primitive state the forest is heavy, the principal trees being white, Norway and jack pines, balsam, cedar, tamarack, hemlock, poplar, birch, sugar and soft maple, oak, linn, elm and black ash. The hills become covered with birch and poplar after the pines are cut away.

The low growth consists of black alder, hazel, wild raspberry, currant and gooseberry. A wild rose is also numerous. The ground in the clearings and old burns is carpeted with winter-green, wild strawberry, and the abundant blueberry. The great 'brakes,' and more delicate species of ferns are in profusion everywhere.

The country is wild and new, and fences are few and far between, as little land is under cultivation. The soil is very sandy with much gravel, and looks unpromising.

1. *Colymbus holbœllii*. HOLBÆLL'S GREBE.—A colony of from six to ten pairs was found breeding in a bay formed by Minnesota Point in both 1902 and 1903. In 1902 I saw the following nests, with contents as stated: June 2, two nests, each containing one egg, and one nest containing six eggs; June 10, three nests, containing four, five, and seven eggs respectively. In 1903 we saw the following: May 31, two nests, each with one egg, one with three, and another with four eggs; May 24, two nests, each with one egg, and two containing three eggs each.

One nest was high and dry on a muskrat house—a hollow in the side of the house, and about ten inches above the water. The muskrat house was in a patch of tall canes, growing in deep, open water, forming a small island. The other nests were similar in situation, style of architecture, and material used. They varied only in size, and this depended upon the time the birds had been laying. Nests containing only one egg were simply irregular piles or rafts of floating flags, soft and rotting, with the egg often awash and covered with foam. In more advanced sets the nests formed quite a mass of material, with a deep cup above water line. No birds were seen on the nests, or leaving them, but in 1902 I saw one swimming away from a patch of canes in open water that contained a nest.

When there was but one egg in the nest this was left uncovered, but in larger sets the eggs were at least partially covered, and in some cases entirely so. The nests were all placed at the edge of deep and open water so that the bird could dive directly from them.

In 1903 the birds were very quiet both times we were there, and kept out of sight, or at a great distance. I think this was because they had been disturbed, as nests containing eggs May 24 were either deserted or contained fewer eggs when we visited them again on the 31st. The Indians have a village on Squaw Point, a few miles across the bay, and they were seen paddling around these rice beds, and it may be that they take the eggs. In 1902 I did not notice that any nests had been disturbed.

In 1902 they were very noisy both days I was in the vicinity, and although wary and keeping at a distance, were constantly in sight in the open waters between the rice beds and cane islands. They are much given to short flights, resembling a loon while on the wing. In taking wing they patter along the water like a coot. The cry is loon-like also, and very striking. It begins with a shrill wail, drawn out, and ending with more rapid notes, and can be heard a great distance over the water. When at a distance they sit high upon the water like a duck, but with the neck held stiffly at a right angle to the body, and the bill at a right angle to the neck. When nearer they swim with the back awash or only the head above the surface.

We did not see any other grebe around Leech Lake, and it was only in this one place that this species was found.

2. *Gavia imber*. LOON.—Common, and seen every day on or about Leech Lake, or flying overhead to or from the smaller lakes back in the forest. Cry frequently heard. No nests seen either year.

3. *Larus argentatus*. HERRING GULL.—Seen on Walker Bay on the following dates in 1903: May 21, 24, 29, and 31. Not over two seen at one time.

4. *Larus franklinii*. FRANKLIN'S GULL.—May 27, 1902, several were flying over Walker Bay, and on the same date in 1903 we saw one at the eastern end of the same water.

5. *Sterna forsteri*. FORSTER'S TERN.—A white tern seen on Walker Bay, May 30, 1903, was probably this species. It was not obtained.

6. *Hydrochelidon nigra surinamensis*. BLACK TERN.—A colony of perhaps 200 pairs was seen on the marsh extending along Minnesota Point from Kabakona Bay out into the lake. They seemed to be in about the same numbers in 1903 as in 1902. In the former year I found no nests although I saw them carrying material, but this year we found them breeding on the 6th of June. The nests almost invariably held three eggs, most of them fresh, but some had been incubated for several days. The nests were on little islands of moss, or occasionally on rafts of floating grass. Some of them were quite deeply cupped and dry, others were made of reeds and flags, on the beds of grass, and looked rather neat; but in some instances the eggs were half buried by their own weight in the

wet slime, with only three or four short pieces of cane or reeds for a nest. Not more than one nest was on the same bed, nor did we find two nests near together.

The majority of the birds were in full plumage, but a few were much mottled with light. The clamor made by their jerky cries, the harsh, scolding of the Yellow-heads, and more vigorous protests of the Red-wings, the cries of the Sora, and the 'jumping' of the Bitterns, together with frequent shouts from Holbøell's Grebe, made this marsh very interesting.

7. *Pelecanus erythrorhynchos*. AMERICAN WHITE PELICAN.—JUNE 6, 1902, I saw a flock of eight over Squaw Point flying towards the main lake. None were seen by us in 1903.

8. *Anas boschas*. MALLARD.—Seen in several places about Walker Bay in both 1902 and 1903. June 6, 1903, I found a nest on Kabakona marsh recently left by a brood. It was a hollow filled with down and egg shells, between two ash stumps in rank grass, in a dry place on the marsh and only a few yards from the railroad.

9. *Querquedula discors*. BLUE-WINGED TEAL.—A pair heard and seen at Minnesota Point June 6, 1902. None seen in 1903.

10. *Aix sponsa*. WOOD DUCK.—JUNE 6, 1902, at Minnesota Point, a pair flew around me in evident excitement. I suppose they had young near by.

11. *Branta canadensis*. CANADA GOOSE.—MAY 31, 1902, an old bird with young was seen near the mouth of Steamboat River.

12. *Botaurus lentiginosus*. AMERICAN BITTERN.—COMMON at every point visited. No nests were seen in 1903, but June 6, 1902, I saw a nest containing five eggs.

13. *Ardea herodias*. GREAT BLUE HERON.—COMMON about the lake. No nests seen.

14. *Porzana carolina*. SORA RAIL.—ABUNDANT on all suitable marshes. Many nests seen in 1903, one containing eighteen eggs, another seventeen. The average number of a set seems to be about ten.

15. *Steganopus tricolor*. WILSON'S PHALAROPE.—COMMON on the rice beds at Minnesota Point in both 1902 and 1903. No nests seen.

16. *Macrorhamphus scolopaceus*. LONG-BILLED DOWITCHER.—ONE was taken May 24, 1903, at Minnesota Point. It was standing on the edge of a rice bed, near deep water, and allowed us to row within a few yards, merely crouching down and showing little fear. As we were not sure as to the bird's identity Mr. Smith shot it from the boat. It was a beautiful bird in high plumage.

17. *Actodromas minutilla*. LEAST SANDPIPER.—JUNE 6, 1902, a flock of ten or fifteen was feeding on the beach along Minnesota Point. At the same place, May 24, 1903, another flock of about the same size flew by us.

18. *Ereunetes pusillus*. SEMIPALMATED SANDPIPER.—MAY 27, 1902, one was seen along the beach near Walker. May 23, 1903, another was flushed from a bog near the railroad above Walker.

19. *Calidris arenaria*. SANDERLING.—June 10, 1902, one was seen on the beach near the end of Minnesota Point. The wind was high at the time, and I was rowing as close to the shore as possible to avoid it, and the boat passed within a few feet of this bird. It seemed to be too busy searching for food to notice me. May 24, 1903, another was seen near the same place on the beach.

20. *Bartramia longicauda*. BARTRAMIAN SANDPIPER.—I saw but one; this was on June 9, 1902, on a small marsh near the mouth of Kabakona Bay.

21. *Actitis macularia*. SPOTTED SANDPIPER.—Abundant about the lake shore. Two nests, each containing four eggs, were seen in 1903.

22. *Oxyechus vociferus*. KILDEER.—Common near the lake, particularly in the evening when they seemed to come from the interior to feed.

23. *Ægialitis semipalmata*. SEMIPALMATED PLOVER.—May 24, 1903, one was seen on the beach near the end of Minnesota Point.

24. *Arenaria morinella*. RUDDY TURNSTONE.—May 24, 1903, one was seen on the beach near the end of Minnesota Point. We passed in the boat within a few yards of where it was busily engaged in turning over pebbles and pieces of bark without flushing it. It stopped and looked at us several times but did not seem timid.

25. *Canachites canadensis canace*. CANADIAN SPRUCE GROUSE.—I think I flushed one of these birds from a poplar wood on a hillside near Walker, May 26, 1902, but we could find none in 1903, although we looked particularly. The people there say that the "Spruce Hen" is only with them in the winter, when it is common in the jack pine woods.

26. *Bonasa umbellus togata*.—CANADIAN RUFFED GROUSE.—Common and tame about Walker. Heard drumming, or seen almost every day. No nests seen. The people call them "Partridges," and they are the chief game bird of that region.

27. *Cathartes aura*. TURKEY VULTURE.—Several were seen both years about Walker. June 9, 1902, a pair passed low over me at Kabakona Bay, and May 27, 1903, three were in sight at one time over Shinobie River. They are generally seen singly, and cannot be called common.

28. *Circus hudsonius*. MARSH HAWK.—In 1902 I saw this bird on almost every suitable marsh around the lake, but in 1903, strange to say, we did not see a single one anywhere.

29. *Accipiter velox*. SHARP-SHINNED HAWK.—One seen May 27, 1902. In 1903 we saw several.

30. *Buteo borealis*. RED-TAILED HAWK.—Several seen in both years about the lake.

31. *Buteo lineatus*. RED-SHOULDERED HAWK.—June 8, 1902, one crossed the railroad so near me I could see it plainly. Several seen in 1903.

32. *Falco columbarius*. PIGEON HAWK.—May 27, 1903, a pair was seen sitting, not far apart, on the extreme tops of two spire-like balsams

on the Shinobie River. They acted very much at home and no doubt had a nest not far away.

33. *Falco sparverius*. AMERICAN SPARROW HAWK.—None seen about Leech Lake in 1902, but in 1903 we could generally find one about some old stubs two miles south of Walker, along the lake shore. Others were also seen in 1903.

34. *Syrnium varium*. BARRED OWL.—One was seen crossing an arm of Walker Bay, at twilight, June 7, 1903. Two downy young were also seen in captivity in Walker while we were there this year.

No other owl was seen or heard either year. I was told that Screech Owls were often heard, but we were not fortunate enough to hear any. The people say that the Snowy Owl visits them in the winter, some years in numbers.

35. *Coccyzus erythrophthalmus*. BLACK-BILLED CUCKOO.—Fairly common around Walker. First heard June 3, 1902, and May 25, 1903.

36. *Ceryle alcyon*. BELTED KINGFISHER.—Very abundant around the lake, and seen near every body of water visited. Many nesting cavities seen.

37. *Dryobates villosus leucomelas*. NORTHERN HAIRY WOODPECKER.—The Hairy Woodpecker of the Leech Lake region is very much larger than the one I am familiar with in Iowa and Missouri, and I do not hesitate to list it as *D. v. leucomelas*. Several nests full of noisy young were found in both years.

38. *Dryobates pubescens medianus*. DOWNY WOODPECKER.—Seen frequently about Walker but nowhere nearly so common as in the woodlands of Iowa. Several nests seen in the two years.

39. *Picoides arcticus*. AMERICAN THREE-TOED WOODPECKER.—Two fine males were seen along Shinobie River, May 27, 1903. We located what we supposed was the nest of one of them, but not having climbers along at the time and it being in an almost impassable pine stub, limbless, and charred by forest fires, we had to give it up. The cavity was fifty feet, at least, from the ground in the main trunk and was plainly new, and much worn about the entrance, where the birds in alighting had brushed off the black. Rapping on the trunk failed to bring out the female, but the nest was at such a height it would not be likely to.

The birds were very beautiful, with their black backs and yellow crowns. They were both very busy as long as we saw them, lighting on a tree trunk or snag they would work upwards, almost from the ground, frequently giving a rather shrill *cheep, cheep*.

40. *Sphyrapicus varius*. YELLOW-BELLIED WOODPECKER.—Quite common in 1902, but not so many were seen in 1903. A nest containing six fresh eggs was seen, May 31, 1902. This was about twelve feet from the ground in the main trunk of a live poplar. We saw another nest June 1, 1903, about 30 feet up, also in a poplar. The birds were about this nest, but it was empty.

41. *Ceophlœus pileatus abieticola*. NORTHERN PILEATED WOOD-

PECKER. — I saw or heard none in 1902, but this was simply bad luck, as in 1903 we heard three or four at different times around Walker, and May 22 Mr. Smith caught a glimpse of one as it left a snag on a hilltop. Their work on stumps and snags was frequently seen, and several times the quavering song was heard near at hand, but the trees were so close together it was no trouble for the bird to remain hidden. There were at least three pairs breeding within a few miles of Walker.

42. *Melanerpes erythrocephalus*. RED-HEADED WOODPECKER. — A rare bird about Leech Lake. Only one was seen in 1902, on May 27, near Walker. June 1, 1903, we saw one near the same place, and a few days later saw it again.

43. *Colaptes auratus luteus*. NORTHERN FLICKER. — Could be called fairly common. Several nests seen both years.

44. *Antrostomus vociferus*. WHIP-POOR-WILL. — I heard but one in 1902. This was on June 8, on the hillside back of Walker, and although I was in the same locality several evenings after that I did not hear it again. In 1903 I heard the first call in the evening of May 23. No more were heard until the 26th, when two or three could be heard calling. After that two or more were heard every evening.

45. *Chordeiles virginianus*. NIGHTHAWK. — Very common in the evenings over the lake. We saw four nests in 1903, on the cleared hills back of Walker.

46. *Chætura pelagica*. CHIMNEY SWIFT. — Quite common about Walker and frequently seen over the forests miles from the settlements. Many must nest in hollow trees, as they do in the southern swamps, because this region is very thinly settled. May 26, 1903, we found one building a nest on the wall inside of a vacant shanty on Kabakona Bay. Several were seen descending brick chimneys in the town of Walker, but there certainly are not enough chimneys to go around in that locality.

47. *Trochilus colubris*. RUBY-THROATED HUMMINGBIRD. — A common bird about Walker. In greatest numbers during the last week in May, showing that migrations were on then.

48. *Tyrannus tyrannus*. KINGBIRD. — Seldom out of sight along the lake shores, and railways, and near the cabins of the settlers. Several nests were seen both years.

49. *Myiarchus crinitus*. CRESTED FLYCATCHER. — Frequently seen and heard. In 1902, first heard on May 27; in 1903, one on May 22. No nests seen.

50. *Sayornis phœbe*. PHŒBE. — A common bird around the lake shores. I saw a nest containing five speckled eggs May 27, 1902.

51. *Nuttallornis borealis*. OLIVE-SIDED FLYCATCHER. — None seen by me in 1902, but, May 30, 1903, the loud call of one attracted us to it in a dry ravine back of Walker. We saw it, or others, in that vicinity for several days, and June 7, the females seemed to have arrived, as we saw two birds in pursuit of another. They were very active and noisy, and would not allow a near approach. The cry is one of the wildest of all

small bird calls, and is not to be confused with that of any other species, at least in the Mississippi Valley.

52. *Contopus virens*. WOOD PEWEE.—Heard every day we were in the woods about Walker.

53. *Empidonax traillii*. TRAILL'S FLYCATCHER.—Two seen and heard in the low thicket along the shores of the lake, June 5, 1902. I heard the low *phweet* of another May 25, 1903, in the same place. The form here may be referable to the northeastern form, *E. t. alnorum*, but we did not procure any specimens.

54. *Empidonax minimus*. LEAST FLYCATCHER.—An abundant bird, particularly in 1902. In that year, from May 26 to June 1, they were the most abundant bird, the *chebick, chebick* being constantly heard during daylight. They were not so numerous after June 1, but still could be called abundant. In 1903 they did not appear in such numbers, but we heard and saw them every day.

55. *Otocoris alpestris praticola*. PRAIRIE HORNED LARK.—I saw but one of these birds in 1902, and in 1903 we saw none. The one seen was near the Great Northern depot at Walker, June 5, after a shower. It was soaring and in full song. The country in that section is not suitable for this bird, and to that fact no doubt is due its scarcity.

56. *Cyanocitta cristata*. BLUE JAY.—Frequently seen and heard, but not in such numbers as further south.

I was told that the 'Camp-robber' (*Perisoreus canadensis*) appears about Leech Lake in cold weather, but does not remain during the summer.

57. *Corvus americanus*. AMERICAN CROW.—Common everywhere about the lake. Several occupied nests were seen both years. One pair in particular had our sympathy. They had a nest full of young in a scrub oak standing alone out on the marsh, where several pairs of King-birds, and thousands of Redwings were breeding. Every time a Crow made a move it was pounced upon by from two to a dozen of the smaller birds and forced to light for a time. The Yellow-heads would also join in at times, but they were not so persistent. The Redwings seemed to be the worst.

58. *Dolichonyx oryzivorus*. BOBOLINK.—Only one seen near Leech Lake in the two years. This was on June 9, 1902, at Kabakona Bay, and was a male in song.

59. *Molothrus ater*. COWBIRD.—Very common in the clearings and along the railroads, but were in greatest numbers in the town of Walker and vicinity, where they were in flocks of from 25 to 50, familiarly lighting in the streets and roads. Eggs of this bird were seen in nests of *Melospiza cinerea melodia*, *Melospiza georgiana*, *Dendroica pensylvanica*, *Seiurus aurocapillus* and *Wilsonia canadensis*.

60. *Xanthocephalus xanthocephalus*. YELLOW-HEADED BLACKBIRD.—Seen on all the marshes about Leech Lake, and there was a large colony at Minnesota Point. The full plumaged male is a striking bird with his

abruptly contrasting colors, and the noise made by a colony of them, when intruded upon, is rather exciting. The cries are rather unpleasant, being harsh and grating, yet after one has been with them a little time they do not seem out of tune with the wind's whistling over the grass and through the canes. Many beautiful nests were seen, one in particular I would have liked to have taken, but it contained young at the time. This was in a patch of canes at the edge of open water and was unusually large. What made it so handsome was that the bird had woven into the nest from the top several long stalks of a species of fox-tail grass, leaving the heads on, and five or six of these stood erect, plume like, around the edge of the cup. The usual number of eggs in a nest was three or four, but we saw one containing five.

61. *Agelaius phœniceus*. RED-WINGED BLACKBIRD.—Abundant throughout that country. Every suitable place had its pair or colony. A great many nests were examined. They usually contained four eggs or young, often only three, and frequently five. In 1902 I saw one nest containing six eggs, and this year two nests with the same number.

62. *Icterus galbula*. BALTIMORE ORIOLE.—Common about the lake, but not as many were seen in 1903 as in 1902. All the nests seen were in birch trees.

63. *Quiscalus quiscula æneus*. BRONZED GRACKLE.—Abundant in the village of Walker and along the lake shores and in the marshes. During the two years many nests were seen and they seem to vary considerably in situation in that country. While the majority were open nests placed in forks or crotches of limbs or trees, several seen in 1902 were in cavities of trees and stubs. I found one nest in 1903 out on the open marsh, with a colony of redwings. This nest was woven together in the top of a clump of flags, and its weight had lowered it to within a few inches of the water. Its greater size than the near by redwings' nests attracted my attention, and I went to it. The nest contained two young, and two eggs on the point of hatching, and both grackles were there.

64. *Carpodacus purpureus*. PURPLE FINCH.—Common in 1902, but not so many were seen in 1903. Only one nest was seen in the two years. This was placed near the extreme top of a very tall balsam, and was found by Mr. Smith's seeing the female fly directly to the spot. We then saw that she was building, and we watched her at work for some time. This was on the 22d of May. On May 30, after a hard climb, Mr. Smith reached the nest, but it contained but one egg.

65. *Loxia curvirostra minor*. AMERICAN CROSSBILL.—May 29, 1903, while on a pine covered ridge on the Indian Reservation, near Kabakona Bay, a new note attracted our attention to the top of a tall Norway pine. Looking it up we found a party of three or four Crossbills industriously at work amongst the cones at the ends of the branches. We watched them for quite a while, they apparently giving us no thought. They were still in this tree when we left them.

66. *Astragalinus tristis*. AMERICAN GOLDFINCH.—Common in all places suited to the bird.

67. *Spinus pinus*. PINE SISKIN.—I found this bird not uncommon, in parties of from 6 to 30, in the tamarack swamps in 1902. In 1903 we did not see any. I have no doubt they bred there in 1902, as on the 8th and 9th of June I saw several groups feeding near the ends of branches of balsam trees. The whole flock seemed to keep up a twittering sort of a conversation, and at times one would break into a low, rather sweet song.

68. *Poœcetes gramineus*. VESPER SPARROW.—In 1902 they seemed to be rather scarce. That year I saw but one nest; this was on June 3, and it contained three young. In 1903, we found them to be common around Walker in the bare or cleared places, along the railroads or wagon roads. This year we saw six nests, five containing four eggs each, and one four young.

69. *Zonotrichia albicollis*. WHITE-THROATED SPARROW.—Abundant in the partially cleared country about Walker, and often heard in the wilder forest regions.

We saw many nests containing from three to six eggs. May 31, 1903, I found one nest containing four newly hatched young, but this seemed to be an unusually early pair. At that date most of the nests had incomplete sets or the eggs were fresh. The nests were all much alike, being sunken to the brim, and as a rule well hidden under brush or a rank growth of ferns, plants, etc. Several were placed just at the foot of small white pine shrubs and in such cases were completely concealed. There were exceptional cases where the nest could be looked into without disturbing any of the surroundings. One nest in particular, along a path, was in plain sight with no concealment, but the owners had deserted it before laying. There were other nests that were hard to find even after flushing the bird. One I saw in 1902 was well under a dead tree top and I did not find it until I had removed some of the brush. The bird does not flush directly from the nest like the Vesper and Song Sparrows, but runs off like a mouse.

70. *Spizella socialis*. CHIPPING SPARROW.—Common about the settlements, and along the railroads and wagon roads. Found with, but not nearly so numerous as the next. Many nests found, usually placed in small pine shrubs.

71. *Spizella pallida*. CLAY-COLORED SPARROW.—A plentiful bird in the brush land around Walker and along the railroads. It is a pretty little sparrow, with a confiding manner, but an unpleasant song. They were constant singers, too, while we were there, and it is one of the few bird songs I have found disagreeable. It is a buzzing, rasping noise, a little like the song of the cicada, but not so musical, and given with much vigor. A friend who was with me part of the time in 1902, would call the bird nothing but the "rasper," and I thought the name very appropriate.

They inhabit much the same kind of a country as does *S. pusilla* further south, and they nest in much the same manner. As a rule the

nests were placed within a few inches of the ground, and if a scrub white pine bush was handy it would invariably be used. I have seen no nest over three feet above the ground, and several were resting upon the ground in a clump of wintergreen or other rank growth. The nest resembles that of *S. socialis* in general style, but has less of the hair lining so characteristic of that bird. As a rule *S. pallida* uses a very fine, light-colored wire grass for this purpose. The number of eggs was usually four, sometimes only three, and only once did I see a nest containing five.

72. *Melospiza cinerea melodia*. SONG SPARROW.—The most abundant songster of that country. Found everywhere, but in greatest numbers in and near the settlements. Common also on the marshes with *M. georgiana* and on the dry hillsides and in the 'burns' with *S. pallida* and *Z. albicollis*. Every cabin or shack had its pair near by, and they were always within sight and hearing along the railroads.

73. *Melospiza lincolni*. LINCOLN'S SPARROW.—This bird was first seen on the marsh at Minnesota Point May 24, 1903. I heard it from the boat as we approached land and noticed that the song was something I had never heard before. The bird would allow quite a near approach, and was in full song from the top of one of the small birch shrubs scattered over the marsh. We spent an hour or so in the immediate vicinity trying to flush his mate but without success. The bird was there when we left, but upon another visit to the same place, May 31, he could not be found. May 27, 1903, we found another in song in a similar locality; this one also seemed attached to the place but was not seen there on May 31.

74. *Melospiza georgiana*. SWAMP SPARROW.—Abundant on all the marshes. A vigorous singer, but the song is lacking in sweetness and is rather monotonous. Many nests were seen in the tussocks, usually containing four or five eggs.

75. *Passer domesticus*. HOUSE SPARROW.—Common about the streets of Walker.

76. *Pipilo erythrophthalmus*. TOWHEE.—Fairly common on the cut-over hills back of Walker. Several nests seen in 1903 contained each three or four young or eggs.

77. *Zamelodia ludoviciana*. ROSE-BREASTED GROSBEAK.—June 5, 1902, I heard one but saw none. In 1903 we found them fairly common.

78. *Cyanospiza cyanea*. INDIGO BUNTING.—Only one seen in the two visits.

79. *Piranga erythromelas*. SCARLET TANAGER.—Seen and heard frequently both years.

80. *Progne subis*. PURPLE MARTIN.—Common about the settlements and along the lake shores. At a distance from human habitations, they were using cavities in stubs for nesting places. One oak stub in particular was in demand on Minnesota Point. It was standing by itself on the lake shore, at a distance from other trees, and a pair of martins and a flicker were battling for possession of a cavity, with a pair of Tree Swallows flying around in a wistful manner.

81. *Tachycineta bicolor*. TREE SWALLOW.—Seen about the ponds and smaller lakes near Walker and along the shores of Leech Lake. In 1903 we saw three cavities in use as nesting places. They were in stubs standing at the edge of the water.

82. *Riparia riparia*. BANK SWALLOW.—An abundant bird about Leech Lake.

83. *Ampelis cedrorum*. CEDAR WAXWING.—A plentiful bird, but much more numerous in 1902 than in 1903.

84. *Vireo olivaceus*. RED-EYED VIREO.—Abundant throughout that region. It seems to be as numerous about Leech Lake as it is in Iowa and Missouri, and certainly is one of the best distributed birds of the Mississippi Valley.

85. *Vireo gilvus*. WARBLING VIREO.—But one was seen near Walker. This was May 27, 1902, when one appeared in song. Thirty or forty miles southwest of Walker, I found them to be a common bird May 29, 1902, and several were seen near Brainerd sixty miles south of Walker by Mr. Smith May 21, 1903. In both localities the country is well cultivated.

86. *Vireo solitarius*. BLUE-HEADED VIREO.—Several seen May 23, 1903, but could not find them later. Both sexes were represented.

87. *Mniotilta varia*. BLACK AND WHITE WARBLER.—Common in 1902, and one of the most abundant of all warblers in 1903.

88. *Helminthophila chrysoptera*. GOLDEN-WINGED WARBLER.—May 22, 1903, I found one—a male in song—in a small swamp along the railroad near Walker.

89. *Helminthophila rubricapilla*. NASHVILLE WARBLER.—We found this species to be quite common. June 17, 1903, Mr. Smith flushed a female from a nest containing five incubated eggs. The locality was a small swamp along a brook near Walker, and the nest was sunken into a hummock of moss near the foot of a balsam. A clump of *Dalibarda*, growing just in front of the nest, completely hid the eggs from view with its big leaves.

90. *Compothlypis americana usneæ*. NORTHERN PARULA WARBLER.—Found in every swamp where there were balsam and tamarack.

91. *Dendroica tigrina*.—CAPE MAY WARBLER.—But one seen. This was on May 25, 1903, near Long Lake, southwest of Walker. It was with a group of other warblers of which there was a great flight that morning.

93. *Dendroica æstiva*. YELLOW WARBLER.—One of the most numerous of all the birds, keeping to the partially cleared hills and 'burns,' with their thickets of hazel and alder. Many nests were seen.

94. *Dendroica cærulescens*. BLACK-THROATED BLUE WARBLER.—First found May 22, 1903, and at a later date it was in the same place. This was a male in song, and from his staying in the vicinity we supposed there was a nest near, but we did not see it or the mate.

95. *Dendroica maculosa*. MAGNOLIA WARBLER.—One seen May 28, 1902, and several seen during our stay in 1903. During 1903 one male in particular attracted our attention by his great beauty and sprightly song

and movements. We saw him several times at the edge of a woodland along a brook near Walker. The last day we were there, June 7, he was still in the same place, and I have no doubt had a mate and nest in the vicinity.

96. *Dendroica pensylvanica*. CHESTNUT-SIDED WARBLER.—Perhaps the most abundant member of the family. Found in all the alder and hazel thickets, and around the clearings and in the 'burns.' Very tame and pretty. Many nests seen contained from three to five eggs.

97. *Dendroica striata*. BLACK-POLL WARBLER.—Scarce in 1902, but fairly common in 1903 throughout our stay. I have no doubt it breeds there, although we saw no nests.

98. *Dendroica dominica albilora*. SYCAMORE WARBLER.—This bird was first seen May 26, 1903. Its song attracted us to the locality, and we spent perhaps two hours watching him. During this time he moved around slowly from one perch to another, constantly singing, often coming down on the lower branches above us, where we could see him quite well. The beautiful yellow throat, the triangular spot of black on the side of the head and the white spot on the eyelid could plainly be seen. This bird visited not over half a dozen trees while we were there, spending most of his time in an oak and a large white pine. June 1 we went back to the same locality and found him there again, and he spent his time in exactly the same trees. Once Mr. Smith saw him chase a bird, perhaps his mate, off into the undergrowth, soon returning. We saw no nest, but there must have been one at no great distance—we thought in the white pine.

99. *Dendroica vigorsii*. PINE WARBLER.—One of the common Warblers around Leech Lake. In spite of this bird's abundance but one nest was seen in the two years. This was placed in the tuft at the end of a branch of a Norway pine and could not be seen from the ground even after we knew where it was. If all were hidden like this it is not surprising we saw no more.

100. *Seiurus aurocapillus*. OVEN-BIRD.—Seemingly as numerous on the birch and poplar clad hillside about Leech Lake, as under the white oaks and maples of Southern Iowa. Several beautiful nests were seen, containing from three to five eggs each.

101. *Geothlypis philadelphia*. MOURNING WARBLER.—A common bird about Walker. I had understood this species confined itself to wet woodlands, as does the Kentucky Warbler of the South, but such is not the case about Leech Lake. They were on the dry hillsides, about the burns and clearings, and about the alder and hazel thickets. They inhabited the same territory as *Zonotrichia albicollis*, *Wilsonia canadensis*, *Hylocichla fuscescens*, *Dendroica aestiva* and *Dendroica pensylvanica*. Occasionally we saw them along old logging roads crossing the swamps, but the greatest numbers were on the higher ground, seemingly preferring brush to timber.

I saw several nests both years and they are all much alike in construc-

tion and situation. They are placed like the Kentucky's, on the ground, at the foot of a clump of rank growth, such as wintergreen, wild strawberry, wild currant, grass, etc., sometimes resting in the growth so that it raises the nest a little from the ground as it grows. The nest is often in plain view from one or more directions, its concealment depending more upon its color and the leaves growing around it than upon any particular care of the birds. The number of eggs laid seems to be four, as I saw only one nest containing five.

102. *Geothlypis trichas occidentalis*. WESTERN YELLOW-THROAT. — Very common in suitable places. The bird around Leech Lake may be the newly recognized northern form *G. t. brachidactyla*, but we did not take any of the birds.

103. *Wilsonia canadensis*. CANADIAN WARBLER. — Quite common on the partially cleared hillsides near Walker, and along the railroads. They inhabit much the same country as the Mourning Warbler around Leech Lake, but are more frequently found at the foot of the hills, along the brooks, and at the edge of the damp places.

In 1902 I saw only two nests, but in 1903 I saw several. One nest seen in 1902 was placed in a clump of long dead grass, and almost on the ground after the manner of a Yellow-throat. This nest was in the middle of an old road on the top of a low hill in brush land and was very different in construction from those seen this year. It was composed entirely of long dry grass, without any dead leaves, while those seen in 1903 were built principally of large dead leaves. The other nests varied considerably in situation, the most of them being several inches above the ground in low growth — one at least ten inches up. One nest seen in 1903 was placed on the ground at the side of a stock path in a dense growth of wild currants and was the only one completely hidden. The number of eggs laid was usually four and in only one case did I see five.

104. *Setophaga ruticilla*. AMERICAN REDSTART. — Very common. Several nests seen.

105. *Galeoscoptes carolinensis*. CATBIRD. — Fairly common along the wooded lake shores and in the thickets around Walker. Several occupied nests were seen containing from three to five eggs.

106. *Toxostoma rufum*. BROWN THRASHER. — Not uncommon about the thickets and clearings around Walker in 1903. In 1902 they were scarce. Several nests seen, and *all* of them were sunken in the ground after the manner of a Towhee's. In Iowa I have seen the nest thus placed, but it is very unusual, and it is strange that the Leech Lake bird should prefer such a situation, though there must be a reason.

107. *Troglodytes aëdon aztecus*. WESTERN HOUSE WREN. — Common alike about the settlements and in the woodlands along the lake shores. Several occupied nests seen.

108. *Cistothorus stellaris*. SHORT-BILLED MARSH WREN. — Quite a colony on the marsh around Kabakona Bay in 1902, but this was burned over during the winter and this season (1903) we found but one male

singing in the whole place. This year we found a small colony along the Shinobie River, May 27. Several nests were seen, but only two were occupied. One contained four and the other six delicate white eggs.

Like *T. palustris*, the males are great singers at their summer homes, but the song is less pleasing. In the rank grass and sedge the bird would be singing almost at one's knees and yet out of sight. Occasionally one would mount to a higher perch to sing, after the manner of the Grass-hopper Sparrow.

109. *Telmatoodytes palustris*. LONG-BILLED MARSH WREN.—Scattered in single pairs amongst the cane beds about Minnesota Island. Several nests seen but only one containing eggs. This was on the 2d of June, 1902, and there were six fresh eggs in the nest. A great singer with a sweet voice.

110. *Certhia familiaris americanus*. BROWN CREEPER.—One seen and heard in song, May 25, 1903, at the edge of a small lake along the Great Northern Railroad two miles west of Walker.

111. *Sitta carolinensis*. WHITE-BREASTED NUTHATCH.—Several were seen both years, but it cannot be called a common bird about Leech Lake.

I was rather disappointed in not finding *S. canadensis*, as I expected to meet with it.

112. *Parus atricapillus*. CHICKADEE.—Frequently seen and heard but not abundant.

113. *Hylocichla fuscescens*. WILSON'S THRUSH.—The abundant thrush of the region.

We saw a great many nests containing three or four eggs, and one containing five. The nests were placed on the ground, in a clump of black alder near the ground where sprouts had shot out from a stump, on top of low stumps, or four feet up in shrubbery. When the nests were on the ground they were fairly well hidden, but several we saw were placed on top of stumps in plain view, and at the side of paths. Many of the eggs had small dots of brown scattered over them, and several were freely freckled.

114. *Hylocichla aliciae*. GRAY-CHEEKED THRUSH.—Very abundant in 1902, from May 26 to 29. None seen after the first of June and none at all in 1903. While they were passing through in 1902 the low, pleasant song reached one from dozens of places on all sides.

115. *Hylocichla guttata pallasii*. HERMIT THRUSH.—Rather rare about Walker and more retiring than the Veery. It seemed to prefer the wilder forests and was very shy. We saw several nests containing three or four eggs each. The nests were on the ground, or a few inches from it, and were exactly like those of *H. fuscescens*. The eggs also looked alike, those of this species being slightly larger and a shade lighter in color.

116. *Merula migratoria*. AMERICAN ROBIN.—Common about the settlements and in clearings. Several occupied nests seen about Walker.

117. *Sialia sialis*. BLUEBIRD.—Several pairs seen about Walker. They were nesting in dead stubs about the clearings.

BIRD MIGRATION PHENOMENA IN THE EXTREME
LOWER MISSISSIPPI VALLEY.

BY HENRY H. KOPMAN.

IT CAN be imagined easily enough that to take up all the considerations suggested in the title set to this article would be beyond the possibilities of a single paper for 'The Auk.' My intention is simply to pick out from among the general phenomena of southern Louisiana and southern Mississippi bird migration those important facts to which the general attention of the ornithological world has never been drawn. Aside from the ornithologists of the Department of Agriculture, to which several observers in this section have reported regularly every spring and fall for the past ten years, scarcely any of our ornithologists are acquainted with the striking peculiarities detected in bird migration in this latitude. One of the prominent tendencies, noted by me in a former brief communication to 'The Auk' (Vol. XX, July, 1903, pp. 309, 310), is procrastination in spring migration. A corresponding tendency is seemingly premature arrival in the fall. Under the first head, a very striking case is that of the three transient thrushes of this latitude, the Wilson's, the Gray-cheeked, and the Olive-backed. The case of these birds comes very readily to mind because it was only the past spring that I settled an important phase of their migrations through Lower Louisiana. Every spring for the past ten years, and not infrequently in the fall, I have been puzzled by a querulous whistle, to be heard, with few if any exceptions, in heavy night migrations the latter part of April and the early part of May, and again the latter part of September. As my knowledge of the conditions of migration have grown I have attributed this note to several species, each time discovering the impossibility of the suspected bird being the author, until I hit upon the Yellow-breasted Chat as the chief actor in the heavy migrations of the late spring and of the middle fall. In this belief I rested with fair security, so like the mellow *whoort* of the Chat was the oft repeated note of the night migrations. My first record of this note was the night of April 25, 1894. Heavy rains and an electric storm early in

the evening had made the conditions excellent for migration. The tremulous whistle was caught up as frequently as the notes of Yellow Warblers, Indigo Buntings, Sandpipers, Green Herons, and Night Herons. More than nine years later, May 9, 1903, I settled the mystery that had perplexed me more than any question that had come up in my experience. I caught one of the birds making the same note in the day-time. It was a Wilson's Thrush. Of all the guesses I had made, I had been unsuspecting of the thrushes. The abundance of the birds heard in night migration had led me off the track. As a bird of the woodland, the Wilson's Thrush is so retiring, and therefore seen so infrequently that one would scarcely hit upon it as the incessantly heard migrant. Once I had heard the note, however, I wondered that I had not before recognized the famous *whew* or *whoit* by which John Burroughs characterizes the voice of the Veery. It was dumbfounding to think that while in all my ornithological observations in this section I had never seen a score of Veeries in the course of ten springs, I had heard countless hundreds. Since the spring of 1897 I had known that both the Gray-cheeked and Olive-backed, especially the former, might appear in astonishing numbers as transients in late April and the first week of May. In hedges, weedy places, and willow thickets in pastures and other open places, I had seen scores of Gray-cheeked Thrushes in a single day the early part of May, but the Wilson's Thrush had been a consistent rarity. For the latter part of spring, in this section, it may be stated as a general proposition that these three transient thrushes will be found migrating together. I have come across heavy waves of the Gray-cheeked and the Olive-backed on various occasions the latter part of April and the early part of May. Usually at the same times the note of the Veery may be heard in night migration. The past spring I observed both the Gray-cheeked and the Wilson's together in a thicket of willows and hackberries between the new and the old levee at Audubon Park, New Orleans. The birds were detained by a slight temporary fall in the temperature that first became apparent May 9. I spent half a morning watching just these thrushes, and it was after watching for some time that I first heard the note of the Wilson's. The first day I could not see any of the Wilson's

Thrushes as they made the note, but the next day one called as I watched it through my glass. The Gray-cheeked were present only the 9th and 10th, but I last observed the Wilson's in the woods May 13, and the last were heard in night migration midnight of May 16. This is the latest the Wilson's Thrush has ever been recorded in southern Louisiana, as the 10th of May is the latest for the Gray-cheeked Thrush. The Olive-backed probably remains as late, but there is no later record than May 4.

As the abundance of these rarer thrushes is often a characteristic feature of the late spring migration of this section, so the absence of most of the less common *Dendroica* is also characteristic. When they do occur, however, it is almost entirely very late in the season, as in the cases of the thrushes. The Black-throated Blue Warbler is an exception to the latter statement. It is rare, but of the two records of its occurrence of which I know, both fell before the first of April. The Magnolia Warbler, however, the Blackburnian, the Chestnut-sided, the Bay-breasted, and the Black-throated Green, are usually seen, if at all, in the late spring. At New Iberia, La., in the south central part of the State, where the prairies begin to encroach, I have seen a female Bay-breasted Warbler May 15. Strange enough, the weather at the time did not show the usual fall in the temperature that accompanies, or, perhaps, causes the tarrying of the spring travelers. A majority of the few records for the occurrence of the Bay-breasted Warbler at this latitude in spring occur between the 25th of April and the 10th of May. The appearance of the Redstart at New Orleans and other points near it in spring occurs mostly at the same time. With the Bay-breasted Warbler seen at New Iberia there was a male Redstart. The Tennessee Warbler has recently been proved to have the same propensity. The past spring the only Tennessee Warblers I saw at New Orleans, and among the few of which I have any spring records, were noted between April 26 and May 9. Some were present almost every day of that period, and they seemed to be lingering contentedly.

Outside of the Warblers and Thrushes, there are other species that loiter unaccountably. For several years in succession the American Pipit was seen in abundance at New Orleans as late as the 20th of April. Small flocks would be seen even until the end

of the month and the last date has twice been set at May 2. The Savanna Sparrow always remains until after the first of May, and the last has been seen May 9. Like the Pipit, the Rusty Blackbird has been seen as late as May 2, and small singing flocks have been on hand at New Orleans until the very last week of April. May 7, Andrew Allison has seen the last Water Thrush (*Seiurus noveboracensis*) at New Orleans. It was with a week's wave of warblers, thrushes, and a sprinkling of a few other species, notably the Rose-breasted Grosbeak and the White-crowned Sparrow. The White-crowned Sparrows, four of which were seen May 1, were the only ones I have ever observed at New Orleans, and the only ones I have seen in this latitude in spring. Noted a month after the latest date I should have expected to find them, these birds have always seemed to me remarkable instances of the tendency towards retarded migration. The greatest of all the loiterers are the Waders. Almost no date is too late for some of the species, and it is doubtful whether all individuals of certain of the species believed to breed only in the far North ever leave the region of the Gulf Coast in summer. At Cameron, La., on the southwest coast of Louisiana, I saw four or five Sanderlings on the beach June 30, last. While the return of the waders to the lower Mississippi valley begins very early, I am hardly disposed to believe that these birds were returning migrants. Whether there had been any at Cameron earlier in June I was unable to know, as I had not been there before. The earliness of the fall migration in southern Louisiana and Mississippi, however, is remarkable. Pectoral, Solitary and Bartramian Sandpipers are almost certain to be back by the middle of July, and other species return in quick successive order. From the nature of their flight, however, the early return of the waders is to be expected, but how are we to explain the presence of the Black-throated Green Warbler in southern Mississippi July 30? In 1897 I took one on that date, during a very heavy migration at Beauvoir, Miss., on the Gulf Coast. Redstarts, Black-and-White, Cerulean, Yellow, and Prairie Warblers, which at the most are very rare breeders in southern Mississippi, the Redstart certainly not breeding that far south, appeared in considerable numbers at the same time and some had appeared two weeks or more before. Aug. 11, the Water-Thrush (*S. noveboracensis*) fol-

lowed. August 12 I took a specimen of the Golden-winged Warbler. At Bay St. Louis, Miss., Andrew Allison has taken Blackburn's Warbler, Aug. 11. While it is not always the same species that shows this unexpected tendency, it happens in one case or another with too much frequency to be disposed of on the ground of fortuity. It is obvious also that birds of about the same class have been participant in the tendency. These early movements have been known to include the rarer vireos also. In 1893, the Philadelphia Vireo, which had appeared furtively during the last days of July in a heavy growth of willows on the batture land of the Mississippi at Convent, La., forty miles up the river (west) from New Orleans, appeared in astonishing abundance August 2. I took one specimen, but there was no need of killing more, as the birds were about me on all sides. In spring, during the time of abundance of the Warbling Vireo, which is a common breeder along the Mississippi in southern Louisiana, I have never seen the Philadelphia Vireo, but beside the record just noted, I have several other records of its occurrence in this section in fall, always later, however, than on the above occasion. As for the Blue-headed Vireo, H. L. Ballowe (now Dr. Ballowe), of Diamond, La., on the Mississippi thirty miles south of New Orleans, sent me in 1893 a specimen of this bird that he killed August 4. Taken all in all, this is probably the most remarkable of these early records. The Blue-headed Vireo is a winter resident in the wet woods of southern Louisiana, but it commonly appears only at the beginning of the winter. The August record seems more in the nature of a 'freak' record than do any of the other records. A rare bird in this part of the South, whose case, nevertheless, is very clearly indicated as that of a bird preferring early fall migration, is the Olive-sided Flycatcher. In 1894 Mr. Ballowe sent me a specimen he had killed at Diamond, August 31. Andrew Allison recorded the Olive-sided Flycatcher at Bay St. Louis, August 29, 1902, and the present season I saw one August 16, at Covington, La., like Bay St. Louis, in pine woods. Covington is less than forty miles north of New Orleans.

One of the strange features of the early fall migration of this latitude is that it is composed chiefly of those species that in spring give little of their presence here, especially in the fertile alluvial of the Mississippi delta. Such are the Yellow Warbler, the Red-

start, the Black-and-White Warbler. The Yellow Warbler appears at New Orleans from further north about the middle of July, and by the last week of the month Yellow Warblers are present by hundreds. Even when appearing in waves in the spring, the Yellow Warblers are always restricted in their numbers at that season. As for the Black-and-White Warbler and the Redstart they are rarities at New Orleans in spring. Not so after the first of August. They are always to be found in reasonable numbers in the woods after that date and sometimes in large numbers. The Tennessee and Magnolia Warblers do not agree with the foregoing in being particularly early fall migrants, but they do agree in being the most abundant of our birds in the fall, and among the rarest in spring. The time of their arrival in fall approximates September 20.

THE CORRECT NAME OF THE PACIFIC DUNLIN.

BY S. A. BUTURLIN.

WHEN publishing, in 1902, Part I of my 'Limicolæ of the Russian Empire,' it was not without much hesitation that I proposed to give a new name to the Fantail Snipe of East Siberia,¹ as Vieillot's old one, *Scolopax sakhalina*, was a very suggestive one. But Vieillot's 'Nouveau Dictionnaire' was not to be found in Russia (not even in the Academical Library), and as H. Seebohm, R. B. Sharpe and others quote "*Sc. sakhalina*" invariably with a "?", I preferred to give a new name to the East-Siberian Snipe.

Through the extreme kindness of Mr. Charles W. Richmond,

¹ *Scolopax (Gallinago) gallinago raddei* nests from Yenesei eastward; differs from *Sc. (G.) gallinago* Linn. in having more white on the wing-lining and axillaries; the chest not so mottled with brown; feathers of the upper parts somewhat more mottled with rufous; the sandy buff edges of the scapulars and the feathers of the upper back much broader, some .08-.16 inch broad; pale central stripe along the crown also broader.

of the U. S. National Museum, Washington, I received afterwards (*in litt.*) a copy of Vieillot's description. As the work is rare; it is better to quote fully.

"LA BÉCASSINE SAKHALINE, *Scolopax sakhalina*, Vieill., (pl. 85 d'un ouvrage russe publié par Sakhalin), se trouve en Russie. Elle a le dessus de la tête, du cou, des ailes et de la queue d'un fauve rougeâtre varié d'un grand nombre de taches brunes; le tour du bec et la gorge blancs et bruns; la poitrine de cette dernière couleur, mais uniforme; les côtés du ventre, les plumes de l'anus et le bord des grandes plumes alaires blancs; le bec et les pieds bruns." (Vieillot, *Nouv. Dict. d'Hist. Nat.*, III, 1816, p. 359.)

"Breast uniformly brown" cannot possibly be intended for a Fantail Snipe (*Gall. gallinago* Linn. or subsp.), and is a gross exaggeration even for a Solitary Snipe (*G. solitaria* Hodgs. et. subsp.). Amongst Palearctic waders only to the Dunlin (*Tringa* or *Pelidna alpina* Linn. et subsp.) the above description applies better. The including of the Dunlin in one genus with snipes is not to be wondered at, as Pallas (*Zoogr.*, 1811, II, p. 176) did the same.

Vieillot's description, however, is none too good, though plainly referable to the Dunlin; so it was necessary to inquire the source of his information, "un ouvrage russe publié par Sakhalin." Scientific books of Natural History or Travel previous to 1816 (date of Vieillot's work) were rarely published in the Russian language, but I tried in vain to trace Mr. Sakhalin, a name of a Russian writer or artist quite as unknown to my friends as to myself.

At last I thought of Gray's splendid work, and my friend M. N. Michaylowsky has sent me the following quotation (from St. Petersburg. Akad. Library) from Gray's *Gen. Birds*, III, 1849, p. 283. "? 25. *G. sakhalina* (Vieill.) *N. Dict. d'Hist. Nat.* iii, 359, *Krust. Voy.* t. 86."

Here Vieillot's somewhat vague original quotation of a "Russian work by Mr. Sakhalin" is rendered quite clear, as the name of the gallant Captain Krusenstern, first Russian circumnavigator of the Globe, is well known to all interesting themselves in Natural Science. The copies of the original (Russian) edition of his

'Voyage' are very rare, but Mr. Af. Al. Illyne in St. Petersburg most kindly sent me a copy.

The text (Russian) is in three small quarto volumes, issued, Vol. I in 1809, Vol. II in 1810, and Vol. III in 1812. The first two contain the Narrative of the voyage round the World in 1803, 4, 5 and 6, and the third contains some of the scientific results. The botanical and zoölogical results were intended to be published in Vol. IV (see Vol. III, pp. iii and iv), but unfortunately it was never published. From pp. iv and 7 of Vol. I we know that plates of natural history objects were drawn by Dr. Tilesius of Leipsic, the naturalist of the expedition.

To the text is adjoined a big in-folio Atlas of XCVIII Plates, issued in St. Petersburg in 1814 and bearing the following title:

Atlas | zur | Reise um die Welt | unternommen auf Befehl | Seiner
Kaiserlichen Majestät | Alexander der Ersten | auf den Schiffen Nadeshda
und Neva | unter dem Commando | des Capitans von Krusenstern. | St.
Petersburg. | 1814.

Curiously enough, Gray must have quoted Tab. 86 by a lapsus calami (or a typographical error),— as Vieillot also quoted Tab. 85: Tab. LXXXV of Krusenstern's Atlas represents a Wagtail (perhaps *M. leucopsis* Gould) and a Titmouse, and Tab. LXXXVI is a bad figure, that I take for a young *Heteractitis brevipes* Vieill. (it is termed "*Tringa meleagris*" on the plate, or "Die Braune Weispunctierte Meerlerche").

But Plate LXXXIV represents very well the type of Vieillot's description; it is a fairly accurate, natural size (I presume) figure of the Pacific Dunlin in breeding dress, with the typical, for the Pacific form, pure white band across the chest, above the black patch. The wing is 121 mm. (4.76 inch) long, and the culmen 38.5 mm. (1.51 in.); in the right upper part of the Plate the bill is drawn as seen from above and nearly 1.5:1 of the natural size (55.5 mm.); the outlines are clearly those of the Dunlin bill, only it is made too straight. The bird on the plate bears not only a Russian name,¹ but also "*Tringa Variegata* oder der Bunte Sachalinische Strandlaufer"; it is stated also that the plate is by Dr. Tilesius ("*Tilesius p. Petroff sc.*").

¹ Indicating that the bird is from the island Saghalien.



1.



2.



3.

4.

BILL OF PORTORICAN WOODPECKER.
Figs. 1 and 3, deformed; figs. 2 and 4, normal.

I am quite satisfied now, that *Tringa alpina* var. *americana* Cassin, B. N. Amer., p. 719 (1858), *Pelidna pacifica* Coues, Pr. Acad. Nat. Sci. Philad., p. 189 (1861), and the much earlier *Scolopax sakhalina* Vieillot, N. Dict. d'Hist. Nat., III, p. 359 (1816), are only synonyms of *Tringa variegata* Tilesius, Atlas Krusenstern. Reis., Pl. LXXXIV (1814).

I think that Tilesius's name must be accepted for the Pacific Dunlin,¹ as *Tringa variegata* of Gmelin (Sys. Nat., I, p. 674, 1788) is not a *Tringa* at all, but (being a synonym of his *Tringa virgata*, *ibid.*) a type of quite a distant genus of waders: *Aphriza* Audubon (1839). But those who consider that Gmelin's *Tringa variegata* invalidates Tilesius's name must accept Vieillot's name and call the Pacific Dunlin *Tringa (Pelidna) alpina sakhalina* (Vieill.).

I add to this note an accurate photograph (nearly 1:1.4 nat. size) of Tilesius's Plate.

1903, Oct. 7,

Russia, Esthonia, Wesenberg.

AN ABNORMAL BILL OF *MELANERPES* *PORTORICENSIS.*

BY B. S. BOWDISH.

Plate XI.

ON June 27, 1901, I shot a male *Melanerpes portoricensis* from a tree in a coffee plantation on a hillside near Mayaguez, P. R. The specimen is No. 177842 of the National Museum collection and was loaned to me for the purpose of making illustrations and measurements.

This bird, which was in company with an apparently quite nor-

¹And it should stand as *Tringa (Pelidna) alpina variegata* Tilesius, as it is only subspecifically distinct. I must add, that I see no reasons for even subgenerically dividing Dunlins, Knots, Purple and Curlew Sandpipers, etc.

mal female, possessed a beak abnormally developed in a most interesting manner. An injury near the base of the lower mandible, partially breaking it away, as a shot might do, seems to have caused this growth.

The theory that I have evolved to account for it, is that as the wound healed the edges contracted, warping the mandible toward that side and tending to the corkscrew-shaped growth that the mandible exhibits. The bird was debarred from hammering by the weakened and misshapen bill, and the growth which normally would have replaced wear, abnormally prolonged both mandibles, though why the lower so much more than the upper I cannot readily understand.

The measurements of this bill are: length of upper mandible, (exposed culmen), 1.33 in.; lower mandible from symphysis, 1.85 in.; width at base, .34 in.

The extent of the abnormal growth can be better appreciated by a comparison of a table of measurements of bills of nine specimens in my collection:

Sex.	Date.	Upper mandible.	Lower mandible (from symphysis).	Width.
♀	Aug. 27	.80 in.	.50 in.	.30 in.
♂	Dec. 1	.85 "	.57 "	.30 "
♂	Aug. 25	.98 "	.60 "	.35 "
♂	Sept. 6	1.00 "	.62 "	.32 "
♂	Jan. 31	1.10 "	.70 "	.33 "
♂	Sept. 25	1.96 "	.60 "	.34 "
♂	Feb. 10	1.10 "	.68 "	.35 "
♂	Dec. 28	1.06 "	.72 "	.33 "
♂	Aug. 14	1.02 "	.65 "	.36 "

This table shows the average length of the upper mandible to be about 1.00 in.; length of lower mandible, .67 in.; and the width of bill at base .33. Thus it will be seen that in the specimen under consideration, while the width of the base of bill is about normal, the upper mandible is a third of an inch longer than the average, and the lower *nearly three times* the average of these nine specimens.

The illustrations show very well the form of the beak. It will be noticed that the lower mandible makes a half turn, so that what should be its lower surface is, at the tip, the upper; while

slender it is not characteristically sharp pointed. The upper mandible is much more curved than normally, probably from lack of the support of the lower mandible, and in place of the normal sharp, chisel-shaped point, the tip much more resembles that of a snipe's bill.

Where the edges of the mandibles meet at the crossing they are worn to a slight notch.

It would be interesting to know whether this bird subsisted entirely on fruit and seeds, which normally form a large percentage of the food of the species, or whether it was fed by the mate, with insects. Obviously this bill was not adapted to obtaining insects for itself in the usual manner. Unfortunately the bird's stomach when procured was empty. The stomach of the female contained the remains of a dragonfly.

SOME NOVA SCOTIA BIRDS.

BY SPENCER TROTTER.

THE peninsula of Nova Scotia has a ragged coast-line ; the land is deeply invaded by the sea through many fiord-like inlets. Four rocky headlands, scarred and worn, alternate with stretches of sand and shingle ; boulder-strewn ledges fringe the shores and submarine banks reach far seaward. These sands seem to have impressed the early French explorers who gave the name "Sable " to the southern cape of the peninsula, as well as to a river and also to a group of low islands which lie at some distance off the eastern coast. The edge of the great Atlantic fog bank hovers over these shores, and creeping in with the southerly wind wraps the land in its gloomy mists, often for days at a time.

Back of this coast the voyager along the southern shores sees a land of pointed trees — spruce and balsam fir — rising into a low ridge that is succeeded inland by other similar ridges ; a vast, unbroken stretch of evergreen wilderness from shore to shore

across the peninsula, with wide savannas of sphagnum bog, swampy jungles of alder and tamarack, rocky 'barrens' covered by a growth of dwarf blueberry, and here and there, in the hollows between the ridges, the waters of a glacial lake. Many streams head in the bogs on the low divides, their waters dark with the leachings of the peat, and flow west toward the Bay of Fundy and east into the long inlets of the Atlantic. They widen out into lily-covered ponds where the moose wades and feeds, and in places the ancient building of the beaver has blocked their course with meadows. Each spring the salmon, running up from the ocean to spawn, stem the rapids of these rivers and leap their waterfalls, and the angler will find the brook trout from the foam flecked pools of the lower reaches to the head streams far back in the bogs.

Along the shores of the bays are the scattered settlements of a fishing folk, hemmed in landward by the wilderness of evergreens. At one of these — the village of Barrington, just back of Cape Sable Island — I spent the past three summers. It was mid-June when we reached there and lilacs and horsechestnuts were in bloom in the dooryards; a week or so later the air was sweet with the blossoms of the May or English hawthorn, hedges of which had been planted about some of the old houses. This renewal of the spring was very pleasing to us who had come from the early summer of southeastern Pennsylvania. Back in the woods we traced the footprints of spring where the dainty twin flower (*Linnæa*) showed in patches of faint rosy bloom above the moss. The dense thickets of Labrador tea (*Ledum*) and Rhodora, that grew along the boggy waysides, were in blossom, and here and there the chokeberry (*Prunus virginiana*) showed its flowers. In old clearings a profusion of wild strawberries were slowly ripening. The white flowers of the bunchberry (*Cornus canadensis*), the chickweed wintergreen (*Trientalis*), and the two-leaved solomon's seal (*Unifolium*) showed everywhere through the woods. The undergrowth of this region, except where dense forests of balsam fir had excluded sunlight, was for the most part made up of brake (*Pteris*), bayberry (*Myrica*), sheep laurel (*Kalmia angustifolia*), and blueberry bushes (*Vaccinium canadense* and *V. pennsylvanicum*).

During these June days and through the first half of July the land was ringing with bird songs. Along the village highway, from every piece of garden shrubbery, every patch of swamp tangle and thicket came the sweet, homely notes of Song Sparrows, Maryland Yellow-throats, and Summer Warblers. In the woods back of the village the loud, clear whistle of the White-throated Sparrow, calling *Old Sam Peabody-Peabody-Peabody*, struck the keynote of all that was wild and delectable in these solitudes. The song of the Olive-backed Thrush sounded far and near over the tree tops and across clearings, while from all about the woods came the dry, monotonous ditty of the Black-throated Green Warbler. These three songs were the dominant notes of the woodland. This is far from saying that other bird notes were not appreciably present to the attentive ear. The rapid chipping song of the Junco, the tiny tin trumpet of the Canada Nuthatch, the wiry notes of the Hudsonian Chickadee, the screeching calls of wandering Whiskey Jacks, to say nothing of the more familiar notes of Robins, Flickers, and Crows, all these and others fell upon the ear with more or less frequency, but back in the woods from dawn to sunset, you were rarely if ever out of hearing of some Peabody song, some Olive-backed Thrush, or some member of the ubiquitous and tireless tribe of Vireos.

For several reasons I have not attempted to present the birds of this interesting region in the form of a list of species. In the first place I was only a casual observer of the birds during three summers and only an indifferent collector during my third and last sojourn. In the second place the bird fauna of the region is already well known, and a list at the hands of one who took life easy would necessarily be imperfect. What I have tried to do is to record my impressions of the bird life as a whole and what facts fell in my way that related to certain birds in particular.

The shores of Barrington Bay are largely tide-washed beaches of coarse gravel, loose rocks, and boulders covered with brown rock weed. The ebbing tide lays bare extensive 'flats' of eel grass and exposes numerous ledges on which many harbor seals gather to sun themselves. Here and there a bar of sand affords a haunt for the restless flocks of shore birds, while the Herring Gulls and the Terns settle in long rows on these sand strips at

low water, their white breasts glistening in the sunlight. While at Barrington I saw an occasional Black-backed Gull. Some years before (1897) I visited a gull rookery at Cape Split where the waters of the Bay of Fundy spread into the Basin of Minas, a point much farther north than Barrington. Here the 'Coffin-carrier' was quite abundant and nested in the colonies of Herring Gulls on the narrow basaltic edges of the high Cape wall. In the clefts and crannies of this rocky wall many wild roses were in bloom which added a charming effect to the scene. I saw the two species feeding together; a number of gulls would swim in a wide circle, apparently 'rounding up' their prey, while several individuals in the center were actively engaged in diving after the fish. When seemingly satisfied the divers would drop back into the circle of swimmers and others would take their turn at diving and feeding. As far as I have been able to learn this rookery at Cape Split is one of the most southerly breeding places of the great Black-backed Gull, which is at home with the Ice Gulls and Kittiwakes of Baffin Bay.

The terns, or 'Mackerel Gulls,' as they are called by the fishermen, are reasonably abundant in Barrington Bay and probably breed on the shingle and sand beaches of Cape Island. All that I saw appeared to belong to the common species—Wilson's Tern.

The Black Duck was the only species of its kind that bred in this part of Nova Scotia; its favorite nesting haunts were the bogs about lake shores and it was fairly abundant in these situations during the early part of the summer.

One of the most conspicuous inhabitants of the tidal marshes, that formed wide stretches of shore land in many places along the bay, was the Willet. These birds nest on the inland border of the marsh where the swampy undergrowth of woods met the salt grass. I had no success in finding nests and was probably too late in the season. Fully fledged young birds were about early in July; one of these was shot by my son with an air rifle. The old birds were noisy and vigilant until midsummer, when they disappeared from these haunts and in small flocks frequented the mud flats and beaches at low water. Earlier in the summer, as we tramped along the inner edge of the marsh, or skirted its outer edge in a boat, the shrill *pill-will-willet* call was sure to greet us; one or

more individuals would follow, hovering with dangling legs on broad, outstretched wing, close at hand, or perched on some stake or the top of a spruce tree, restless, uneasy, and vociferous until we had gotten well away from the devoted spot.

Certain birds were remarkable for their scarcity, though abundant enough in other sections of the country. I saw but few Chimney Swifts during my three visits; this is undoubtedly due to the fact that most of the chimneys are small and are more or less continually in use during the summer. The Kingbird, save in one instance, was not observed about Barrington until the latter part of the summer when it appeared sparingly in old fields bordering the salt marshes and shores. In the extensive apple orchards about the Basin of Minas I found these birds nesting in 1897 — and they were fairly abundant. The majority of the Kingbird population undoubtedly finds more congenial nesting sites in the agricultural portions of the Province, and the birds appear in the wilder tracts of the southern part only after the breeding season. The same observations are true of the Bobolink. I found this bird nesting abundantly in the lush grass meadows of the Habitant that flows through an old Acadian dyke into the Basin of Minas, but only saw one individual during my three summers' stay at Barrington; a male bird in changing plumage, which I secured on July 30, 1903.

The only flycatcher aside from the Kingbird that I found at Barrington was the Alder Flycatcher (*Empidonax traillii alnorum*). Most of the individuals seen were low down in the dense growth of alders along a sparsely traveled road. The solicitous actions of several of these birds on August 8 betrayed the nearness of young. They kept well out of sight, only occasionally revealing themselves on the edge of the alders and all the while uttering a succession of piping chirps.

A small colony of Rusty Grackles frequented the inner edge of a salt marsh and several individuals were seen on June 17, 1902, in a fresh bog on Barrington River.

I had read Bradford Torrey's account of his hunt after Ravens in the country about Highlands, among the mountains of western North Carolina. I spent two summers at Highlands, and like Mr. Torrey had no success in meeting with this interesting bird. But

fortune changed when I visited Nova Scotia. Under date of July 11, 1901, is the following entry in my note book: "On the beach of a small island [in Barrington Bay] saw four Ravens. They were feeding on the head of a sheep. First heard the 'croak,' then saw the four large birds slowly take wing and flop heavily across the bay toward the further shore." There was no mistaking the ominous croak for the caw of a Crow. At first we thought it was the hoarse bark of a seal on the outer reefs. The Ravens took a direction quite different from that which the Crows took when leaving this small island. The Crows were numerous all about the bay and would fly to the nearest point of the main land, but these Ravens steered for a wild tract of woodland on the farther side of the bay which I afterwards learned was known to be a haunt of the weird bird. During the following summer (1902) I again heard the Raven's croak, several times, from the heavily timbered ridges about the less frequented parts of Shelburne Harbor.

Some northern members of the finch family were at home in this evergreen wilderness; birds which, until my visits to Nova Scotia, I had never seen alive before. One of these was the Pine Grosbeak.

All that I had read and heard from those who had observed the bird during its occasional winter wanderings to more southern latitudes led me to believe that it was almost foolishly tame and unsuspecting. In its breeding grounds, however, I found it just the reverse. The bird was far oftener heard than seen, and always appeared shy. The clear, loud whistling song would sound for long distances over the woods and open savannas. Every little while during the day one or more of these birds would be singing from the top of some tall spruce or fir. After delivering its song for some time the bird, when undisturbed, would suddenly fly down into the dense cover of the woods, but if suspicious of an intruder into its haunts it would frequently fly a long distance from the spot. Like the Goldfinch, the Pine Siskin, the Cross-bills and others of its tribe, the Pine Grosbeak often utters its whistling notes while on the wing. At first I used to think of this song as resembling that of the Goldfinch, only of greater magnitude, but later I came to recognize a quality in it that was

strangely suggestive of the whistle of the Greater Yellowlegs (*Totanus melanoleucus*).

From time to time we would fall in with wandering flocks of Crossbills, the dipping flight and twittering notes on the wing calling to mind the Goldfinch. They appeared to be exceedingly irregular in their movements, disappearing from a locality for days at a time. In the summer of 1901 I saw them first on July 7, and after that more or less frequently during my stay of three months. I have seen those birds feeding in the public road like English Sparrows. The past summer (1903) I did not see or hear Crossbills until the 13th of August. After that they appeared irregularly. Many of the birds were young and a few individuals of the White-winged species were mixed in with the flocks. The birds seemed stupid in their tameness. I fired three or four times into a flock that had settled in a black spruce, the birds busy shelling the cones, without causing any disturbance to the majority, which continued to feed unconcernedly. These flocks are eminently restless, sweeping about over the tree tops with their constantly uttered *tweet-tweet*.

Another finch of exceedingly irregular distribution locally was the Pine Siskin. I frequently heard its canary-like song during the latter part of the summer of 1901 and saw the birds a number of times. In 1902 I saw several individuals on the 18th of June, but never afterwards. Last summer the bird was conspicuous by its absence in the neighborhood of Barrington, and was seen only once, in the early part of September.

The Purple Finch was fairly abundant and its rolling carol was one of the charming songs of these woodlands. At Bedford Basin, near Halifax, N. S., where I spent one summer, this bird frequented the neighborhood of houses, like its western cousin. I have seen two males almost within hand reach of my window trying to outrival each other in singing.

The Acadian Sharp-tailed Finch (*Ammodramus caudacutus subvirgatus*) was an inhabitant of the tidal marshes about Barrington. The bird's notes are like the noise made by sucking in through the teeth, a wet sound that savors of the oozy marsh.

During the first two summers I had my mind set on finding Lincoln's Sparrow. It was not until last summer, however, that I

came upon the bird. My wife and I had wandered far back in a boggy savanna after blueberries — the largest berries I think I have ever seen — and growing weary of picking I took up the gun and began poking along the edge of a dense clump of bushes. Presently a bird showed itself and on being shot proved to be a young male Lincoln's Sparrow. This was on August 29, and a day or two later I secured another young individual in the same locality. Whether the birds breed in this region I am not prepared to say. The two individuals secured, though evidently not long out of the nest, may have been migrants from farther North.

The Red-eyed and Solitary Vireos were the only two species of their kind that I found about Barrington. The Hudsonian Chickadee was common everywhere through the spruce and fir woods and the Black-capped Chickadee was also fairly abundant, though far less so than the Hudsonian species. Golden-crowned Kinglets were frequently heard all through the summer, and Red-breasted Nuthatches were about as common.

Among wood warblers the Black-throated Green, the Maryland Yellow-throat, the Myrtle, and the Black and Yellow were by far the most abundant; the Black and White Warbler and the Redstart were not uncommon. The Chestnut-sided and the Yellow Palm Warblers were also observed. The Oven-bird was oftener heard than seen, and one Wilson's Black-capped Warbler was taken toward the end of the summer. A pair of Nashville Warblers were seen on the edge of an alder and tamarack swamp on the 27th of July, and several others were heard at the same time; one male was secured.

The Cliff Swallows had established colonies under the eaves of a number of the barns in the village. On my first visit I noticed a rather odd departure in the housekeeping habits of the Tree Swallows. A pair of these birds had taken up their residence in a deserted Cliff Swallow's mud house on the lintel over a cottage door. Probably the Cliff Swallows found communal life more to their liking and deserted the solitary dwelling to join some nearby colony.

Young Robins, just out of the nest and not yet able to fly, were found on the 22nd of August, which struck me as rather a late date for Robin fledglings. One cause of these delayed broods is

probably the great abundance of berries in the late summer on which the young birds are fed.

The two species of the *Hylocichla* group of Thrushes which I found in this part of Nova Scotia, presented some interesting facts in local distribution. On the west side of Barrington Bay I found the Olive-backed Thrush the predominant species, while on the eastern side, the Hermit was the only one noticed. I cannot account for this on any other ground than the tendency of individuals of the same species to congregate in the same area. My observations lead me to believe that the Olive-backed Thrush is the shyer of the two. I saw the Hermit a number of times close to dwellings and it seemed to choose the more open woodland tracts, while the Olive-backed Thrush frequented the heavier growth along the edge of clearings. I have approached quite close to the Hermit and listened to his matchless song delivered from a fallen tree or stump in the clearings at noon-day, but the Olive-backed Thrush was always difficult to approach, and so far as my observations go, is a much wilder bird in its habits. Its favorite post when singing is near the top of some tall spruce or fir; the bird diving into the undergrowth on the slightest suspicion of an intruder.

The song of the Olive-backed Thrush seemed to me to be inferior to that of the Hermit; it starts out well but is finished in a series of squeaky notes. My ear for music, however, is uncultivated and I am told by those who have a good ear that the Olive-backed Thrush is really the better performer of the two. The Hermit's song appealed to me as a sustained melody throughout; as though the musician had the ear to appreciate as well as the power to express. Aside from their relative merits as musicians both birds are charming songsters, voicing the very spirit of wilderness solitudes.

The alarm notes of the two species are quite different. The Olive-backed Thrush when disturbed utters a metallic note, short and sharp, often ending in a curious rolling, querulous call. This note is uttered constantly while the bird is 'fidgiting' about in the cover near by. I have several times mistaken these short *pucking* notes of the Olive-backed Thrush for the alarm calls of the Ruffed Grouse to her scattering brood. The alarm note of the Hermit has a Catbird quality about it, lower pitched and less

metallic than that of the Olive-backed Thrush. On the 10th of August I found a Hermit calling to her brood in the undergrowth with a low cluck that was instantly changed to the alarm note when my presence became known.

On the wooded slopes about Shelburne Harbor the Hermit Thrush was apparently abundant. In the hush of the long twilight we would drift far out toward the edge of burnished water, listening to the vesper strains of some late singer that came with infinite sweetness out of the gathering gloom of the farther shore.

THE EXALTATION OF THE SUBSPECIES.

BY JONATHAN DWIGHT, JR., M. D.

WHATEVER may be the intrinsic worth of the subspecies, signs are not wanting, at the present time, that its value, especially in the domain of ornithology, is impaired by the undue prominence which it has attained. Some of us hold it so close to the eye that all fields beyond are obscured and the one near object becomes not a part of ornithology but the aim and end of all our research. Our efforts are so one-sided that minute variations of dimension or color are magnified by their very proximity until they afford foothold for the rising flood of names that threatens to undermine the very foundations of trinomial nomenclature. It seems to be forgotten that the subspecies is only a *convenient* recognition of geographical variation within the limits of the species. Its rise began when the distribution of the species of many parts of the globe had been thoroughly determined, and systematists welcomed it as a new and useful outlet for activity. Since that time down to the present, the dividing and re-dividing of old species into geographical races or subspecies has gone on apace—not as a matter of making two blades of grass grow where one grew before but of splitting the one blade.

The luxuriant growth of the subspecies, while unquestionably

due to numerous and complex causes, depends, in a large degree, upon man's natural and proper desire to bestow names upon the objects about him. Unfortunately the giving of a name, be it ever so scientific, is hedged in by no prerequisites of scientific training, and many have been the blunders committed through ignorance and haste. We are, after all, only human, but one of the greatest misfortunes that can befall is when a dim conception of evolution leads us to confuse plasticity of a form to its environment with plasticity in our own brain. We must beware lest we name that which exists only in our expectant mind. A subspecies potential is a fact, a subspecies named, an opinion, for in giving a name we express an opinion which may or may not fit the fact. As a working hypothesis, it is convenient to consider the subspecies as an incipient species, but to name every degree of incipency is pushing matters to a point where the name, by overshadowing the fact, ceases to be the convenient handle for which it is primarily intended. The tail begins to wag the dog, and, in the eyes of some, it really seems to be more important than the dog.

Another, but less potent cause for the rise of the subspecies is found in the unnecessary prominence accorded it in our books and other publications. Wherever we turn we find it, to all appearances, on equal terms with the full species. It is clothed in the same type, while descriptions, measurements, synonymy and other matters are displayed independently as if every name were of equal value. No wonder the impression is created that the subspecies is quite as important as the species and deserving of the same treatment. We forget that, as names multiply, they lose in definiteness of meaning, and that the standard by which races are measured falls in direct proportion to the number of names resulting from new campaigns over old ground. Ornithology, in North America at least, is suffering from too many campaigns.

But, the mind of the young ornithologist is strongly influenced by what his elders do, and if they make much of the subspecies he is likely to do the same. Hence, if we expend so much effort in seeking new lines of geographical cleavage, it is not inconceivable that our successors may reduce our splinters to sawdust and bestow a name upon each and every grain. It is to be hoped,

however, that the limits of the human eye and of the vernier scale will not be the only goal of the ornithologist, for true science does not receive much uplifting from the mere renaming of a few handfuls of skin and feathers. How well revision and renaming have worked in the past, when species were the units, is shown by the long array of synonyms that burden many a page. Synonymy might fittingly be called the science of the blunders of our predecessors, and we ourselves shall need deliverance from an intolerable load of names unless our fragile subspecific refinements are woven of stronger threads. We discover and name trivialities because we like to do it, and new names loom very large even if they mean little. We confuse nomenclature and ornithology, forgetful that names which should be the tools of the ornithologist may easily become the playthings of the systematist. If the subspecies be relegated to its proper place and held in proper perspective, we shall neither flounder in a flood of names nor fail to perceive the opportunities which lie open before us. There is more serious work on hand than the naming of subspecies if the advance of ornithology is to keep pace with that of kindred sciences.

YOSEMITE VALLEY BIRDS.

BY O. WIDMANN.

To demonstrate the efficacy of bird protection by exclusion of firearms the Yosemite Valley is an excellent example. During a short stay of three and a half days, from noon of May 21 to early morning of May 25, 1903, fifty-seven species were noticed. The valley is seven miles long by a width of one half to one mile, but only a part of this area in the vicinity of the so-called village was subjected to a close scrutiny, and no attempt was made to investigate the bird fauna of the surrounding higher regions.

Discovered in 1851, the valley with its enclosing peaks was granted by Congress in 1864 to the State of California on condition that it should be held as a "State Park for public use, resort

and recreation for all times." This carries with it the prohibition of introducing firearms. From November till April shootists are kept out by the deep snows, which make access to the valley difficult. When the season opens in spring a detachment of U. S. cavalry assists the State guardian in the work of policing the park, and the great number of birds speaks well for their efficiency. It is not only the comparatively large number of species that surprises the visitor, but still more so the great number of individuals of many of these species, and their extraordinary tameness. From the veranda, there called piazza, of the Sentinel Hotel annex I could easily count from one to two dozen species any time of the day, and among them such woodland birds as the Pileated Woodpecker and Hermit Thrush. The Ruby-crowned Kinglet had its bulky nest on the very next tree, an old incense-cedar (*Libocedrus decurrens*), not more than thirty-five feet from the veranda and on the side of the tree nearest to the house.

Not far from it a pair of Brown Creepers went in and out feeding young in a nest only six feet from the ground under the bark of another old *Libocedrus*. At one time a Green Towhee, a Spurred Towhee, a White-crowned Sparrow and a Thick-billed Fox Sparrow were feeding peacefully together on one square yard of ground under the veranda, while half a dozen Juncos and Chippies were also hopping about.

Part of this richness of the ornithology may be attributable to weather conditions, in so far as some of the birds may have been driven down from the neighboring peaks by the snow which fell on the day of our arrival, May 21, 1903. In fact, all forenoon, from seven, when we started in the open stage from Wawona, till our arrival at the Sentinel Hotel at noon, snow fell continually, sometimes at a lively rate, and mixed with hail on the highest point of the stage route, said to be seven thousand feet above the sea. The valley itself is only four thousand feet high, but the enclosing peaks average four thousand feet higher and form with their nearly vertical walls and magnificent waterfalls the sublime grandeur for which the valley is deservedly world-renowned.

But while the lofty peaks and granite domes, the spiry pinnacles and roaring cataracts make it grand and glorious beyond description, it is the rich organic life, the great variety of beautiful forms

of trees and flowers, and the unusual tameness of the many birds, which make this paradisaic spot particularly dear to our heart. Those who expect to see only cold majestic grandeur are most agreeably surprised to find in the heart of the Sierra such a gentle garden spot, full of mellow sunshine, benevolent quiet, and blissful joy.

It took only one hour of sunshine to melt most of the snow in the valley on the afternoon of May 21, and though the nights during our stay were frosty, the days were mild and pleasant with a maximum temperature of 60° in the shade.

LIST OF BIRDS OBSERVED IN YOSEMITE VALLEY.

1. *Actitis macularia*. SPOTTED SANDPIPER.—Though the swift-running water of Merced River was of icy coldness, four Spotted Sandpipers were busily engaged feeding at favorable spots along its banks.
2. *Oreortyx pictus plumiferus*. MOUNTAIN PARTRIDGE.—Seen only in two places, but feathers found on the ground and some interwoven in birds' nests show that they may be more numerous than it seems.
3. *Columba fasciata*. BAND-TAILED PIGEON.—Daily seen on wing or resting in high trees (yellow pines) in parties of 2 to 5. A flock of about 30 were disturbed at their roost near the Bridal Falls early on May 25.
4. *Zenaidura macroura*. MOURNING DOVE.—Only one seen, May 21.
5. *Elanus leucurus*. WHITE-TAILED KITE.—About 9 A. M. on May 24 a great commotion was heard in a clump of trees near the Yosemite Falls, and presently a White-tailed Kite, chased by two Vireos, flew out and across an opening into a tall yellow pine.
6. *Accipiter velox rufilatus*. WESTERN SHARP-SHINNED HAWK.—One (female) going slowly over the valley, 6.15 P. M. May 23.
7. *Falco sparverius deserticolus*. DESERT SPARROW HAWK.—Twice seen May 23, and again on the 25th.
8. *Dryobates villosus hyloscopus*. CABANIS WOODPECKER.—Two males seen May 22 and 24.
9. *Dryobates pubescens turati*. WILLOW WOODPECKER.—Male and female in two localities along Merced River, May 23.
10. *Xenopicus albolarvatus*. WHITE-HEADED WOODPECKER.—Only one seen in the valley near Camp Currie, but several crossed our way between the Yosemite and Wawona on the 25th.
11. *Ceophlæus pileatus abieticola*. NORTHERN PILEATED WOODPECKER.—Males and females seen in different localities.
12. *Melanerpes formicivorus bairdi*. CALIFORNIA WOODPECKER.—One pair stationed not far from hotel.

13. *Colaptes cafer collaris*. RED-SHAFTED FLICKER.—Often heard; several present but rather shy.

14. *Aëronautes melanoleucus*. WHITE-THROATED SWIFT.—Only two seen, flying together over valley, May 24.

15. *Stellula caliope*. CALIOPE HUMMINGBIRD.—Quite numerous in the valley; conspicuous and excited; on two occasions males went straight up some sixty feet, there remained suspended at the same place for half a minute, dropped down and rose again to repeat the performance; also seen to dart up from prominent station into the air, catch an insect and return to same perch like a flycatcher.

16. *Sayornis nigricans semiatra*. BLACK PHŒBE.—Only once met with, near Pohono Bridge.

17. *Contopus richardsoni richardsoni*. WESTERN WOOD PEWEE.—One of the common sounds heard in the valley was the note of this bird, perched high up in trees; while feeding they were often low down near the ground. A nest in a California black oak was nearly fifty feet above the ground.

18. *Empidonax difficilis*. WESTERN FLYCATCHER.—Among several *Empidonaces* seen, this is the only one identified with certainty, while among the others were probably Wright's Flycatcher.

19. *Empidonax wrighti*. WRIGHT'S FLYCATCHER.—Identification open to doubt.

20. *Cyanocitta stelleri frontalis*. BLUE-FRONTED JAY.—Pretty common, but rather quiet and retiring.

21. *Scolecophagus cyanocephalus*. BREWER BLACKBIRD.—A small troop was always on the meadow near the village.

22. *Coccythraustes vespertinus montanus*. WESTERN EVENING GROSBEAK.—One pair near hotel.

23. *Carpodacus purpureus californicus*. CALIFORNIA PURPLE FINCH.

24. *Carpodacus cassinii*. CASSIN PURPLE FINCH.

25. *Carpodacus mexicanus frontalis*. HOUSE FINCH.

This being my first acquaintance with the western *Carpodaci* the identification of the different species gave me considerable trouble and my notes on this genus are somewhat clouded, but it appeared to me that all three species were present. On the 24th a female House Finch was busily engaged building a nest in a maple near the hotel, while the mate indulged in song flights.

26. *Astragalinus tristis salicamans*. WILLOW GOLDFINCH.—Only once seen, May 21.

27. *Astragalinus psaltria psaltria*. ARKANSAS GOLDFINCH.—Four together on the 21st.

28. *Spinus pinus*. PINE SISKIN.—Several pairs in immediate vicinity of the hotel doing much singing and often hopping on the ground in the street, so tame that they could almost be touched with the foot.

29. *Zonotrichia leucophrys leucophrys*. WHITE-CROWNED SPARROW.—Single individuals in half a dozen places, often in song, which does not at all differ from that heard in the Mississippi Valley.

30. *Spizella socialis arizonæ*. WESTERN CHIPPING SPARROW.— Like the Robin, generally distributed and numerous.

31. *Junco hyemalis thurberi*. SIERRA JUNCO.— Very numerous; always a few together, sometimes as many as 20 to 30 on the ground feeding in openings and on meadows.

32. *Passerella iliaca megarhyncha*. THICK-BILLED FOX SPARROW.— Only once seen, May 21.

33. *Pipilo maculatus megalonyx*. SPURRED TOWHEE.— Apparently a common breeder; several males singing all day at their stands.

34. *Oreospiza chlorura*. GREEN-TAILED TOWHEE.— In 6 or 7 places, a diligent musician whose song reminded me strongly of *Chondestes grammacus*.

35. *Zamelodia melanocephala*. BLACK-HEADED GROSBEAK.— The most prominent of all songsters in the valley, where at least fifty individuals were present, and females as well as males everywhere in sight; two males found singing on nests less than eight feet from ground.

36. *Cyanospiza amœna*. LAZULI FINCH.— Three pairs were located; song differed much individually; one's song was remarkably like that of the Indigo Bird, another's more like a Goldfinch's.

37. *Piranga ludoviciana*. WESTERN Tanager.— Quite abundant after the 22d; not only old males as before, but females and young of last year of different patterns of coloration in small troops, singing and mating.

38. *Tachycineta lepida*. VIOLET-GREEN SWALLOW.— When after the frosty mornings the sun began to warm the valley half a dozen swallows were hunting over the meadow behind the village or resting on the fence wires for an hour or two. On the afternoon of the 24th a large number of swallows was seen, perhaps fifteen hundred feet above the valley, hunting on the sunny side between Union and Glacier Points.

39. *Stelgidopteryx serripennis*. ROUGH-WINGED SWALLOW.— Two (probably a pair) hunting with *Tachycineta* over meadow, May 22.

40. *Vireo gilvus swainsoni*. WESTERN WARBLING VIREO.— One of the common songsters, heard everywhere and often seen.

41. *Vireo solitarius cassini*. CASSIN VIREO.— Almost as numerous as the Warbling Vireo and nearly as musical; their pleasing song one of the common sounds in the valley and the musicians themselves easily detected.

42. *Helminthophila rubricapilla gutturalis*. CALAVERAS WARBLER.— With the Vireos and Yellow Warbler, one of the common songsters.

43. *Dendroica æstiva morcomi*. WESTERN YELLOW WARBLER.— Generally distributed and an industrious songster.

44. *Dendroica auduboni*. AUDUBON WARBLER.— This is the only warbler yet in troops of twenty and more, while single individuals and pairs were scattered all over the valley. Two individuals were noticed in which it required a good light to discover yellow traces on the white throat, and thus could easily have been mistaken for *D. coronata*.

45. *Dendroica nigrescens*. BLACK-THROATED GRAY WARBLER.—

Quite a number of this beautiful warbler were at home in the valley; they were often seen, and their song, which varies much, was freely given.

46. *Dendroica occidentalis*. HERMIT WARBLER. — Only in two localities; a singing male and a female.

47. *Geothlypis tolmiei*. TOLMIE WARBLER. — The interesting song of this warbler was heard at several places along Merced River and it did not take long to see the bird itself, as it was not at all shy; sometimes their sharp alarm note betrayed them.

48. *Wilsonia pusilla pileolata*. PILEOLATED WARBLER. — One of the birds often seen and heard; their song contributed not a little to the general concert of the morning hours.

49. *Cinclus mexicanus*. AMERICAN DIPPER. — Returning from a visit to the beautiful Cascade Falls at the lower end of the valley Dr. J. A. Allen saw a dipper fly across Merced River and immediately thereafter Mrs. Allen discovered the mossy nest on a big boulder in the river. No others were noticed.

50. *Catherpes mexicanus punctulatus*. DOTTED CAÑON WREN. — At the foot of the Yosemite Falls, where giant boulders are piled mountain high, a Cañon Wren had his home and gave a performance in play and song; another was heard on Coulterville Road near Pohona bridge.

51. *Certhia familiaris zelotes*. SIERRA CREEPER. — Often heard and seen. Feeding young in nest under bark of *Libocedrus*.

52. *Parus gambeli*. MOUNTAIN CHICKADEE. — Generally distributed, but rather quiet.

53. *Regulus satrapa olivaceus*. WESTERN GOLDEN-CROWNED KINGLET. — In two localities; one at the foot of Eagle Peak had so much black on its forehead, through and behind the eye, that it reminded me of pictures of Audubon's *cuvieri*.

54. *Regulus calendula calendula*. RUBY-CROWNED KINGLET. — A breeder, and one of the most industrious songsters; its song louder, but less sweet, than in the Mississippi Valley. From a distance some of its notes resembled the whistle of the Tufted Tit.

55. *Hylocichla aonalaschkæ sequoiensis*. SIERRA HERMIT THRUSH. — Numerous and singing toward evening. An imitation of its peculiar whistling call-note never failed to attract one or more individuals, who came within a few yards and remained there in plain view for a long while.

56. *Merula migratoria propinqua*. WESTERN ROBIN. — One of the most conspicuous birds, not only near the village, but also in the forest far from human habitations.

57. *Sialia arctica*. MOUNTAIN BLUEBIRD. — At one place only; near village on way to Mirror Lake.

In Wawona, where we made a halt of one day and from where we visited the famous Mariposa Grove of Big Trees, the following

species were noted, some of them not found in the Yosemite Valley. Wawona is twenty-six miles south of the Yosemite on the south branch of Merced River in the high forest region. It lies in the National Park and would be an excellent place for birdlovers to stay a week or more; it has a very good hotel, in fact a better one than the Sentinel Hotel in the Yosemite Valley.

BIRDS OBSERVED MAY 20 AT WAWONA.¹

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| 1. <i>Zenaidura macroura</i> , one. | 15. <i>Zonotrichia leucophrys</i> , male in song. |
| *2. <i>Ceryle alcyon</i> , one. | 16. <i>Spizella socialis arizonæ</i> , several. |
| 3. <i>Ceophlœus pileatus abieticola</i> , one. | *17. <i>Melospiza cinerea heermanni</i> , male in song. |
| *4. <i>Sphyrapicus varius daggetti</i> , male. | *18. <i>Melospiza lincolni</i> , male in song. |
| 5. <i>Colaptes cafer collaris</i> , one. | 19. <i>Zamelodia melanocephala</i> , several in song; also female. |
| 6. <i>Sayornis nigricans semiatra</i> , two. | 20. <i>Vireo gilvus swainsoni</i> , male in song. |
| *7. <i>Contopus borealis</i> , one. (Also at Maimi Mill.) | 21. <i>Helminthophila rubricapilla gutturalis</i> , male singing. |
| 8. <i>Contopus richardsoni</i> , several. | 22. <i>Dendroica æstiva morcomi</i> , male singing. |
| 9. <i>Cyanocitta stelleri frontalis</i> , several. | 23. <i>Dendroica auduboni</i> , male. |
| 10. <i>Scolecophagus cyanocephalus</i> , several. | *24. <i>Troglodytes ædon aztecus</i> , male in song. |
| 11. <i>Carpodacus cassini</i> , 2 troops of 10 and 12 birds. | 25. <i>Certhia familiaris zelotes</i> , singing. |
| 12. <i>Carpodacus mexicanus frontalis</i> , one. | 26. <i>Merula migratoria propinqua</i> , several. |
| 13. <i>Astragalinus psaltria</i> , one. | |
| *14. <i>Ammodramus savanna alaudinus</i> , two. | |

BIRDS SEEN IN MARIPOSA GROVE,² MAY 20.

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|---|--|
| *1. <i>Empidonax hammondi</i> , one. | 5. <i>Dendroica occidentalis</i> , male in song. |
| 2. <i>Junco hyemalis thurberi</i> , a few. | 6. <i>Parus gambeli</i> , one. |
| 3. <i>Vireo solitarius cassini</i> , one in song. | 7. <i>Regulus calendula</i> , singing. |
| 4. <i>Dendroica auduboni</i> , male and female. | 8. <i>Hylocichla sequoiensis</i> , very tame. |
| | 9. <i>Merula migr. propinqua</i> , one. |

¹ Those marked * not seen in Yosemite.² Eight miles southeast of Wawona.

In descending from Wawona into the San Joaquin basin, by way of Awahnee, the change in the flora and fauna from the forest region through the arid chaparral into the cultivated land at the base of the foothills is extremely interesting and would be well worth a detailed description, but when traveling in the stage one can only enjoy the most salient points, and much is lost through unnecessary haste on the part of the driver.

Half way between Wawona and Raymond there lies in the valley of the Fresno River, Awahnee, one of the stage company's stopping stations, with a good hotel. Situated near the chaparral region, but itself surrounded by cultivated fields and woodlands, it seems to be a fine place for a few days of birding, but unfortunately our time-table allowed only a short hour for dinner, May 25. On the barn of the hotel was a lively colony of *Petrochelidon lunifrons*, with fifty finished nests. A Screech owl, *Megascops asio bendirei*, flew up from the ground and disappeared in a treehole by the wayside.

In the brushy foothills a number of birds not seen in the high forest region were more or less common, among them:

- Lophortyx californicus valicolus*. VALLEY PARTRIDGE. Very common.
Buteo borealis calurus. WESTERN REDTAIL. Three on wing.
Tyrannus verticalis. ARKANSAS FLYCATCHER. Several.
Myiarchus cinerascens. ASH-THROATED FLYCATCHER. Several.
Aphelocoma californica. CALIFORNIA JAY. Very common.
Melanerpes formicivorus bairdii. CALIFORNIA WOODPECKER. Very common.
Progne subis. Several at Grub Gulch and along Fresno River.
Pipilo crissalis. CALIFORNIA TOWHEE. A few.
Toxostoma redivivum. CALIFORNIA THRASHER. A few.

AT RAYMOND, MAY 25, 6. P. M.

- Icterus bullocki*.
Sturnella neglecta.
Astragalinus lawrenci.
- } In song.

TWENTY-FIRST CONGRESS OF THE AMERICAN
ORNITHOLOGISTS' UNION.

THE TWENTY-FIRST CONGRESS of the American Ornithologists' Union convened in Philadelphia, Pa., Monday evening, November 16, 1903. The business meeting was held in the Council Room, and the public sessions, commencing Tuesday, November 17, and lasting three days, were held in the lecture hall of the Academy of Natural Sciences.

BUSINESS SESSION.—The meeting was called to order by the President, Dr. C. Hart Merriam. Nineteen Fellows were present. The Secretary stated that at the opening of the present Congress the membership of the Union numbered 775, constituted as follows: Fellows, 47; Honorary Fellows, 18; Corresponding Fellows, 61; Members, 63; Associates, 586.

During the year the Union lost sixty members, eight by death, seventeen by resignation, and thirty-five for non-payment of dues. The deceased members include one Fellow, one Corresponding Fellow, one Member, and five Associates, as follows: Thomas McIlwraith,¹ a Fellow, and one of the Founders of the Union, who died in Hamilton, Ontario, January 31, 1903, in his 79th year; Dr. Gustav F. R. von Radde,² a Corresponding Fellow, who died early in 1903 at Tiflis, Russia, in the 72d year of his age; John N. Clark,³ a Member, who died in Saybrook, Conn., January 13, 1903, at the age of 72; and the following Associates: Ludwig Kumlien,⁴ who died in Milton, Wis., Dec. 4, 1902, in his 50th year; Edward S. Waters,⁵ who died at Holyoke, Mass., Dec. 27, 1902, aged 71; Thomas E. Slevin,⁶ who died in San Francisco, Calif., Dec. 23, 1902, in his 32d year; George H. Ready,⁷ who

¹ For an obituary notice, see *Auk*, XX, p. 242; also Memorial Address in the present number.

² For an obituary notice, see *Ibid.*, XX, pp. 458, 459.

³ For an obituary notice, see *Ibid.*, XX, pp. 242, 243.

⁴ For an obituary notice, see *Ibid.*, XX, pp. 93, 94.

⁵ For an obituary notice, see *Ibid.*, XX, p. 243.

⁶ For an obituary notice, see *Ibid.*, XX, pp. 326, 327.

⁷ For an obituary notice, see *Ibid.*, XX, p. 327.

died in Santa Cruz, Calif., March 20, 1903, in his 45th year; and Prof. Wilber C. Knight,¹ who died at Laramie, Wyoming, July 28, 1903, in the 45th year of his age.

The report of the Treasurer showed the finances of the Union to be in a satisfactory condition, much better than ever before.

Charles B. Cory was elected President; Charles F. Batchelder and E. W. Nelson, Vice-Presidents; John H. Sage, Secretary; Jonathan Dwight, Jr., Treasurer; Frank M. Chapman, Ruthven Deane, Witmer Stone, A. K. Fisher, Thos. S. Roberts, William Dutcher, and C. W. Richmond, members of the Council.

Dr. Samuel W. Woodhouse, of Philadelphia, Pa.; Prof. Dean C. Worcester, of Manila, P. I.; Dr. E. C. Hellmayr, of Munich; Dr. Emil A. Goeldi, of Pará, Brazil; Dr. Peter Sucshkin, of Moscow, and Dr. Herluf Winge, of Copenhagen, were elected Corresponding Fellows. One hundred and four Associates were elected, and the following eight persons were elected to the class of Members, namely: Prof. Erwin H. Barbour, of Lincoln, Nebraska; C. William Beebe, of New York City; Edward H. Forbush, of Wareham, Mass.; Benjamin T. Gault, of Glen Ellyn, Ill.; Geo. Spencer Morris, of Philadelphia, Pa.; Robert E. Snodgrass, of Stanford University, Calif.; Dr. Reuben M. Strong, of Chicago, Ill.; and Dr. Robert H. Wolcott, of Lincoln, Nebraska.

Drs. Allen, Dwight, Merriam and Richmond, and Messrs. Brewster, Ridgway and Stone, were reelected 'Committee on Classification and Nomenclature of North American Birds.'

PUBLIC SESSION. *First Day.*—The meeting was called to order by Vice-President Batchelder. The papers read during the morning session were as follows:

A Memorial Address on Thomas McIlwraith, a Fellow, by Dr. A. K. Fisher.

'Notes on the Bird Colonies of the California and Oregon Coasts,' by Dr. T. S. Palmer.

'New Bird Studies in Old Delaware,' by Samuel N. Rhoads and C. J. Pennock.

'Notes on the Protected Birds on the Maine Coast, with Relation to Certain Economic Questions,' by Arthur H. Norton. Read, in the absence of the author, by Mr. Dutcher.

¹ For an obituary notice, see *Auk.*, XX, pp. 457, 458.

'Two Neglected Ornithologists — John K. Townsend and William Gambel,' by Mr. Witmer Stone. Remarks followed by Dr. Merriam and the Chair.

The papers of the afternoon session, all illustrated by lantern slides, were :

'Exhibition of Lantern Slides of Young Raptorial Birds, photographed by Thomas H. Jackson, near West Chester, Pa.' Explained by Mr. Stone.

'Views of Farallone Bird Life,' by Frank M. Chapman.

'The Bird Rookeries of Cape Sable and the Florida Keys,' by the Rev. Herbert K. Job.

'A Winter Trip in Mexico,' by E. W. Nelson.

Second Day.—The meeting was called to order by Vice-President Batchelder. The papers read during the morning session were :

'The Æsthetic Sense in Birds,' by Henry Oldys.

'Nesting Habits of the Whip-poor-will,' by Miss Mary Mann Miller. Remarks followed by Messrs. Beebe and Job and Mrs. Styer.

'Some Nova Scotia Birds,' by Dr. Spencer Trotter. Remarks followed by Prof. Cooke, Drs. Dwight and Merriam, and Messrs. Todd, Rhoads, and Fleming.

'Some Variations among North American Thrushes,' by Dr. Jonathan Dwight, Jr.

'Warbler Migration in the Spring of 1903,' by Prof. W. W. Cooke. Remarks followed by Messrs. Baily, Rhoads, Brewster, Job, Trotter, Powell, Dutcher, and the Chair.

'A Reply to Recent Strictures on American Biologists,' by Dr. Leonhard Stejneger.

The following papers — all illustrated by lantern slides — were given at the afternoon session, viz. : 'Variations in the Speed of Migration,' by Prof. W. W. Cooke.

'An Ornithological Excursion to the Pacific,' by Frank M. Chapman.

'Bird Life on Laysan Island,' by Walter K. Fisher (presented, in the absence of the author, by Dr. A. K. Fisher).

'Ten Days in North Dakota,' by Wm. L. Baily.

Third Day.—The meeting was called to order by Vice-President Nelson. Before proceeding to the reading of papers resolu-

tions were adopted thanking the Academy of Natural Sciences for the use of a hall for a place of meeting for the Union, and for other courtesies extended; to the Local Committee and other Philadelphia ornithologists for the cordial welcome and most generous hospitality shown visiting members and friends of the Union, and to the Zoölogical Society of Philadelphia for its kind invitation to visit the Gardens of the Society.

The following resolution of thanks to Dr. J. A. Allen for twenty years' services as Editor of 'The Auk' was passed:

"WHEREAS, for a period of twenty years Dr. J. A. Allen has performed the laborious duties of Editor of 'The Auk,' the official publication of the American Ornithologists' Union; and

"WHEREAS, by reason of his ability and training as an Editor, and his high standing as an ornithologist, he has brought 'The Auk' to the front rank among the ornithological publications of the world; be it

"RESOLVED, that the American Ornithologists' Union hereby extends to Dr. Allen its appreciative and grateful thanks for his services."

A resolution of thanks to William Dutcher, for many years Treasurer of the Union, was also adopted:

"RESOLVED, that the thanks of the American Ornithologists' Union be extended to Mr. William Dutcher for his long and arduous services as Treasurer."

These resolutions will be engrossed and presented, respectively, to Dr. Allen and Mr. Dutcher.

The following papers were read:

'The Exaltation of the Subspecies,' by Dr. Jonathan Dwight, Jr. Remarks followed by Drs. Merriam and Stejneger, Messrs. Brewster and Stone, and the Chair.

'Bird Life at Cape Charles, Va.,' by Geo. Spencer Morris.

'The Origin of Migration,' by P. A. Tavernier. In the absence of the author it was read by Dr. Palmer. Remarks followed by Dr. Trotter.

'Yosemite Valley Birds,' by Otto Widmann. Read by Dr. Dwight in the absence of the author. Remarks followed by Dr. Merriam.

The fifth paper 'Mortality among Young Birds due to Exces-

sive 'Rains,' by B. S. Bowdish. Read by Mr. Stone, in the absence of the author. Remarks followed by Messrs. Stone, Coggins and Baily.

The papers of the afternoon session were: 'Some Birds of Northern Chihuahua,' by Dr. W. E. Hughes.

'Collecting Permits: Their History, Objects and Restrictions,' by Dr. T. S. Palmer.

The following papers were read by title:

'Nesting Habits of Florida Herons,' by A. C. Bent.

'The Spring Migration of 1903 at Rochester, N. Y.,' by E. H. Eaton.

'San Clemente Island and its Birds,' by Geo. F. Breninger.

'A Contribution to the Natural History of the Cuckoo,' by Dr. M. R. Levenson.

As the concluding paper of the day, Mr. Wm. Dutcher, Chairman of the Committee on 'Protection of North American Birds,' presented the report of his Committee for the previous year.

The next meeting of the Union will be held in Cambridge, Mass., commencing November 28, 1904.

The Congress was most successful, the papers presented being of a high order, and the attendance of members larger than ever before.

JNO. H. SAGE,
Secretary.

GENERAL NOTES.

White-winged Scoter in Colorado.—The undersigned takes this chance to record the occurrence of another White-winged Scoter (*Oidemia deglandi*) in Colorado. The bird, a mature female, was given to the writer by E. L. Bostwick of Denver, who secured the specimen Oct. 11, 1903, at Loveland, Colo. This makes the ninth record, so far as the writer knows, for Colorado.—W. H. BERGTOLD, *Denver, Colo.*

Occurrence of the Knot (*Tringa canutus*) at San Diego, California.—Three specimens of the Knot, taken by Mr. H. W. Marsden, have recently

come into my possession, and as the species is of comparative rarity on the Pacific coast, its occurrence at San Diego seems worthy of record. The three birds are in juvenal plumage, with a few feathers of the first winter dress beginning to appear, and were obtained, a male and a female October 7, and a female October 9, 1903. — JONATHAN DWIGHT, JR., M.D., *New York City*.

A Sanderling with Hind Toes. — On September 11, 1903, I obtained from a gunner at Ipswich, Mass., a Sanderling (*Calidris arenaria*) which had rudimentary hind toes. The bird was one of eleven shot in my presence out of a passing flock. None of the other birds secured had this peculiarity. The hind toes are only about .05 of an inch in length and have no claws but they were very noticeable in the fresh bird and are equally so in the skin, which is now in the collection of Dr. Charles W. Townsend of Boston. I suppose this to be a case of reversion, as the ancestors of the Sanderling were doubtless four-toed sandpipers. — FRANCIS H. ALLEN, *Boston, Mass.*

Black-bellied Plover and Hudsonian Godwit on Long Island, N. Y. — On July 1, 1903, while walking along the beach at Quogue, Long Island, I shot a young Black-bellied Plover (*Charadrius squatarola*). It was quite tame but in good condition. None have been taken here before July 20, and they do not occur regularly until later.

On August 31, a flight of Hudsonian Godwits (*Limosa hæmastica*) occurred. Many gunners shot a dozen or more. Such a flight of these rare birds has not taken place within the memory of the oldest gunners, and they will probably not come again after their warm reception. — T. W. KOBBE, *New York City*.

The Ani in Florida. — Mr. Thomas Barbour has sent me an Ani (*Crotophaga ani*) which he shot in Brevard County, Fla., during the winter of 1901. The bird was taken in either February, March or April; the exact date was lost. — REGINALD HEBER HOWE, JR., *Concord, Mass.*

The Pileated Woodpecker in the District of Columbia. — On the 21st of November, 1903, while hunting in a piece of woods adjacent to Mt. Pleasant, a local name for a suburb lying just north of Washington, Mr. H. J. Saers of this city secured a fine male specimen of *Ceophlæus pileatus*. Subsequently it was learned through Mr. H. C. Oberholser that Mr. F. H. Kent of the Biological Survey had seen an individual of this species, presumably the same bird, in approximately the same locality, on the 8th of last August.

The capture of this wild, forest-loving bird so close to Washington is a matter of considerable interest to local ornithologists, as it is somewhat doubtful that this species has actually occurred within the limits of the District, during the last forty-five years. Drs. Coues and Prentiss, in

'Avifauna Columbiana,' state (Bull. U. S. Nat. Mus. No. 26, 1883, p. 81): "It was rare in 1862, having already responded . . . to the encroachment of the city upon its favorite haunts. . . . The only one we remember to have ever seen alive was in a piece of heavy timber known as 'Gales' Woods'; but that was about 1857 or 1858." They state further: "Mr. Shoemaker informs us that one was seen a year or two ago," which was in 1881 or 1882. As there was no locality given with this last record, it is somewhat difficult to say whether the bird recorded was seen within the District or in the surrounding country, as the authors in listing the rarer species, frequently gave records for the vicinity as well. However, giving the record the benefit of the doubt, it is quite safe to assert that until the bird forming the subject of this note made its appearance, the species had not been observed for the past 21 or 22 years.—GEORGE W. H. SOELNER, *Washington, D. C.*

Empidonax griseus Brewst. = *E. canescens* Salv. & Godm.—In the 'Biologia,' II, p. 79, March, 1889, Salvin and Godman described *Empidonax canescens* from specimens taken at Mexicalcingo and various other places near the City of Mexico.

In 'The Auk' for April of the same year (p. 87), Mr. Brewster described *Empidonax griseus* from specimens taken at La Paz, Lower California.

The Biological Survey Collection contains specimens of *canescens* from near the type locality in the Valley of Mexico which have recently been compared with the type by Dr. Sharpe and his assistant, Mr. Chubb, of the British Museum, and pronounced to be identical with it.

Before these specimens were sent for comparison with the type of *canescens* they were compared by Mr. Brewster with the type of *griseus* and pronounced to be indistinguishable. It follows, therefore, that *griseus* and *canescens* apply to the same bird, and the latter name has a month's priority.

The range of *E. canescens* extends from southern Puebla through the Valley of Mexico northwesterly to southern Sonora, and from Cape St. Lucas north through Lower California into southern California.—E. W. NELSON, *Biological Survey, Washington D. C.*

A Preoccupied Generic Name.—Mr. G. E. Shelley in Vol. III of his 'Birds of Africa' (London, 1902) finds a new genus *Botha* (to Louis Botha) for a new species of Lark from the Orange River Colony,—*Botha difficilis*. Nearly a century ago Rafinesque (Caratteri di Alcuni Nuovi Generi, etc., 1810, p. 23) proposed the generic name *Bothus* for flounders allied to the European turbot (*Pleuronectes*). As these two terms (*Bothus* and *Botha*) are practically almost identical, it would be better to drop *Botha* and take for this Lark another generic name, for instance *Dewetia* (to Christian De Wet, another gallant Oranjestaat chief).—S. A. BUTURLIN, *Wesenberg, Esthonia, Russia.*

Extension of the Breeding Range of the Prairie Horned Lark (*Otocoris alpestris praticola*) to the Eastern Coast.— On August 9, 1903, at Ipswich, Mass., Mr. Ralph Hoffmann saw two adults of this species with a fully grown young bird. Two days later, on August 11, Mr. Thomas L. Bradlee shot, at the same place, two young birds, both females, and saw three other individuals. They were near a road in open fields not far from the sea. Again two days later, on August 13, I secured a young male of this species that was alone on the upper edge of Ipswich beach.

The specimens secured by Mr. Bradlee were examined by Dr. J. Dwight, Jr., who stated in a letter to Mr. Bradlee that the birds "were undoubtedly *praticola*" and "were in juvenal plumage, moulting into first winter dress, only two or three primaries and a few rectrices remaining. In this condition this species (or any sparrow) does not and probably can not migrate, so I have no doubt the birds were hatched near where they were found."

My own bird may have been from another brood, as although it was taken four days later, its plumage is more juvenal, being more spotted above, and having 9 juvenal rectrices and 4 juvenal primaries, against 5 rectrices and 3 primaries in Mr. Bradlee's birds. It was taken three miles from the first station.

The Prairie Horned Lark has been seen at Ipswich before in the fall migrations, but this is the first time it has been found there in the breeding season. At last this enterprising bird in its progress eastward has reached the sea. Formerly a bird of the western prairies, it was recorded as breeding near Troy, N. Y., in 1881 (Park, Bull. N. O. C., VI, 1881, p. 177). Its first recorded breeding in New England was at Cornwall, Vt., in June, 1889 (C. H. Parkhill, O. & O., XIV, 1889, p. 87). In 1890 specimens were secured in the breeding season in Williamstown and North Adams, Mass., by Mr. Walter Faxon (Faxon, Auk, IX, 1892, p. 202), and a nest and eggs were found near Pittsfield by Mr. C. H. Buckingham July 10, 1892 (Brewster, Auk, XI, 1894, p. 326).

In 1891 it was observed in June and July at Franconia, N. H. (Faxon, Auk, IX, 1895, p. 202). The foregoing records are from Faxon and Hoffmann on 'The Birds of Berkshire,' 1900, p. 138. They state that the bird is a "rare summer resident at Williamstown, North Adams, Lanesboro, Pittsfield."

In 1899 the bird was found breeding as far east as Hubbardston in Worcester County, Mass., Mr. Frederick Cunningham, Jr., in July of that year "finding a nest with eggs from which the young were safely reared" (Howe & Allen, 'The Birds of Mass.,' 1901, p. 81).—CHARLES W. TOWNSEND, M. D., *Boston, Mass.*

Black-backed Three-toed Woodpecker and Evening Grosbeak at Wellfleet, Mass.— In the vicinity of Wellfleet, Cape Cod, December 5, I killed a Black-backed Three-toed Woodpecker (*Picoides arcticus*), which is now in Mr. William Brewster's collection, and saw an Evening Grosbeak

(*Hesperiphona vespertina*). The Grosbeak was in the open near one or more buildings. I saw it close enough to be sure of the identification. It was a striking looking bird and could have been nothing else. Assuming it was the same individual all the time, it was very loath to leave the vicinity. I thought it had left, and departed myself, but came back later and found it again. I shot at it several times, but unfortunately did not secure it. The white wing patches were perhaps its most striking feature. It called (whistled) a great deal. — JOHN TREADWELL NICHOLS, *Cambridge, Mass.*

The Evening Grosbeak in Presque Isle Co., Mich.—Mr. O. S. Burton of Millersburg, Presque Isle County, Mich., informs me that the Evening Grosbeak (*Hesperiphona vespertina*) has put in an appearance in considerable numbers in his vicinity. These feed on the berries of the mountain ash. It has been a number of years since this species has been reported to me in the Lower Peninsular except an occasional bird.—BRADSHAW H. SWALES, *Detroit, Mich.*

The Bachman Sparrow (*Peucaea aestivalis backmanii*) in the Vicinity of Cincinnati, Ohio.—On April 25, 1901, as I strolled about Rose Hill—a lately plotted subdivision of Avondale, Cincinnati, Ohio, and a region favored by the birds from primeval times—I heard a song from a sparrow, very sweet and unlike the songs of familiar resident or migrant sparrows. In the approaching dusk of evening it seemed to resemble a Field Sparrow in size and general coloring, as the bird flitted along from one low point to another, finally dropping into a bramble patch where the dimming light made it useless to follow.

On April 27, 1901, at a place three to four miles from Rose Hill—also a high, lightly wooded pasture, called Groesbeck Hill—a number of sparrows were singing similar songs to that heard on April 21. We were able to approach and examine several from close range as they sat singing most varied strains—never twice alike in opening, general composition, nor close of song, yet each repetition equally attractive. After careful observations with an opera glass, I felt reasonably certain of the Bachman Sparrow, heretofore on the hypothetical list for Ohio. It is one of the dullest and most inconspicuously plumaged of the ‘sparrowy’ arrayed sparrows.

On May 3, 1901, I visited the vicinity of Rose Hill again and did not fail to hear and see the Bachman in song. The opening notes of their songs are frequently exquisite, indrawn strains, of the quality of the Chickadee’s daintiest *phebe* whistle, followed by a lower-pitched trill with perhaps several Goldfinch-like notes introduced. The whole is superior in quality, variations and a certain plaintive cadence to any sparrow song I know.

The birds are quiet and with an almost passive manner. If undisturbed, they perch for a comparatively long interval on the same spot

(preferably an open perch), lifting up their heads and voices in song, sometimes running one song into another with scarce perceptible interval between. One can approach very close to the bird—within three feet and less—when they are settled in low situations, and they often rise from almost under foot if you pass through their haunts in the long grass or rank melilot. To escape, they will flit down into the grass and run away. They will perch for singing as high as thirty feet, but the usual situations are bushes and fences.

About Cincinnati, I am glad to say, this sweet-voiced sparrow is becoming more abundant yearly. In the spring of this year (1903) I began hearing them in full song April 18, and by May 1 met them in almost every direction in the country, singing from rail fences, wayside thickets and telegraph poles or wires. They especially abound in grass fields and old pastures northeast of the city, where their notes seemed the most familiar sounds, on the days I passed that way.

I am indebted to Mr. W. L. Dawson of Columbus, Ohio, for securing a specimen from near Rose Hill for me—a male in full song at the time he was shot; and also thank Mr. Wm. Hubbell Fisher for making a carefully finished skin, and Dr. Josua Lindahl for preserving tongue and contents of crop.—LAURA GANO, *Earlham Place, Richmond, Ind.*

Kirtland's Warbler (*Dendroica kirtlandi*) on the Coast of South Carolina.—On October 29, 1903, I shot near Mount Pleasant, S. C., a superb specimen of Kirtland's Warbler from the top of a water oak tree about 40 feet from the ground.

It was about 11 A. M., when I heard a chirp which I thought was that of a Prairie Warbler (*Dendroica discolor*) and as it was a very late date for a Prairie Warbler to be here I went in search of the bird.

The sound ceased entirely, but I kept looking into the water oak tree and did not move far away. At last I saw a small bird near the top of the tree behind a cluster of leaves, and when it moved it wagged its tail in a most deliberate and studied manner. The tail seemed to be disproportionately long and the body altogether unsymmetrical in contour. I at once realized that it was a Kirtland's Warbler—a bird that I had looked for in vain for twenty years. The bird kept constantly *behind* a limb or a cluster of leaves or twigs and remained in this position nearly all the time I was watching it. At last it changed its position and with its breast toward me I fired and found that I had secured a superb specimen of this rare Warbler.

The specimen is a young male, and had not entirely completed the moult, and was very fat. This bird makes the third specimen captured in South Carolina, and, if I have read the record correctly, makes the third specimen taken in the United States during the autumnal migration; while it is the latest fall record for the presence of the bird in the United States by eighteen days.

Previous to the capture of the bird heavy frosts were noted, and on the day of the capture there had been a heavy frost.—ARTHUR T. WAYNE, *Mount Pleasant, S. C.*

A Few Southern Michigan Notes.—*Vireo philadelphicus*. PHILADELPHIA VIREO.—I shot a finely marked male August 28, 1896, in St. Clair County. This bird was feeding in a small piece of woodland with a number of Red-eyed Vireos. I am positive that several other Philadelphia Vireos were present but as I obtained but one am not certain.

Cardinalis cardinalis. CARDINAL.—On January 1, 1903, I observed two birds at Belle Isle, the river park of Detroit. We have but few records of this species here and these have been of birds seen in winter, with but one exception.

Antrostomus vociferus. WHIP-POOR-WILL.—On October 5, 1903, I flushed a late bird from a thick undergrowth at Belle Isle. This is the latest date that I have ever recorded this species here.

Nyctala acadica. SAW-WHET OWL.—A male of this species was shot April 10, 1903, in the northeastern part of Detroit by R. E. Russell. He presented the specimen to me, but it was too badly decomposed to save it. This little owl is seldom seen here although this rarity may be more apparent than a fact.

Bartramia longicauda. BARTRAMIAN SANDPIPER.—Mr. C. Stenton shot a bird of this species east of the city October 20, 1902.

Olor columbianus. WHISTLING SWAN.—Unusually abundant during the past spring, especially at the St. Clair Flats. The first brought to my attention was a bird shot in Macomb County, bordering Lake St. Clair, by Ernest Ford. On March 14, while duck shooting at Bryant's, near the Middle Channel of the Flats, I watched a flock of fifteen feeding out in the lake. These were very wary and could not be approached. Various observers at the Flats reported to me large flocks being seen at different localities, and several were secured by the hunters and sportsmen. During April 1-10 several small flocks were reported to me. On April 17 I saw my last birds of the season—a small flock of eight feeding out in the lake near Avery's.

Sterna tschegrava. CASPIAN TERN.—While in Charlevoix County, bordering Lake Michigan, on August 16, 1903, I observed two of these birds. They were perched on the rocks bordering the shore and allowed a near approach. I watched them for some time through a Bausch and Lomb binocular.

Larus philadelphia. BONAPARTE'S GULL.—On October 17 and 18, 1903, I witnessed a very unusual sight, to me, with regard to this species. Large numbers were migrating down the St. Clair River, the main body consisting of immature birds. The flocks passed all day on the 17th and were quite numerous on the 18th. Now and then a flock would remain near where I was stationed to feed, giving me a fine chance to watch them. With these birds were a few *L. delawarensis*.

Colymbus auritus. HORNED GREBE.—Very abundant during the migrations during last fall and this spring. I first observed them October 18, 1902, near Fair Haven, on Lake St. Clair. In April, of this year, I found them common in the Detroit River above the city. On the 27th I saw about fifty birds, on May 4 about sixty. They were generally unsuspecting and allowed a near approach. I saw the last May 10, twelve birds.—BRADSHAW H. SWALES, *Detroit, Mich.*

Occurrence of the Ruff (*Pavoncella pugnax*) and Other Birds in Rhode Island.—**Larus atricilla.** LAUGHING GULL.—I observed two birds of this species on a marsh at Seaconnet Point on Aug. 24, 1903. One of the birds was in adult plumage, but the other seemed immature. This species is not often seen in Rhode Island, there being but one instance of its capture in the State recorded in 'The Birds of Rhode Island' by Howe and Sturtevant.

Hydrochelidon nigra surinamensis. BLACK TERN.—A fine male of this species was shot near Newport on July 30, 1903. It was just beginning to lose the black plumage.

Ardetta exilis. LEAST BITTERN.—A bird of this species was shot on July 18, 1903, on a salt marsh near Newport. It is now in my collection. The Least Bittern, although formerly common near Newport, seems to have become rare during the last five years.

Micropalama himantopus. STILT SANDPIPER.—This species occurred in greater numbers than usual near Newport in August and early September, 1903. It seems to be a very irregular migrant, varying in numbers from year to year.

Limosa hæmastica. HUDSONIAN GODWIT.—Eighteen 'Ring-tail Marlins' were observed at Point Judith on August 30, 1903, and six were shot. Three of these latter, which I obtained, proved to be adult birds, two being males and one a female. They were changing into winter plumage but still had many traces of the reddish summer plumage on the breasts and flanks. The birds were seen during a severe northeast gale and were easily approached as they stood huddled together in a pool of water about five inches deep. This species is rare in Rhode Island, not more than one or two being shot each year.

Pavoncella pugnax. RUFF.—An immature female of this species was taken at Point Judith, R. I., on August 31, 1903, by a local gunner. I obtained it of him and it is now in my collection. The bird, which was flying alone, was shot over decoys. I believe this is the second record for this bird in Rhode Island.—LEROY KING, *Newport, R. I.*

The Black-bellied Plover, Road-runner, and Black-throated Green Warbler in Kansas.—I wish to restore to my 'Catalogue of the Birds of Kansas' the Black-bellied Plover (*Charadrius squatarola*). It was omitted from my 5th edition (May, 1903) because I had no personal

knowledge of the capture of this species in Kansas. On the 22d of May I received from Dr. R. Matthews a mounted specimen from his own collection. It was captured at Wichita in 1896 by Mr. Ed. Goldberg.

I am also almost ready to add to my list the Road-runner or Chaparral Cock (*Geococcyx californicus*). Additional evidence of its having been "seen" is afforded by the statement of Prof. Chas. N. Gould of the University of Oklahoma, whom I met during a collecting expedition to southwest Kansas in May and June of the present year. He says: "In the summer of 1894 I saw a Chaparral Cock in the cañons west of Ashland, Clark Co., Kansas. In 1897 Dr. Lester F. Ward and I saw this bird at Belvidere, Kiowa Co., Kansas. But a single specimen was seen in each instance. The one at Belvidere was seen repeatedly in the evening, remaining around camp for several days." And finally, the 'Kiowa Signal,' published at Greensburg, Kiowa Co., Kansas, in July, 1903, gave an account of the capture of a "chaparral or snake-killer" by W. H. Wilbur of Kiowa township, who was said to have the bird in captivity. Letters addressed both to the newspaper and to Mr. Wilbur have thus far failed to elicit a reply.

POSTSCRIPT.—Since sending the above to 'The Auk' for publication I have visited the ranch of Mr. W. H. Wilbur, in the southwest corner of Kiowa County, Kansas, and have secured evidence of the capture in that locality of a specimen of the Road-runner (*Geococcyx californianus*). The bird was found in the chicken yard of Mr. Wilbur one morning during the last week of June, 1903. This yard is surrounded by a coarse wire netting and the bird when discovered was making strenuous efforts to find an opening for escape by running along the fence in search of an opening. Mrs. Wilbur caught the bird with her hands and placed it in a cracker box covered with an old stove grate. She fed it for two weeks upon grasshoppers and other insects until, becoming weary of the labor of providing its daily food, she turned it loose upon the prairie. Mrs. Wilbur was with her brother, Mr. Oris Ham, when the latter shot a specimen of the Road-runner on January 24, 1901, in Oklahoma, about thirty-five miles south of the Kansas line. The wings and tail feathers of this specimen were preserved so that the identification was entirely satisfactory. The date of capture of the Kansas specimen indicates that the species breeds in Kansas.

I wish also to put on record the capture, in Kansas, of a specimen of the Black-throated Green Warbler (*Dendroica virens*). I received the fragmentary skin of this specimen, which has been identified by Mr. J. A. Allen, from Mr. F. F. Crevecoeur of Onaga, Kansas, who states that it "was shot, as near as I can remember, in 1890 on French Creek, three miles north of Onaga."

The addition of the three species thus reported, the Black-bellied Plover, the Road-runner, and the Black-throated Green Warbler, increases my list of birds personally known by me to have been captured in Kansas, to 345 species and varieties. —F. H. SNOW, *Lawrence, Mass.*

RECENT LITERATURE.

Walton's 'A Hermit's Wild Friends.'¹—As a popular work on out-of-door 'wild things' this collection of well-intentioned sketches will doubtless meet with many admirers, being printed on heavy paper in large type, with broad-margined pages embellished profusely with marginal cuts, and copiously illustrated with full-page plates, many of them after drawings by Fuertes, and others by Kennedy, with still others that have seen previous service. It is written, however, with a know-it-all cocksureness that only lack of knowledge ever prompts, and doubtless no amount of proof of error in the author's statements would in the slightest degree affect his attitude in the case. The author's "eighteen years of hermit life" in the woods on Cape Ann, Massachusetts, have given him opportunity for intimate acquaintance with the birds, small mammals and reptiles to be found in such localities, and he evidently knows them well. It is therefore the greater pity that through his wealth of imagination and predilection for humanizing his birds and mice and squirrels he should, perhaps unconsciously and therefore without dishonest motive, so often turn his sketches into incredible natural history romances. It would take too much space to itemize this general charge, but in the case of 'Wabbles,' a male Song Sparrow, alleged to have lived in his immediate neighborhood for "fourteen years," and "eleven years . . . with his second wife," we begin to wonder if the author knows the size of a No. 4 shot, a no inconsiderable pellet of lead he claims to have removed from "the muscle of the wing-joint" of 'Wabbles' when he first made his acquaintance. If he had been satisfied to call it a No. 10, or even a No. 8, it would take less imagination to conceive of its arrest by and lodgment in "the muscle of the wing-joint" of a Song Sparrow. And we could then have been better prepared to take a little stock in Wabbles's setting up a little family singing school and teaching "his boys to sing the mating-song of his species"; and also that on one tenth day of March, twelve years before the close of the author's related association with Wabbles, he might have "brought with him from the South a male linnnet," and that "a week later Mrs. Wabbles returned, and with her was the mate of the linnnet," in consequence of these four birds having "met in the South," and because: "In the course of bird gossip either the linnets or sparrows had announced that the summer home was on Cape Ann." In this romance of Wabbles a series of events is narrated with all the seriousness of positive knowledge, yet many of them are of such

¹ A Hermit's Wild Friends, or Eighteen Years in the Woods. By Mason A. Walton (The Hermit of Gloucester). Boston: Dana Estes and Company, Publishers. "Published October, 1903." 8vo, pp. i-x, 11-304, with numerous full-page illustrations and text-cuts.

a nature as to be outside the realm of the least shadow of proof, and can only rest on belief or on the promptings of the imagination.

This sample from the Hermit's repertoire is only one of many that adorn his chapters; indeed, it is a fair illustration of the general character of the book. His dogmatism in the chapter on 'The Instinct of the Cowbird' is only a further illustration of the cocksureness of ignorance. Apropos of young Cowbirds flocking together, and with the older members of their kind, in the fall, it is enough to quote: "I will say now, that long before I had opportunity to study the bird, I did not believe it possible for a young bird, by its own knowledge, to hunt up and associate with birds of its kind." Any one approaching an intricate question with this condition of mind can readily see, or imagine (perhaps unconsciously) that he sees, just what he desires to see. So our Hermit finds no trouble in solving, to *his* "belief," all the problems of the Cowbird question. It appears, however, that his first young Cowbird "was big and black," and he "thought it was a male. I made it a male," he says, "in my note-book. While the bird was in the nest I fastened a bit of copper wire to its leg, and the next spring when it returned, I found the bird was a female. I saw her with another female, I think it was the mother, visiting birds' nests. So the young Cowbird was educated to lay its eggs in other birds' nests. Nesting is educational and not instinctive." That is his answer to his question, "Why do young Cowbirds lay eggs in other birds' nests instead of building nests for themselves?" First, young Cowbirds, as all ornithologists know, but as many of Hermit's lay readers may not know, are brown and not black. Second, he saw his marked young Cowbird the next year, which proved then to be a female, going about with another female, presumed to be her mother, visiting other birds' nests and being thus "educated" as to what to do with her eggs, when in the course of natural events she should have eggs to dispose of! This is a sample of the Hermit's evidence and of his wonderful logic.

'A Hermit's Wild Friends' is not all bad; it has many delightfully written pages, but it is so obviously permeated with romance that one never knows when to take its pages seriously. It is noticed here not as a contribution to natural history, but as an example of a class of so-called 'nature books' that is misleading hosts of credulous readers who are unable to discriminate fact from fiction. Such books have thus a pernicious influence in giving wrong conceptions of the faculties and habits of animals. Nor is such writing confined to books, but leaves its nauseous trail over our magazines and newspapers. A fine example of this kind of literature appeared recently in 'The Outlook,' entitled 'Animal Surgery.'¹ The surprise is that such reading matter should find place in so

¹ Animal Surgery. By William J. Long. Author of "Beasts of the Field," "Secrets of the Woods," etc. The Outlook, Vol. LXXV, No. 2, Sept. 12, 1903, pp. 122-127.

intelligently conducted a journal. In this article is related a tale of two female Eider Ducks seen in a freshwater pond, "acting queerly," dipping their heads under water, etc., where the water was too deep for them to be feeding. As darkness came on speedily the mystery of this curious behavior could not be solved. A few weeks later, however, another bird of this species, an old drake, was seen in the same pond acting in the same queer way, and in this case the bird was shot, and found to have been caught by the tongue by a large saltwater mussel. Counsel was sought of an old fisherman, who had witnessed similar behavior by saltwater ducks on a few occasions, but he had no explanation of it to offer. On being shown the mussel taken from the drake's tongue, he said: "Mussels of that kind won't live in fresh water." Then both Mr. Long and the fisherman had an inspiration. The ducks caught by the tongue by mussels repaired to freshwater ponds to kill the mussels by drowning them! On this single case was built at once a theory to explain why saltwater ducks visit freshwater ponds and thrust their heads under water in such a queer way. "I have," he adds, "seen three different eiders practice this bit of surgery myself, and have heard of at least a dozen more, all of the same species, that were seen in fresh water ponds or rivers dipping their heads under water repeatedly." But in only one case, according to his own showing, did he know that the bird had a mussel on its tongue. The assumption is made that the case is proved, and the questions are raised as to how a bird found out "that certain mussels will drown in fresh-water," and "how do the other birds know it now when the need arises unexpectedly"; but, strange to say, they are left without an answer,—a golden opportunity neglected. Mr. Long does not claim to know, even, "whether all the ducks have this wisdom, or whether it is confined to a few rare birds."

The way in which a Woodcock proceeded to mend a broken leg is detailed with great minuteness. As witnessed by Mr. Long, the bird applied a bandage of clay and fibers of grass and rootlets with his bill to the wounded member, and after it had hardened enough to suit him fluttered away and disappeared in the thick woods. This bit of clever surgery was seen from "across a little stream," "too far away for me [him] to be absolutely sure of what all his motions meant." But then, *some years afterward*, Mr. Long, after examining hundreds of woodcock in the markets, at last "found one whose leg had at one time been broken by a shot and then had perfectly healed. There were plain signs of dried mud at the break; but that was also true of the other leg near the foot, which only indicated that the bird had been feeding in a soft place." The final proof came still later, through a lawyer friend of his who once upon a time had shot a woodcock which had a lump of clay on its leg, on the removal of which the leg was found to have been broken. The lawyer did not see the woodcock apply the clay, as did Mr. Long in his first case, nor was it suggested that the oozing fluids from the wound might cause the clay or earth to adhere and harden in a perfectly natural way. So,

Mr. Long was now emboldened, "since proof is at hand," to relate his observation, made so many years before, of how he saw a woodcock put its broken leg in splints.

These are only samples of the deplorable kind of 'natural history' writing that is now so rapidly coming into vogue, of which Mr. Walton's 'A Hermit's Wild Friends' and so much of Mr. Long's writings form striking examples. An active imagination, a slight knowledge of the subject considered, a clever knack at writing, a few pictures, make up the necessary capital for any amount of natural history romancing, and from the infliction of which upon the public publishers and editors seem to interpose no relief, either through ignorance or the consideration that such yarns meet with ready sale.—J. A. A.

Fisher's 'Birds of Laysan.'—In a paper of some forty pages, illustrated with ten plates, Mr. Walter K. Fisher has given a very interesting account of his ornithological work in the Laysan and Leeward Islands of the Hawaiian Group,¹ which he visited in the summer of 1902, on the expedition of the 'Albatross' to Hawaiian waters for the purpose of deep-sea explorations. Although the cruise lasted from March to August, there seems to have been very little opportunity for on-shore work. The 'Albatross' reached Laysan on May 16 and remained there till the 23d, during which period Mr. Fisher, with Mr. J. O. Snyder, was detailed "to make observations on the bird life of the island and collect such specimens as seemed desirable." Later brief stops were made at French Frigate Shoals, Necker and Bird Islands, but a landing was made only at Necker. In 'The Auk' for October, 1903 (pp. 384-397), Mr. Fisher gave an illustrated account of the forms of bird life peculiar to Laysan, and has contributed to the present number of this journal (pp. 8-20) a paper on the Laysan Albatross.

In the present official report some ten pages are devoted to the itinerary of the trip, including a general account, with illustrations, of the islands visited, and the more striking features of their bird life; this is followed by a systematic list of the 27 species observed, giving detailed accounts of their manner of life on these remote islands. The paper is illustrated with a colored plate of the Necker Island Tern (*Procelsterna saxatilis* Fisher) discovered on this trip, and 52 half-tones made up into nine plates. It is thus an important contribution to the history of island bird life, and especially to that of Laysan and the other islands visited.—J. A. A.

Jones's 'The Birds of Ohio.'²—The first twenty-two pages of this

¹ Birds of Laysan and the Leeward Islands, Hawaiian Group. By Walter K. Fisher. U. S. Fish Commission Bulletin for 1903, pp. 1-39, pls. i-x. Washington: Government Printing Office, 1903.

² The Birds of Ohio. A Revised Catalogue. By Lynds Jones, M. Sc., Oberlin College. Ohio State Academy of Science, Special Papers No. 6. 8vo, pp. 141, with map. Oct. 15, 1903.

extensively annotated catalogue of Ohio birds state the scope and purpose of the paper, explain the terms used to indicate relative abundance, give a rather detailed account of the topography and physical conditions of the State, including a consideration of faunal areas, etc., and finally a statement of the author's sources of information, with acknowledgments to contributors for assistance. There is also a bibliography at the close of the list, giving five pages of titles of works and papers relating to the birds of Ohio.

The list includes altogether 338 species, of which 299 are given as found more or less regularly in the State, 15 as merely accidental visitors, and 4 as extinct, making 318 indigenous species as of actual record for the State; there are 2 introduced species, and a hypothetical list of 18 species, the whole number being thus 338, as against 298 given by Dr. Wheaton in 1882.

The annotations give the manner of occurrence of the species as regards season and abundance, and their range within the State; there is also more or less reference to their economic status, there being generally a paragraph under each family heading relating to the food, and often a more detailed statement under many of the species. In addition to the A. O. U. Check-List names are given the synonyms, both technical and vernacular, of the species used in other works, and a reference to Dr. Wheaton's catalogue.

"This catalogue," says the author, "is a revision of Dr. J. M. Wheaton's catalogue issued in 1882 as a part of Volume IV of the Ohio Geological Survey. An attempt has been made to draw comparisons between the conditions prevailing then and now, especially as regards the bird life, and to add such facts as further study and improved methods have brought to light." In the Introduction, the changes in range of certain species within the State are considered, in connection with the probable invasion of the State by several species since Dr. Wheaton wrote. It is needless to say that Professor Jones's 'Catalogue' is a most trustworthy and highly important contribution to Ohio ornithology, being based in part upon special field work he has been able to conduct through a grant by the Ohio State Academy of Sciences from the 'Emerson McMillin Research Fund,' through which also the expense of publication was met.—J. A. A.

Anderson and Grinnell on the Birds of the Siskiyou Mountains, California.¹—This is a record of birds collected or observed by Mr. Anderson in the extreme northwestern part of California between September 6, 1901, and March 10, 1902, with "critical remarks on specimens and distribu-

¹ Birds of Siskiyou Mountains, California: a Problem in Distribution. By Malcolm P. Anderson and Joseph Grinnell. Proc. Acad. Nat. Sciences of Philadelphia, 1903, pp. 4-15. April 17, 1903.

tion" by Mr. Grinnell. A couple of pages descriptive of the limits and physical characteristics of the region, with a list of the trees, is followed by an annotated list of 43 species of birds and a 'summary' of the principal points relating to their distribution. The list shows a mixture, at least in winter, of humid coast forms and arid Sierran forms, the Siskiyou Mountains being "evidently on the narrow line of murgence between the humid coast fauna and the arid Sierran fauna."—J. A. A.

Sharpe's 'Hand List of the Genera and Species of Birds.'—Volume IV. — Volume IV¹ continues the list of the Passeriformes, and includes the families Timeliidæ (with six subfamilies), Troglodytidæ, Cinclidæ, Mimidæ, Turdidæ (with nine subfamilies), Sylviidæ, Vireonidæ, Ampelidæ, Artamidæ, Vangidæ, Prionopidæ, Aerocharidæ (with a single species), Laniidæ, Paridæ, Chamæidæ, Regulidæ, Sittidæ, and Certhiidæ. A fifth volume has been found necessary to complete the work, and its publication is promised in the course of a few months.

The present volume is fully up to the high standard of its predecessors, being in every sense fully up-to-date. As in previous volumes, the proof-sheets have been revised by a considerable number of the leading ornithologists of Europe and America, and the author makes numerous acknowledgments of indebtedness for suggestions thus received.

As regards American birds, it may be noted that *Anorthura* is retained for the Winter Wrens, since "the only bird in Rennie's mind [when he proposed the genus] was certainly the European Wren." "The arrangement of the Turdinæ, as here set forth, is founded on the scheme proposed by Dr. Stejneger in 1883, with certain changes and modifications.... The arrangement of the true Turdidæ into Thrushes (*Turdus*) and Blackbirds (*Merula*) breaks down on close examination; but a more prolonged study is necessary before an arrangement, satisfactory to all ornithologists, can be arrived at.... The distinctive characters between the genera *Turdus* and *Merula* are very slight, and the difference in colour of the sexes in the latter genus is of no account. The proportion of the primary-quills emphasized by Dr. Stejneger is also an unstable character," etc. Just what is the basis of Dr. Sharpe's present arrangement is not quite clear, nor are the reasons for some of the new associations and dissociations at all evident. Between *Turdus* and *Merula* are interposed nearly a dozen other

¹ A Hand-List | of the | Genera and Species | of Birds. | [Nomenclator Avium tum Fossilium | tum Viventium.] | By | R. Bowdler Sharpe, LL.D., | Assistant Keeper, Department of Zoology, | British Museum. |—Volume IV. | London: | Printed by Order of the Trustees. | Sold by | Longmans & Co., 39 Paternoster Row, E. C.; | B. Quaritch, 15 Piccadilly, W.; | Dulau & Co., 37 Soho Square, W.; | Kegan Paul & Co., 43 Gerrard St., W.; | and at the | British Museum (Natural History), Cromwell Road, S.W. | 1903. | All rights reserved.—8vo. pp. i-xii, 1-391.

genera, while some of the species of these two groups are most certainly much more nearly related to each other than they are to any of the interposed groups. Our Robin group is allotted to *Turdus*, and forms the only American species of the genus, except *T. rufigtorques* of Mexico and Central America.

It seems like returning to the 'good old times' to see such groups as the Mimidæ, Regulidæ, Paridæ, Certhiidæ, etc., installed again as full-fledged families.

Parus is restricted to a group of Old World Titmice, the American species hitherto referred to *Parus* being placed in *Pæcile* Kaup, except *P. gambeli*, for which the new genus *Pæcilodes* Bianchi (1902) is adopted.

The recent additions to the list of described forms are given at their face value, with, however, references to adverse opinions when any such have been made public. In short, the care, thoroughness and fairness of Dr. Sharpe's great work will long render it a most invaluable aid to every systematic ornithologist.—J. A. A.

Ridgway on New American Birds.—Mr. Ridgway, in preparing Part III of his 'Birds of North and Middle America,' has found it desirable to describe a number of new genera, species, and subspecies.¹ The new genera comprise the following four genera of Swallows, as follows: *Alopchelidon*, type, *Hirundo fucata* Temm.; *Orochelidon*, type, *Petrochelidon murina* Cass.; *Diplochelidon*, type, *Hirundo melanoleuca* Wied; *Lamprochelidon*, type, *Hirundo euchrysea* Gosse. The new species and subspecies, 29 in number, are mostly from Mexico and Central America, but the following come within the scope of the A. O. U. Check-List: (1) *Budytes flavus alascensis*, Western Alaska; (2) *Vireo huttoni cognatus*, Cape district of Lower California; (3) *Vireo bellii arizonæ*, western Texas and Arizona; (4) *Lanius ludovicianus mearnsi*, San Clemente and Santa Margarita Islands, L. Cal.; (5) *Bæolophus inornatus restrictus*, vicinity of San Francisco Bay, Cal.; (6) *B. i. murinus*, northern Lower California; (7) *Psaltriparus minimus saturatus*, Mount Vernon, Wash.; (8) *Chamæa fasciata rufula*, central coast region of California; (9) Mississippi Valley and Great Plains region, north to Alberta.—J. A. A.

Nelson on New Birds from Mexico.—The 13 new species and subspecies here described² were mainly collected by Messrs. Nelson and Goldman in southwestern Mexico during the winter of 1902-03. They

¹ Descriptions of New Genera, Species, and Subspecies of American Birds. Proc. Biol. Soc. Wash., XVI, pp. 105-113, Sept. 30, 1903.

Diagnoses of Nine New Forms of American Birds. *Ibid.*, pp. 167-170, Nov. 30, 1903.

² Descriptions of New Birds from Southern Mexico. By E. W. Nelson. Proc. Biol. Soc. Wash. XVI, pp. 151-160, Nov. 30, 1903.

include a Quail-Dove, a Grouse (*Dactylortyx*), an Owl, 10 species of Passerine birds, of which several are given the rank of full species.—J. A. A.

Oberholser on a New Wren from Texas.—Mr. Oberholser has described¹ the Long-billed Marsh Wren of eastern Texas and Louisiana as *Telmatodytes palustris thryophilus*, it differing from *T. palustris* in smaller size, paler and grayer coloration.—J. A. A.

Hartert's 'Die Vögel der paläarktischen Fauna.'²—Mr. Hartert's Birds of the Palæarctic Fauna is to comprise two volumes of about 650 pages each, to be issued in ten parts, at four marks each, and to be completed during 1905. Part I consists of an introduction of twelve pages and the first 112 pages of the text, and comprises the families Corvidæ, Sturnidæ, Oreolidæ, and the first part of the Fringillidæ, numbering altogether 184 species and subspecies. In the introduction the author clearly defines his attitude as regards 'lumping' and 'splitting,' and on various questions of nomenclature; he takes Linnæus at 1758, adheres strictly to the rule of priority, and employs trinomials in the most approved way for subspecies. These he recognizes with great liberality, but displays much conservatism in respect to genera. For example, under *Acanthis* he would combine *Carduelis*, *Chrysomitris*, *Linota*, *Spinus*, *Astragalinus*, and *Hylocanthus*, and similarly under *Corvus* various allied groups that are often given generic rank. He emphatically disapproves of the supposition that birds can change the color and markings of their plumage without a renewal of the feathers, and in other respects stands in the front rank of the new school.'

Passing now to the systematic portion of the work, the higher groups are briefly characterized, and under the genera there are keys to the species, but, generally, not to the subspecies; there is no generic synonymy, and the citations under the species and subspecies are restricted to the first mention of the names adopted, and their synonyms. The characters of the species are quite fully given, with a brief statement of their geographical ranges, manner of nesting, character of the eggs, etc., and under the subspecies their distinctive characteristics and distribution.

The geographical scope of the work is sufficiently indicated by the title, but the southern boundary of the Palæarctic Region is not very sharply definable. In general terms the region includes all of Europe, northern

¹ Descriptions of a New *Telmatodytes*. By Harry C. Oberholser. Proc. Biol. Soc. Wash., XVI, pp. 149, 150, Nov. 12, 1903.

² Die Vögel der paläarktischen Fauna. Systematische Übersicht der in Europa, Nord-Asian und der Mittelmeerregion vorkommenden Vögel. Von Ernst Hartert. Heft. I. Mit 22 Abbildungen. Berlin. Verlag von R. Friedländer und Sohn. Ausgegeben in November 1903. Large 8vo, pp. i-xii, 1-112.

Africa to the Sahara, and Asia south to northern Arabia and the Himalayas, and China to about the latitude of Peking. A few North American forms are included when they belong to circumpolar species, for the purpose of completing the account of the group, as in *Pica pica* and the genus *Acanthis* but not in the case of *Corvus corax*, although this species is cited in the introduction as an example of this treatment. It is to be noted that the name *flammea* (*Fringilla flammea* Linn.) is substituted for the familiar *linaria* (*F. linaria* Linn.) for *Acanthis linaria*, on the basis of precedence on the same page. Several subspecies are also here described for the first time.

Although we have a recent popular manual on the birds of the same region, the present work is to be most heartily welcomed as an exposition of the subject from a technically up-to-date standpoint.—J. A. A.

'The Avicultural Magazine.'—'The Avicultural Magazine'¹ is the journal of the Avicultural Society, which has for its object "The study of foreign and British birds in freedom and captivity," exclusive of "Poultry, Pigeons and Canaries."

It is published monthly, forming an annual volume of about 450 pages, with numerous colored and other plates, and also text figures. It is devoted, as the name implies, largely to the habits and rearing of wild birds in captivity, but contains also papers on birds observed in a state of freedom; the present volume including a series of illustrated popular papers by Mr. J. Lewis Bonhote on birds observed by him in the Bahamas (already noticed in this journal, XX, 1903, p. 230); on 'Birds in Towns,' by John Sergeant; 'The Late Rains and their effect on Bird Life' (in England), by E. G. B. Meade-Waldo, etc. Besides the general articles, there are departments for 'Reviews,' 'Bird Notes,' 'Correspondence,' etc.

An interesting note from a bird-dealer on 'British Birds in New Zealand,' states that Goldfinches, Redpolls, Chaffinches, Greenfinches, Hedge Sparrows, Thrushes, Blackbirds, Yellow-hammers, Buntings, and Gray Linnets, liberated some twenty-five years ago, have become very abundant so that a catch of "fifteen dozen Goldfinches a day," or seventeen dozen Redpolls, is easily made, while Chaffinches, Greenfinches and Hedge Sparrows may be had in "any quantity."

The magazine is largely taken up, as would be expected, with the habits and care of birds in captivity. There are several very interesting

¹ The | Avicultural Magazine, | being the Journal of | the Avicultural Society for the Study of | Foreign and British Birds | in Freedom and Captivity. | Edited by | D. Seth-Smith, F. Z. S., M. B. O. U. | New Series, Vol. I. | November, 1902 to October, 1903. | London: | R. H. Porter, | 7, Princes Street, Cavendish Square, W. | 1903.—8vo, pp. i-xx, 1-431, 32 pl. (12 colored), and 18 text figures. Annual membership subscription, 10s.

communications on the nesting habits of a number of species, and some discussion under 'Instinct and Nest-building' of Wallace's theory that young birds learn to make their nests because they have themselves been reared in one, the experience of various contributions being to the effect that birds in captivity nest 'true to type' when the conditions are favorable, regardless of whether reared in a typical nest of their own species or not.

The magazine is evidently an authority in its own field, and an invaluable medium of communication and bond of union between the members of the Avicultural Society, which was founded in 1894, and has shown substantial and steady growth.—J. A. A.

Seth-Smith's Handbook of Parrakeets.¹—Part VI, concluding this excellent work,¹ has been received, comprising pages 217-281, i-xx, and three colored plates, representing five species. The scope of the work, as defined by the author, is as follows: "Scientifically speaking, there is no distinction between a 'Parrot' and a 'Parrakeet,' the latter word being purely a popular term used for the smaller Parrots. It cannot be applied to any particular family, or subfamily, nor to those species with long or short tails. The gigantic Macaws are never called Parrakeets, but they are closely related to the Conures, and possess the long tails that one generally associates with Parrakeets. The title of this work, must, therefore, be interpreted in the sense in which it is generally used by aviculturists—that is, to mean the smaller Parrots, whether they possess short tails or long, whether they have ordinary or filamented tongues." The work, however, is not intended as a monograph of all the species, but only of the imported species, or those known to the author to have been imported. The number included in the present work is 131 species, of which colored figures are given of 33, and text figures of 23, mostly additional to those shown in the colored plates.

The general character of the work has already been given in our notice of Parts I-V (Auk, XX, pp. 322, 323), and we need add little more than to say that the author has provided for the large number of aviculturists and others interested in this class of popular cage birds a manual giving a large amount of interesting information concerning their habits and distribution in a wild state, their proper treatment in confinement, descriptions by which they may be easily identified, and very useful colored figures of many of them.—J. A. A.

¹ Parrakeets. | A Handbook to the Imported Species. | [Vignette] By | David Seth-Smith, M. B. O. U., F. Z. S. | With Twenty Coloured Plates and other Illustrations. | London: | R. H. Porter, | 7, Prince's Street, Cavendish Square, W. | 1903. — 8vo, pp. i-xx + 1-281, with 20 colored plates and numerous text-figures.

SUPPLEMENT.

REPORT OF THE A. O. U. COMMITTEE ON THE PROTECTION OF NORTH AMERICAN BIRDS FOR THE YEAR 1903.

BY WILLIAM DUTCHER, CHAIRMAN.

Plates XII-XVIII.

THE Audubon Societies and the generous subscribers to the Thayer Fund have every reason to congratulate themselves upon the steady progress of bird protection work in the United States during the past twelve months. The present outlook of the work is like the intermittent notes of birds before the break of day, or the first gleam of Heaven's amber in the eastern gray; if those who are now working may not see the full meridian sunlight yet the results of 1903 are an earnest of what we hope may be accomplished in the next decade. After all, it is honest love for our work, honest sorrow for the ills which we see about us in the bird world, honest work for the day that is present with us, and honest hope for to-morrow that must govern our actions. When we rise above the sordidness that so often hinders spiritual work, and learn to believe that it is better sometimes to invest in deeds of mercy to God's helpless creatures than it is to invest in the best of securities, we will find that our works of love are better paying investments and will bring us in something far higher and nobler. Our labors will go forth to bless our country and make the world about us fairer and better; in addition it will react and make ourselves not only happier but better, as we will realize that unselfish work is far better than work for personal display or self aggrandizement.

The year's results have been so full of interest, have developed so rapidly, and bid so fair to develop more rapidly in the future, that it becomes necessary to make a very detailed report under the head of each Commonwealth; this is done in order that each society may have a general idea of what each other society is doing, and thus the strong, aggressive bodies become an example and lesson to those that are not so successful; new ideas of work are

also thus suggested. In this connection the work of the North Carolina Society, in securing funds from their sustaining members, is certainly commendable and is an object lesson of the greatest force to other societies who complain of the difficulty in securing funds for their work. If in a State that is comparatively poor, 331 sustaining members can be secured for the asking, what would be the result of the same effort in the more wealthy and thickly settled States?

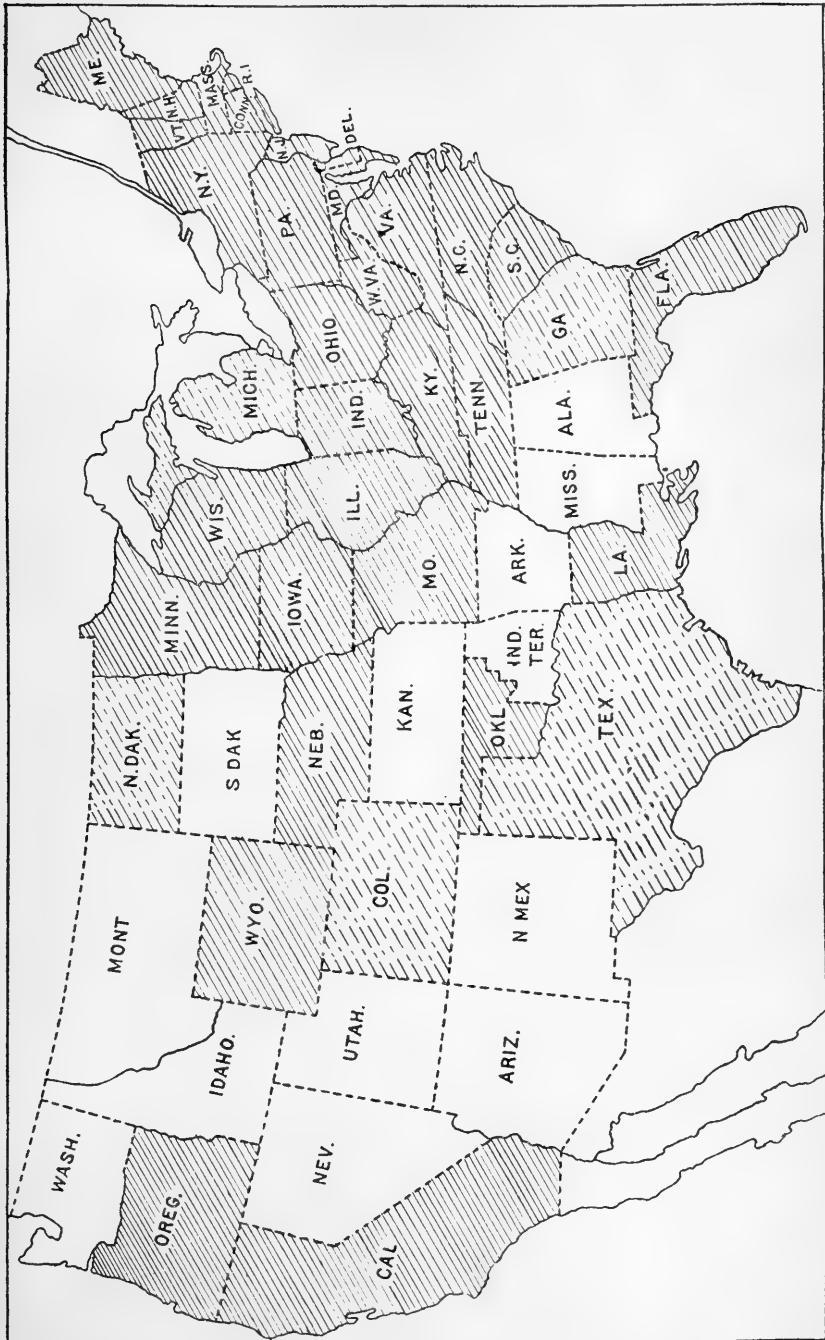
The activities of the past year have been confined to three channels, as heretofore: Legislation, Warden Work, and Audubon or Educational Work. The legislative branch has been particularly successful, inasmuch as the A. O. U. model law has been adopted in nine States, as follows: Virginia, North Carolina, Georgia, Tennessee, Texas, Minnesota, Colorado, Oregon, and Washington (see map).

Besides this, the influence of the National Committee was given to the bettering of the game laws, in stopping spring shooting, preventing sale and transportation of game, and in other directions. In five States we were unsuccessful in our efforts to improve the non-game bird law; the reasons for our failure are given later under the heads of the following States, namely, California, Kansas, Michigan, Missouri, and Oklahoma Territory.

The Warden Work of the year was largely increased over that of previous years and will be still further broadened during the coming year, provided sufficient funds are furnished to enable the National Committee to carry out its present plans.

Audubon and Educational Work go hand in hand and are really the foundation of the great economic movement that is now going on; prohibitive laws and the actual guarding of breeding birds by wardens are important, but unless these are upheld by a moral sentiment in the public mind, the goal that we are aiming at may never be reached:

“Books! ’t is a dull and endless strife:
Come, hear the woodland Linnet,
How sweet his music! on my life,
There’s more of wisdom in it.
And hark! how blithe the Thristle sings!
He, too, is no mean preacher:
Come forth into the light of things,
Let Nature be your teacher.”



MAP SHOWING STATES (SHADED) HAVING AUDUBON SOCIETIES. (SEE DIRECTORY, AT END OF THIS REPORT.)
(Broken lines indicate States in which Societies were first organized in 1903.)

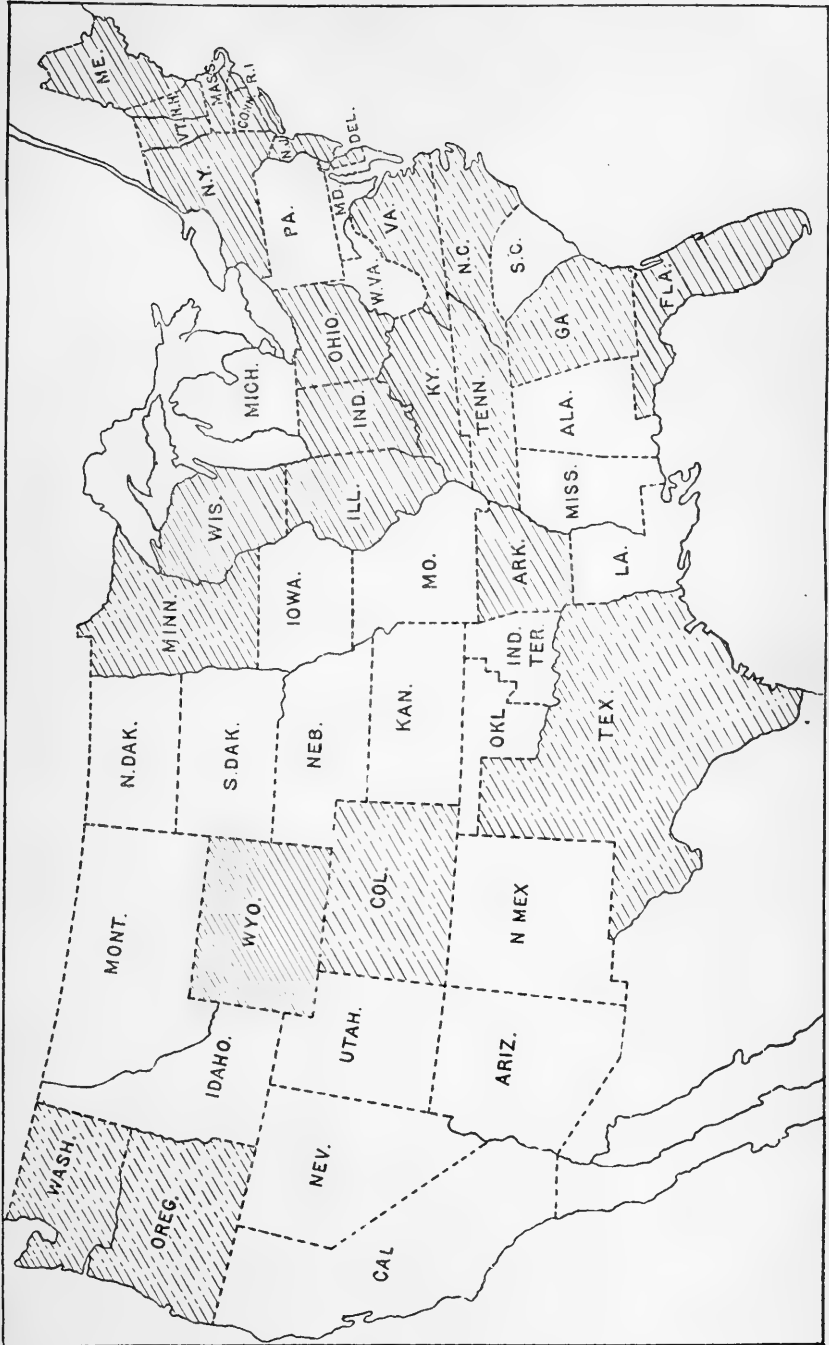
Audubon societies are educating both adults and children; it is teach, teach, teach, both in the field and by libraries, pictures, lectures, and every method to make the masses acquainted with the bird in life. Day by day and year by year there is a steady growth of sentiment in favor of bird protection; this can be seen on every hand. Unfortunately there are a few unsympathetic and doubting people who say all this work is not necessary because the fashion is changing and the use of birds' plumage is not very popular at the present time; this, however, we believe is not a fact. The reason there is less plumage now used is simply because the Audubon sentiment is increasing; it is more difficult to obtain wild birds' plumage; protective laws are being passed in the country; and, as is reported by the Wisconsin Audubon Society, milliners say it is impossible to sell a hat trimmed with wild birds' plumage to the mother of a child who belongs to an Audubon society, or who is taught in the school about birds.

During the year new Audubon societies have been organized in the following States: Michigan, Georgia, North Dakota, and Colorado, and it is found that there is a steady and persistent growth of the Audubon movement in other localities (see map).

One of the greatest gains of the past year in educational lines was the educational leaflets issued by the National Committee; these have been found to fill a long-felt want and are practical methods of teaching not only the æsthetic but the economic value of birds.

It is most unfortunate that these leaflets cannot be distributed gratuitously; requests are made almost daily for them from schools or individuals which cannot be met, and it dampens the ardor of the inquirer when we cannot freely give them our literature without charge.

Probably one of the most important advance movements in the history of bird protection was the agreement made in April last between the Millinery Merchants Protective Association, the New York Audubon Society and the American Ornithologists' Union. This agreement was concurred in by the Western Millinery Association, and has been so widely noticed in the press of the country that it is unnecessary to do more than give the actual text of the agreement.



MAP SHOWING STATES (SHADED) WHICH HAVE ADOPTED THE A. O. U. MODEL LAW.

(Broken lines indicate the States which passed the Law in 1903.)

AGREEMENT BETWEEN THE MEMBERS OF THE MILLINERY MERCHANTS PROTECTIVE ASSOCIATION OF NEW YORK AND THE AUDUBON SOCIETY OF THE STATE OF NEW YORK.

The members of the Millinery Merchants Protective Association hereby pledge themselves as follows :

To abstain from the importation, manufacture, purchase or sale of gulls, terns, grebes, hummingbirds and song birds.

To publish monthly in the Millinery Trade Review a notice informing the millinery trade in general that it is illegal to buy, sell or deal in gulls, terns, grebes, hummingbirds or song birds, and that no means will be spared to convict and punish all persons who continue to deal in the said prohibited birds.

To notify the millinery trade by printed notices as to what plumage can be legally used.

To mail printed notices to all dealers in raw materials, importers and manufacturers of fancy feathers and to the millinery trade in general that all violations of the law will be reported to the proper authorities.

It is further agreed on the part of the Millinery Merchants Protective Association that on and after January 1, 1904, the importation, manufacture, purchase or sale of the plumage of egrets or herons and of American pelicans of any species shall cease, and the said birds shall be added to the list of prohibited species mentioned above.

It is understood and agreed that the restrictions referred to in this agreement as to gulls, terns, grebes, herons and hummingbirds, shall apply to the said birds irrespective of the country in which they may have been killed or captured.

The Audubon Society of New York State on its part hereby agrees as follows :

To endeavor to prevent all illegal interference on the part of game wardens with the millinery trade: to refrain from aiding the passage of any legislation that has for its object restrictions against the importation, manufacture or sale of fancy feathers obtained from domesticated fowls or of the plumage of foreign birds other than those specifically mentioned above.

It is agreed by each of the parties that this contract shall remain in force for a period of three years from the date of its execution.

FOR THE AUDUBON SOCIETY OF
NEW YORK.

FRANK M. CHAPMAN,
*Chairman of the
Executive Committee.*

FOR THE MILLINERY MERCHANTS
PROTECTIVE ASSOCIATION.

GEORGE LEGG, *President,*
CHARLES W. FARMER, *Secretary.*

The above agreement, is concurred in by the American Ornithologists' Union.

WILLIAM DUTCHER,
Chairman Protection Committee.

This agreement, it is believed, is being lived up to by the milliners with very few exceptions, a notable one being the refusal of three firms in New York who are not members of the Association, and who refuse to be governed by the agreement in respect to the use of aigrettes.

The further use of the aigrette in the United States, therefore, becomes a matter of ethics. The women who will not wear the aigrette are upholding every good impulse and are living up to the sentiment expressed by Coleridge :

He prayeth well, who loveth well
 Both man and bird and beast.
 He prayeth best, who loveth best
 All things both great and small;
 For the dear God who loveth us,
 He made and loveth all.

On the other hand the women who still persist in wearing the aigrette, no matter whether it was secured in this country or any other, does so at the cost of a life taken in the cruellest possible manner. The plume when worn is not an emblem of grace and beauty, but is a badge of cruelty and inhumanity.

The National Committee offers the following suggestions for the work of the coming year :

A decided and energetic effort must be made to prevent the use of automatic guns. Birds and game are disappearing quite rapidly enough by the use of the ordinary shot gun, but if the magazine gun comes into general use, it simply multiplies enormously the present means of destruction.

Every State should be urged to follow the example set by Pennsylvania and Delaware in appointing an Honorary Consulting Ornithologist; he may be connected with the Board of Agriculture or with the Fish and Game Commission, and all matters relating to the bird life of the State, or the laws governing the same, should be referred to him for expert opinion. In every State may be found ornithologists of note who would be willing to contribute their services without compensation.

The Audubon societies should affiliate closely with the Humane societies; many of these throughout the United States are now

doing excellent bird protection work, and as the objects of both societies are in the main similar, the good work of the Humane societies should be recognized.

Farmers' organizations should be encouraged (see Illinois); if the owners of land will band together to prevent illegal shooting upon their properties and thoroughly post and police their farms, much illegal killing of both game and non-game birds will be the result; this is especially important in localities adjacent to the large cities where the foreign population is numerous. As many of these people do not readily understand English, it is of the utmost importance that warning notices printed in Italian, Polish, and Scandinavian should be freely distributed in suburban localities. Only fifteen States are without trespass laws as follows: Alabama, Arkansas, Connecticut, Delaware, Kansas, Maine, Maryland, Montana, Nevada, New Hampshire, North Dakota, South Carolina, Utah, Vermont, and Wyoming.

In many of the States Sunday shooting is strictly prohibited; this gives absolute rest to bird life for one day in the week, and the Audubon societies should see that this law is complied with; the twenty-one States and Territories that have no law prohibiting Sunday shooting are, Arizona, Arkansas, California, Colorado, Hawaii, Idaho, Illinois, Louisiana, Michigan, Montana, Nevada, New Mexico, Oregon, South Carolina, South Dakota, Texas, Utah, Virginia, Washington, Wisconsin, and Wyoming, and in these Commonwealths such a law should be passed at once.

Another subject that should engage the attention of the Audubon workers is, the feline hunter; in other words, the house cat run wild, for there is no doubt that millions of birds are killed in the United States and Canada every year by cats. This is a subject that has never received the attention its importance warrants. Most States provide for a license or tax on dogs, so that the number is kept within reasonable limits, and none are permitted to run wild as cats do; there is no good reason why a tax should not be placed on cats.

The National Committee feel very strongly that all of the Audubon societies should heartily support our organ 'Bird Lore.' This magazine is conducted with the sole purpose of educating the public, especially the children of the country, about birds;

nothing is admitted to its pages that is not scientifically correct, and everything is presented in a popular and interesting manner. It is always beautifully illustrated, and gives reviews of new bird publications.

During the coming year each issue will furnish interesting news regarding the work of the National Committee ; besides this, every number will contain a new educational leaflet which will afterward be printed as a ' separate ' for general distribution. The more widely our magazine can be distributed the greater will be the progress of our work.

During the past year the Committee has received in contributions for the various branches of work the sum of \$3,756.85, which has been expended with the greatest care and economy ; notwithstanding this, at the close of the year, the Committee was confronted with a deficit of \$158.90.

It is absolutely necessary that the Committee should have at its disposal for the year 1904 a sum not less than \$5,000, and it is desirable that even a larger amount should be provided by those interested in the furtherance of this great economic work. The Committee should be in a position to distribute its leaflets free, otherwise its educational work will be seriously hampered.

The territory to be covered by wardens during the coming year will be very much larger than heretofore. In addition it is of the utmost importance that the National Committee shall be able to send into the State of Louisiana at the next session of the Legislature some of its best speakers and most active bird protection workers, in order to secure the passage of the A. O. U. model law. For generations the indiscriminate slaughter of birds of all kinds in Louisiana has been permitted ; this must be shown to be wasteful and wrong.

A material increase in the Thayer Fund is earnestly urged upon the thoughtful consideration of those who have so generously supported it in the past. If every one of our loyal friends will secure an additional subscriber the necessary working fund can be readily secured.

The Subcommittee on Foreign Relations present the following report of its work for the past year.

PHILIPPINE ISLANDS.—A Committee was appointed at the last annual meeting to take measures to prevent the use of the birds of the Philippine Islands for commercial purposes.

A memorial was prepared and sent to the Honorable Secretary of War, as follows :

SIR:—

At the Twentieth Congress of the American Ornithologists' Union, held in Washington, D. C., November 17-20, 1902, the following preamble and resolutions were unanimously adopted :

Whereas, During the past twenty years there has been an alarming decrease in the wild birds of the world, and

Whereas, The said decrease has been largely occasioned by the use of birds' plumage for millinery ornaments, and

Whereas, Scientific study of bird life by experts reveals the fact that wild birds are of great economic value, and

Whereas, A systematic effort is now being made for the preservation of wild bird life in this country as well as in foreign countries, therefore

Be it resolved, That a Committee of five Fellows of the American Ornithologists' Union be appointed by the President, to take such action as will best conserve all bird life.

In accordance with these resolutions the Committee respectfully invites your attention to the importance of taking steps to prevent the export from the Philippine Islands of game and birds, more especially of those species whose plumage is used for millinery purposes. Laws prohibiting export are considered indispensable in bird protection, and are now in force in all but four or five States and Territories of the United States. Such a law was also enacted by Congress in June, 1902, for the protection of birds in Alaska.

At present there is an enormous demand for the plumage of birds used by the millinery trade, and much of this plumage is obtained from birds of the East Indies, Australia, and New Guinea. Birds are now protected in most of the colonies of Australia, in India, and Burma; steps have been taken to protect certain species in British New Guinea; and within the past year the export of birds and plumage from India has been absolutely prohibited. Apparently in most countries of the Orient under British rule efforts are being made to curtail the wholesale destruction of birds for millinery purposes, and the enforcement of existing laws will inevitably drive the plume hunter to new fields, including the Philippine Islands. While it is not probable that many birds are now shipped from the Philippines, it seems desirable to prohibit such export before the plume trade has gained a foothold in the islands.

The Committee therefore respectfully requests your coöperation in this matter, and also requests that the subject be brought to the attention of

the Philippine Commission with a view to taking such action as may be possible to prevent the destruction of birds for export from the islands.

Respectfully,

WM. DUTCHER, CHAS. W. RICHMOND,
THEODORE S. PALMER, RUTHVEN DEANE,
FRANK M. CHAPMAN.
Committee on Foreign Relations.

Action on the memorial was taken as per the following letters :

WAR DEPARTMENT,
Bureau of Insular Affairs,
Washington, D. C., February 9, 1903.

GENTLEMEN:—

By direction of the Secretary of War, I have the honor to acknowledge the receipt of your communication to him of January 31, setting forth the preamble and resolutions adopted at the Twentieth Congress of the American Ornithologists' Union.

You are respectfully informed that your communication has this day, been transmitted to the Hon. William H. Taft, Civil Governor, Manila, P. I.

Very respectfully,
CLARENCE R. EDWARDS,
Colonel, U. S. Army,
Chief of Bureau.

DEPARTMENT OF THE INTERIOR,
Manila, June 24, 1903.

SIR:—

Replying to your letter of January 31, 1903, addressed to the Secretary of War, a copy of which was forwarded to me, I beg to say that there will be, in my judgment, no difficulty whatever in securing the adoption by the Philippine Commission of legislation to insure the protection of wild birds in the Philippine Islands.

There is at present, to the best of my knowledge and belief, no exportation of bird skins from these Islands.

I should appreciate it if you would send any literature on this subject which you have available.

Very respectfully,
DEAN C. WORCESTER,
Secretary of the Interior.

NEW YORK, August 27, 1903.

DEAR SIR:—

In response to your favor of June 24, I beg to enclose you herewith

copies of game laws as follows: Two Acts of India; Two Acts of New Zealand; and One Act of South Australia.

I also enclose a copy of the A. O. U. model law.

From all of this matter I think that you will be able to formulate a good law for our Philippine possessions.

Very respectfully,

WILLIAM DUTCHER,
*Chairman A. O. U. Committee on Protection
of North American Birds.*

From the tenor of the above correspondence it may be safely concluded that the bird life of the Philippine Islands will never be offered as a sacrifice on the altar of fashion or to the greed of man.

MIDWAY ISLANDS.—The Midway Islands are a station of the new Pacific Cable Company and belong to the United States. They are the homes and breeding places of countless seabirds, among them a species of pure white tern. Thousands of these birds suddenly appeared in the millinery market about a year since, under the trade name of 'Albiņas' and it was feared that these terns would shortly be as nearly exterminated as were the terns of the Atlantic coast.

The following correspondence shows what the Committee has done to preserve these birds.

NEW YORK, July 2, 1903.

HON. WM. H. MOODY,
Secretary of the Navy,
Washington, D. C.

DEAR SIR:—

I am informed that large numbers of seabirds breed and make their home upon the Midway Islands in the Pacific Ocean.

As these islands are under the jurisdiction of your Department, I beg in behalf of our Society that you will establish such rules and regulations as will prevent the killing and taking of the resident birds for commercial purposes, and also to prevent the taking of the eggs of the said birds during the breeding season.

I am informed that the Japanese people have been in the habit of visiting these islands for the purpose of killing birds for their plumage.

It is known that during the past few years enormous numbers of seabirds have been killed by the Japanese and have been shipped to the Paris, London, and New York markets for millinery ornaments; among

these birds were great numbers of a very beautiful form of the tern family known as *Gygis alba*.

Our Society is under many obligations to your Department for your hearty coöperation in our work for the preservation of sea-birds, the latest and one of the most notable instances being your order of April 24 *in re* the birds on the Dry Tortugas, Florida.

I am, with great respect, my dear Sir,

Very truly yours,

WM. DUTCHER,
Chairman.

NAVY DEPARTMENT,
Washington, July 3, 1903.

SIR:—

Replying to your letter of the 2nd instant, requesting the establishment of rules and regulations to prevent the killing and taking of the resident birds of the Midway Islands for commercial purposes, and also to prevent the taking of the eggs of said birds during the breeding season: I have to inform you that your letter has been referred to the Commandant, Naval Station, Hawaii, for report. Upon receipt of his report, the Department will advise you more fully in the matter.

Very respectfully,

W. H. MOODY,
Secretary.

ALABAMA.— There is great need of a new bird law in this State. The present law, passed in 1899, seeks to protect quite a long list of birds a portion of the year only, but it is practically valueless, as the provisions of the act do not apply to 60 of the 66 counties in the State. There is no session of the legislature until 1905. There is no Audubon Society in the State, and so far as known no bird students.

At the request of Mr. George W. Carver, Director Department of Agriculture and Experiment Station, Tuskegee Normal and Industrial Institute, a package of Educational Leaflets, Nos. 1 to 4, were sent for him to distribute at the Summer School.

Subsequently he wrote: "I have distributed them among our teachers and they take to them most heartily. I am sure they will do a great deal of good as each teacher will go into a community that has not been touched by them. Trusting I can be of further service to you in pushing this grand movement," etc.

There is a great field for educational bird work in this State; will not some generous reader of this report furnish a fund that will enable the National Committee to send to every teacher in Alabama bird leaflets that will enable them to teach the children in their charge the great economic value of the wild birds.

ARIZONA.—This territory has a very imperfect non-game bird law, although it was passed as late as March, 1901. The next session of the legislature will be held in 1905.

There is seemingly little interest taken in birds or bird protection.

ARKANSAS.—*Legislation.*—No change has been made in the law, which is practically the A. O. U. model. The game laws were improved by non-export and sale clauses. The next session of the legislature will be held in 1905.

Warden system.—No wardens were employed by the Thayer Fund.

Audubon work.—There is no organized society in the State, but a great deal of splendid work is accomplished by Mrs. Stephenson of Helena, who is a member of the A. O. U. Protection Committee. She writes:

“Since work of whatever kind is best measured by its results, mine, which is mostly of a personal character, and too often unfruitful, seems hardly worth mentioning. However, as sponsor for Arkansas something must be said.

“Early in the year, the game bills referred to above were presented to the legislature, and after many weeks passed. Later, it was reported that U. S. Judge Trieber (Judge of the Eastern District of Arkansas) had been asked to declare this new law unconstitutional, and that he had done so. In answer to that report he wrote the following letter:

““In reply to your inquiry I would state that I made no decision whatever in regard to the game law. An injunction was asked from me, and to have me declare the game law of the State prohibiting non-residents from hunting unconstitutional, but I declined to do so, stating that perhaps some State Judge could be induced to take that view, but in my opinion the law is constitutional. Thereupon, Senator Clarke did apply to Judge Hughes in Crittenden County, and he declared it unconstitutional. The only thing

I ever did was to grant an injunction, temporarily, to prevent the so-called game wardens, which means the dead beats, acting as constables and deputy constables in Crittenden County, from trespassing upon private lands for the purpose of annoying the negro tenants, but that has been dismissed now for want of prosecution. In my opinion, all game belongs to the State absolutely, and it has a perfect right to prevent anybody from killing, catching, keeping, buying or selling it, shipping or receiving it, and not only that, but the State can allow its own citizens to kill it and still refuse non-residents the same privilege. As to the wisdom of it, that is a matter with which the courts have nothing to do, but if the State expects to preserve any of the game there will have to be a more stringent enforcement of the law than there is at present.

“ ‘As to the so-called sportsmen: In my opinion there is very little difference between those residing in the State and those out of the State; they enjoy sport because they can see blood. They care nothing for game for the purpose of eating it, but it is considered a noble sport to kill helpless things; all of which only tends to show that our boasted civilization is a very thin veneering and the least scratch takes it off.

“ ‘With some men all you have to do is to yell “sport”; with others, “war”; and still others, “lynching”; but whatever it is when you boil it down it is nothing but the wild animal that is in us.’

“By constant watching and complaining when it is violated, I have upheld the protective law for song birds, and am glad to say there is a perceptible increase in their numbers in my field this past year. All work outside has been done through letters and the distribution of literature.”

The following sentiment expressed in an editorial in the Helena ‘Soliphone’ deserves wide publicity: “Let it be the unwritten law of America that no gentleman will kill a non-game bird, and that no lady will allow her hat to be decorated with the plumage of the innocent warblers.”

CALIFORNIA.—*Legislation.*—There has been no change for the better in the non-game bird law and no further effort can be made until the next session of the legislature, which will be held in 1905. In the interim, however, a strong public sentiment must be created in favor of the A. O. U. model law. As proposed in the last

annual report, an effort was made for a new law; a bill was carefully prepared, and was introduced and favorably reported by the Senate Fish and Game Committee. Owing to opposition from an entirely unexpected quarter, one in fact that should have given support rather than opposition to the bill, it was not pushed. It was thought better not to have any legislation rather than an unsatisfactory law.

Audubon work.—While no society has been formally organized, a great amount of very valuable bird protection work is being done by interested citizens. California is deeply indebted to Mrs. Josephine Clifford McCrackin of Wrights, for her noble and praiseworthy efforts to preserve the birds and trees of her State. One of her friends writes: "This good woman, one of our earliest literary workers and a former associate of Bret Harte on the old 'Overland Monthly,' despite her age, has done our State more good than a thousand prominent citizens. After having saved several of our noblest groves of redwoods (*Sequoia gigantea*) by having bills passed for their purchase by the State is now turning her attention to the preservation of our beautiful song birds. Her energy is tremendous and she carries through all she proposes to do."

Mrs. McCrackin's story of the 'Ladies Forest and Song Bird Protective Association of Santa Cruz County' is of so much interest that it is given in some detail:

"This Association was organized in December, 1901, through the efforts of Walter R. Welch, Deputy State Game Warden. His successor, C. A. Reed, felt the same interest in the preservation of song birds, and used his influence with the supervisors of this county to make the ordinance protecting birds of some effect, and as each member of our Association became at once an active worker in the cause, the song birds soon returned to their former haunts in the vicinity of Santa Cruz City. It is different in the country, I am sorry to say, though a number of our members live in my immediate neighborhood, in a grape and fruit-growing section, and like myself are convinced that the cherry crop, for which many song birds suffer death, is not in any measure made less by the alleged depredations of the birds that are with us at the time when cherries are ripe, yet the rancher, to his own detriment, with

the instinct of the savage, will persecute and kill every bird that dares to make the county its home.

“From the very beginning our aim and object was to awaken interest and find representation in the public schools, and I was instructed to write individually to each teacher, 109 in number; in most cases I received courteous assurances that kindness to all God’s helpless creatures was taught to the children in charge. In the Parochial school, the ‘Address to School Children,’ which I had written, fell on such fruitful soil that a number of really excellent, thoughtful essays were written by some of the pupils, not one of whom had reached the age of fourteen. The public schools evaded and avoided us, giving as a reason that the teachers were already overburdened with studies. (Many of the teachers, let me say, are members of our Association.) Game Warden Reed had 500 copies of the address struck off, at his own expense, and these have been distributed as far as they would go.

“The ‘Pastime’ of San Francisco republished some of my earlier articles from the ‘Sentinel,’ and its successor, ‘Western Field,’ brought out an article of mine on the subject in its first number.

“The ‘Pacific Fruit World’ of Los Angeles, readily consented to publish a strong protest I wrote against the barbarous course, pointed out by one contributor, to rid the country of the bird pest to hang wide-mouthed bottles filled with poisoned water up in the trees where the birds would come to quench their thirst.

“Later the ‘Breeder and Sportsman,’ San Francisco, published two articles ‘Save the Song Birds,’ in the second of which I spoke in the most uncomplimentary manner of women who still insist on having our best friends, our greatest solace in our quiet country homes, the song birds, tortured and murdered in order to wear this badge of heartlessness on hat or bonnet.

“Having been asked by the Woman’s Club of San Jose to speak before the Alliance of Clubs on bird protection I gladly answered the call, as it is most desirable to interest the ladies of Santa Clara County, for the line of that county runs through this part of the Santa Cruz Mountains, and we cannot protect birds in this county when they can shoot across the line from the other county into ours. We of Santa Cruz had made an appeal to the Santa Clara

supervisors to pass a protective ordinance in their county; to which they replied that such an ordinance had been passed in 1896. That it has been a dead letter so far is evident from the fact that that last relic of barbarism, robin pot-pie, is still existent in some households where they choose to believe that no protective ordinance was ever passed.

“What We Purpose to do in 1904.

“If my life is spared, and I am left in my position as President of our Association, I will propose to the members a line of work which shall have for its ultimate object the passing of a protective law by the legislature of California. Our foremost aim must still be the introduction of bird protection and bird study into the public schools. Education is better than prohibition.

“We expect to make a Club effort at the next session of the State legislature, and to work for the forming of a State Audubon society, with one president, and secretaries for the different districts or counties. So much for the State organization. At the present time, or rather with the opening spring, our efforts will be directed toward making it known, and felt, that there is a protective ordinance both in Santa Clara and Santa Cruz counties, and our association must prevail upon the ladies of San Jose, Santa Clara County, to help us. Any person can be appointed Deputy Game Warden without pay in this State; the San Jose Woman's Club will have some member so appointed; I too would seek a like appointment in Santa Cruz county, and together we might succeed in getting the supervisors to have notices printed, to be posted on trees and fences, to the effect that a bird protecting ordinance was in force in both counties.

“I shall make it my duty to write to the people in this State who are interested in bird protection, as one as old as I may venture on writing suggestions.

“Mr. Leonard Coates, an authority on fruit and fruit pests, is our faithful ally, for he is a firm friend of the song bird and has helped protect them.

“I am to address a few lines to the sportsmen who hold their meeting at Paso Robles next month. All the more willingly do I write to them since I wish to make a plea for the better protection

of Mourning Doves, killed off now in this portion of California at a shameful rate. For quail too I will make a plea, though I would hardly venture on this if I did not know that true sportsmen are gentlemen, for I have the honor of being a member, the only lady-member, of the California Game and Fish Protective Association.

“At present our Association numbers nearly fifty regular and over twenty honorary members. We confer honorary membership not only on those who have aided and are kindly disposed toward us, but to those who are indifferent to the cause we sometimes pay a like compliment. An honorary member of a ‘bird society’ will learn, after a while, to take just a little interest in birds, and see that they are protected.

“Mr. Samuel Leaske, Trustee of the Carnegie Library, has kindly promised that a space shall be set aside in the new library building for our literature, and there will be a reading room for children, where humane literature of every character will be received and kept for the perusal of the little ones.

“The dues of our association are merely nominal, 25 cents. What we ask of our members is that they abstain from wearing feathers on hats or bonnets except those of the ostrich or the chicken, and that they induce their friends to use no other kinds.”

Another devoted friend of the birds of California is Mr. W. Scott Way of Pasadena, who is alive to his civic duties and writes as follows: “I shall be very glad to take up, with other earnest workers, the organization of an Audubon society. I have had the thing in mind for some time. I will join anything or go into anything, that is alive, for bird or game protection. I am in the Pasadena Humane Society because it is working on broad lines, and as the bird protection matter is left in my hands you may be sure that that end of the work will not be neglected. I am also working the local Farmers’ Clubs for all there is in it in the way of bird protection.

“There is much need of faithful, persistent work here in the way of getting better bird and game laws, and in enforcing those we have. There has been much unlawful shooting in this country during the present month, and the protective association does not seem to have done anything to check it. When the annual meeting is held I expect to ‘put up a fight’ for better things. In

the meantime, I am ready to take on any new work, that I can possibly undertake, and if you can put me in communication with the right persons I will gladly aid the formation of an Audubon society.

"You will see by the enclosed clipping that I have a county bird protection ordinance in course of preparation. Soon as the local Farmers' Club acts on it I will take it before the supervisors.

"Please send me 100 copies of your Flicker leaflet. I want them for the next Farmers' Club meeting."

The California State Floral Society purchased for distribution among its members and others 1,000 copies of the National Committee Educational Leaflets and its secretary writes: "Our society most heartily approves of your method of education to protect the valuable birds of the country."

COLORADO.—*Legislation.*— During the last session of the legislature the A. O. U. model law was adopted. The next session of legislature will be held in 1905.

Warden work.— No wardens were employed by the Thayer Fund.

Audubon work.— A society was organized during the past year and is now doing effective work. The juniors of the organization have their own officers and manage their own business, with some supervision and advice from the parent society, whose secretary writes of the boys as follows:

"I am very proud of the boys and am confident that the work they are doing will be of much benefit for the protection of the birds of Colorado.

"Their meetings have been held once in two weeks, until lately they have decided that it is best for them to meet weekly on account of the large amount of work they have to do. There are visitors at each session and much encouragement is given to the boys. Mrs. Mackenzie, a prominent teacher of Wyoming, was in attendance at the last two meetings to gain information that would assist her in organizing a like society at her home. Miss West of Pueblo, Colorado, a teacher of much influence in that city, spent an hour with the juniors two weeks ago to secure advice that would enable her to organize an Auxiliary.

"The juniors, which I so justly and proudly claim, have the State

organization, and have decided that all others must be auxiliaries to theirs.

"It is a surprise and satisfaction to many who visit the boys while they are in session to note the very intelligent manner in which they handle parliamentary rules. It has required much of my time to coach them in their work, but I am well satisfied, for they never forget the advice once given.

"The secretary also contributes the following encouraging information: 'If you have any literature to distribute free kindly send some to Mr. Geo. J. Spear, Greeley, Colorado. Mr. Spear is one of the directors of our State organization, a prominent fruit grower and nursery man, and has applied for the appointment of Deputy Game Warden without pay, that he may prosecute parties in Greeley who are killing robins.'

"I think I have written you of the Fremont County Audubon Society, organized by the Hon. B. F. Rockafellow, which now numbers considerably over 300 members. There are several auxiliaries organized in the State and all are doing good work."

CONNECTICUT. — *Legislation.* — The A. O. U. model law is in force. Next session of legislature, 1905.

Warden system. — No wardens employed by the Thayer Fund.

Audubon work. — The Connecticut Society is very active, especially along educational lines, as the following extract from the Secretary's report shows:

"We have not a large number of new members to report; about 125 juniors, six teachers and eight other members, besides 700 associate members; these sign a pledge and receive a button, but do not pay or have a certificate. These members do not represent the work of the society; we have in circulation 70 sets of bird charts, and 20 libraries, besides our three illustrated lectures and reading cards. During the past year the society has spent for libraries, bird charts and other educational work \$170.28."

It is pleasing to note the growth of interest in bird protection and allied subjects, as indicated by the proclamation of Governor Chamberlain in setting apart May 1 as Arbor and Bird Day. He says: "The importance of preserving and multiplying forest and shade trees cannot be overestimated, and it is to be feared that we do not fully appreciate the great advantages to be derived from tree

and plant culture. Many of the trees which beautify our grand old State were planted by our fathers—let us, in our turn, plant trees, in whose branches song birds may build their nests and whose grateful shade coming generations will enjoy.

“I further request that the teachers in our schools endeavor to stimulate their pupils to an interest in the study of ornithology. It is surely an imperative duty to impress upon the boys and girls of to-day the sinfulness of robbing birds’ nests and snaring wild birds. Such acts of wanton cruelty should not go unpunished.”

NORTH AND SOUTH DAKOTA.—*Legislation.*—Non-game bird laws in both the Dakotas are lacking. A few birds are protected, but the present statutes are entirely inadequate. The citizens of these two States, which are so prolific of bird life, should awaken to the necessity for their preservation. The next session of the legislature will not be held until 1905.

Will not the press of these two great agricultural States in the interim awaken the citizens to the value of birds to all classes of agriculture? The National Committee holds itself in readiness to furnish information, on request, to the editors of the Dakotas, regarding the economic value of birds.

DELAWARE.—*Legislation.*—No change in the bird law, the A. O. U. model law being in force.

Warden system.—No wardens were employed under the Thayer Fund.

Audubon work.—The Secretary reports as follows: “The County Superintendent of schools, Mr. A. R. Spaid, gave his bird lecture at Dover during July and succeeded in obtaining the names of 25 teachers as members of the Audubon Society.

“Two arrests have been made during 1903 for shooting robins; the fines and costs in each case amounting to over \$10.00.

“The State Board of Agriculture has expressed its intention of sending literature on birds to the teachers of the Delaware schools and asks their coöperation in distributing it among the children.

“The Society has had copies of the bird laws of the State placed in all the stations of the Delaware railroads, and in all the post offices of those towns and villages where we have members, and permission to post the laws could be obtained.

“Our Society thinks that constant agitation through the press

should be its aim during 1904, and to strive to enroll children as members. It has other work under consideration, but as no definite plan of action has yet been decided on it would be unwise to present it in this report."

A most important and advanced step in bird protection work has been taken in Delaware during the present year in the appointment by the State Board of Agriculture of an Honorary Consulting Ornithologist. The selection of Mr. Charles D. Pennock, a member of the American Ornithologists' Union, to this important position gives assurance that the farmers who listen to his addresses on birds will learn scientific facts of great value to them.

DISTRICT OF COLUMBIA.—*Legislation.*—None. A. O. U. model law in force.

Audubon work.—The Secretary reports as follows :

"This Society was organized for the study and protection of birds. Under the heading of study, the work accomplished has been through lectures, monthly meetings for members, classes for the instruction of teachers conducted by different ornithologists, members of this Society, for which no charge is made. Fifty or sixty teachers have been taught. In these classes illustrations are made by means of bird skins owned by the Society. Classes for popular instruction were held through the spring. These were well patronized and created great enthusiasm, especially the outdoor classes, realizing for the treasury a considerable sum.

"Field meetings were held through April and May for members and their friends, each personally conducted by two or three trained ornithologists. Leading, as they did, through the beautiful woods around Washington, so easy of access, to which was added one water excursion, these meetings are said to be the crowning pleasure of the year's work.

"For the protection of birds, examination of millinery stores has been made by officers of the Society ; coöperation with the Audubon Society of the State of Virginia, to secure the enactment of an adequate law for that State ; coöperation with the game wardens of Montgomery County, Maryland, to all of whom copies of our game laws were sent. Occasional examinations of the markets and commission houses revealed no flagrant violation of game laws, and no song birds offered for sale.

"Protection has been given to two breeding colonies of Night Herons near the Eastern Branch of the Potomac. The existence of breeding colonies so near the city of Washington is of great interest. All sale of grebes in the market has been effectively stopped. The sale of live native birds has been reduced to a minimum. The laws for the protection of birds and game have been generally well observed.

"The Audubon Society of the District of Columbia begins its seventh year with renewed activity. The remarkable spread of bird protection sentiment manifested in the greatly increased interest in nature books and nature study, the rapid growth of bird-protective legislation, and the organization of new societies throughout the land, is both gratifying and stimulating. The ready response of the people to organized effort clearly indicates that energy and persistence are alone needed to awaken that enthusiasm through which protection of the birds becomes an assured fact. The District Society, which has so well borne its part in the past, purposes to conduct a yet more vigorous campaign during the coming year."

FLORIDA.—*Legislation.*—The A. O. U. model law is still in force, although it had a narrow escape from a serious amendment. Fortunately through the vigilance and very active work of Mr. R. W. Williams, Jr., the Florida member of the A. O. U. Protection Committee, the amendment was killed in the Senate after it had passed the House.

The amendment was known as House Bill No. 561 and was introduced by Mr. McNamee of Hillsboro, as follows: "A bill to be entitled an act to exclude that certain family of sea fowls called the tern family from the provisions of all statutes forbidding the killing of plumage birds and providing penalties for a violation for said killing." It was referred to the Committee on Fisheries, which reported it favorably. Mr. McNamee stated in his speech for the measure in the House, that "these birds were a nuisance to man and destroyed the fish industry in Florida; that their pelts were of commercial value and there is no reason why the citizens of Florida should not be allowed to reduce them to money." He also said: "No one knows from whence they come, they are only with us a short time, and it is senseless to protect them." The bill



LAUNCH 'AUDUBON' USED BY WARDEN IN SOUTHERN FLORIDA.

passed the House by a vote of 32 yeas to 26 nays. In the Senate the bill was referred to the Judiciary Committee, on motion of Senator Harris of Key West, where it remained when the legislature adjourned on June 5. This narrow escape forcibly emphasizes the fact that every legislative session must be closely watched in order to prevent the assaults of the ignorant and perhaps the venal. As there will not be another session of the legislature until 1905, the present excellent bird law will remain unchanged until then.

Warden work.—In the report for 1902 the Chairman urgently recommended the purchase of a naphtha launch for the use of the warden who has charge of the district at the extreme southern part of the Florida Peninsula, and the thousands of Keys and small islands in that section. The Executive Committee of the Florida Audubon Society promptly took the matter in hand, with the result that a special fund of \$300 was raised, and a seaworthy launch 23 feet long, with a 3 horse-power engine was specially built and is now in daily use. The boat is capable of making seven miles per hour, and has traveled hundreds of miles since it went into commission shortly after May 1. The boat bears the name of the great artist-naturalist 'Audubon,' and is the property of the Florida Audubon Society and is loaned by them to the National Committee for the use of warden Bradley, who is paid for his services by the Thayer Fund.

Four paid wardens are employed in Florida. Paul Kroegel has been placed in charge of the Pelican Island Reservation on Indian River. As stated in the report for 1902, the Committee thought it very important that this interesting island should be purchased in order that perpetual protection should be given to the colony of pelicans that had so long made it a breeding place. After many months of effort and an expenditure of considerable money in surveys and other necessary red-tape, an appeal was made to the President of the United States, through the U. S. Department of Agriculture, to have Pelican Island set aside as a public reservation. President Roosevelt, with his well-known promptness in all matters relating to the preservation of wild life, issued the following order:

WHITE HOUSE, March 14, 1903.

It is hereby ordered that Pelican Island in Indian River in section nine, township thirty-one south, range thirty-nine east, State of Florida, be, and it is hereby, reserved and set apart for the use of the Department of Agriculture as a preserve and breeding ground for native birds.

(Signed) THEODORE ROOSEVELT.

Pursuant to this order the Secretary of Agriculture appointed as the Keeper of the reservation Mr. Paul Kroegel, the warden employed by the Thayer Fund.

(Copy.)

April 4, 1903.

MR. PAUL KROEGEL,
Sebastian, Florida.

SIR :—

Under an order signed by the President, on March 14, Pelican Island has been reserved as a breeding-ground for native birds under the charge of the Department of Agriculture. This island, as you are aware, has been under the care of the Committee on Protection of Birds of the American Ornithologists' Union for the last two years. For the present the Committee will coöperate with the Department in preserving the birds, and upon recommendation of the Chairman of the Committee you have been appointed as Warden in charge of the reservation.

No shooting will be allowed on the island or in the vicinity and no one will be allowed to land on the island without permission from you or from this department. Any infraction of this rule should be reported promptly with a statement of your action. You should make every effort to make the fact generally known that the object of establishing this reservation is to preserve the pelicans, and you should strive to secure the coöperation of the public so that the birds may be protected, not only on their breeding grounds but also after they leave the island.

Respectfully,

(Signed) JAMES WILSON,
Secretary.

Two large signs were painted and placed at the edge of the island where all who approached could not fail to see them, the signs reading as follows :

U. S. DEPARTMENT OF AGRICULTURE.
PELICAN ISLAND RESERVATION.

(Established by Executive Order, March 14, 1903.)

NO TRESPASSING ALLOWED, NOR FIREARMS PERMITTED ON THE ISLAND.
THE BIRDS MUST NOT BE DISTURBED.

PERSONS DESIRING TO LAND MUST OBTAIN PERMISSION FROM THE
WARDEN AT SEBASTIAN.

By order of

JAMES WILSON,
Secretary of Agriculture.

The fact that this island is a reservation was advertised in the local press and the result has been most satisfactory, as the following report made by Mr. Kroegel shows :

Sebastian, Fla., Aug. 25, 1903.

Department of Agriculture, Biological Survey,
Dr. C. Hart Merriam, Chief of Division.

DEAR SIR :

By request of Mr. William Dutcher, of the American Ornithologists' Union, I beg to report that the nesting season on the Pelican Island Reservation is now over. It has been one of the longest seasons known, commencing Dec. 1st and ending July last. During the season there have been between three and four thousand young birds raised, as near as I could judge. I have endeavored to carry out the rules laid down for the protection of the island to the best of my ability, and am glad to say that I have been fairly successful in preventing trespassing. Of course the amount at present available will not allow me to keep as close a watch on the island as should be, but the mere fact that some one has the oversight of the island is enough to prevent serious depredations. I will of course keep an eye on the island until nesting starts again, so that what birds remain near the island will not be molested.

Yours respectfully,

(Signed) P. KROEGEL.

The following letter from Mr. C. W. Beebe, of the New York Zoölogical Society, under date of New York City, Sept. 30, 1903, confirms the report of Warden Kroegel. He says :

"Let me congratulate you on the success attending the protection of the Brown Pelicans at their breeding resort on Pelican Island in the Indian River, Florida.

"I visited the Island in February of the present year and found the warden alert, warning notices posted, and the birds fearless and greatly increased in numbers, both on the island and especially in the neighboring overflow colonies."

Capt. C. G. Johnson, Keeper of the Sand Key Lighthouse, was re-employed for the past season. He reports that the three species of terns breeding at his station had a most favorable season and that no eggs were taken nor old birds shot. From a description of the three sizes of terns breeding on this Key, sent to me by Mr. Johnson, I suspect that the one he calls "Kill-em-Peters" must be the Least Tern (*Sterna antillarum*). They numbered this year at the close of the season some 3,000 birds, and it is therefore one of the largest colonies of this species remaining in the United States, and is deserving of special protection, from the fact that on the Atlantic coast the Least Terns more nearly approached extermination than any of the other species.

That the large and important colonies of Noddy and Sooty Terns breeding upon Bird and other Keys, in the Dry Tortugas, should again have protection, application was made to the Honorable Secretary of the Navy for permission to establish a warden on Bird Key. In compliance with this request the following order was issued :

U. S. NAVAL STATION,

Key West, Fla., April 24, 1903.

ORDER.

By direction of the Secretary of the Navy, and in deference to a request by the Chairman of the Protection Committee, North American Birds, American Ornithologists' Union, New York City, in the State of New York, all persons connected with the Navy of the United States or the Marine Corps, or citizens of the United States, temporarily in the vicinity of each, any, or all of the islands, keys, or above-water shoals in the group geographically called Dry Tortugas, are hereby prohibited from disturbing, during the nesting period, any sea birds, such as sooty and noddy terns, on the small island known as Bird Key; and all persons, whether foreign or domestic, are hereby prohibited from taking eggs from any non-domesticated birds from any of the islands, keys or shoals of the Tortugas group. It must be understood that the molestation of birds by



BIRD KEY, FLORIDA, PROTECTED TEEN COLONY. (Fort Jefferson, Garden Key, in distance.)

word or gesture, or by the use of any weapon, trap or missile, or device whatever, is in violation of the law of the land, except at certain times and under certain circumstances strictly defined by law.

(Signed) GEORGE A. BICKNELL,
Captain U. S. N., Commandant.

Thereupon Mr. W. R. Burton was appointed special warden and was directed to proceed to and remain on Bird Key.

The following letter of instructions was given the warden :

This is to certify that the bearer, Mr. W. R. Burton, is the duly authorized representative of the American Ornithologists' Union.

He is appointed by the said Society for the purpose of protecting the birds that breed on the several keys in the Dry Tortugas.

The said warden, has the permission of the Hon. Secretary of the Navy, to camp upon any of the keys or islands of the Dry Tortugas for the purpose above stated.

The said warden is directed to report to the Commandant of the Naval Station at Key West for transportation to the Tortugas and on his arrival at the Tortugas is to report to Lieut. R. B. Sullivan, U. S. M. C., Commanding the Marine Barracks, Dry Tortugas, Florida.

The said warden, Mr. Burton, is instructed to enforce the law of the State of Florida, which makes it a misdemeanor to take the eggs of any breeding bird, or to disturb them in any manner, or to kill them at any time.

The said warden will report his arrival at the Tortugas to the undersigned by letter, and will follow such further instructions as he may receive from time to time.

By order of the American Ornithologists' Union.

(Signed) WILLIAM DUTCHER,
Chairman of the Protection Committee.

Mr. Burton made the following interesting report at the close of the season, July 15, when he left the Tortugas :

DRY TORTUGAS, July 15, 1903.

I arrived at Bird Key on ^{Monday} June 19, in company with Mr. Herbert K. Job; I found that the birds had been laying some time, and that some eggs had been taken; there were probably 200 eggs on the ground when we arrived; the birds continued to lay until as late as June 15, in considerable numbers. It was impossible to count the eggs on account of the manner in which the Sooties lay; they deposit their eggs on the ground without any attempt to build a nest, and a great many lay on the open beach without any cover of any kind, but the majority deposit their eggs

under a clump of grass, weeds, or the cedar bushes with which the key is nearly covered. Mr. Job and I estimated that there were about 3,600 of the sooties and about 400 noddies, but as a great many eggs were deposited after he left, I think there must have been at least 5,000 of the sooties and 600 noddies. There are no other birds that nest, although the man-o'-war birds roost there; there were about 300 of them, but they do not molest the gulls in any way, nor do they eat the eggs or young, as reported; the gulls easily drive them away when they wish, as they can whip the man-o'-war birds easily. I did not see a single crow while I was at Tortugas, nor are there any animals of any kind on Bird Key to eat the eggs or young. The only enemy they seem to have are the sea and land crabs with which the island is infested; they undoubtedly eat a great many eggs.

The birds are partly protected by the efforts of Capt. Geo. A. Bicknell, Commandant of the Naval Station at Key West, of which Tortugas is a part; he is a fine officer and has done everything he possibly could to assist me in protecting the birds. An order was posted by his direction at the Fort and the Key, prohibiting any one from landing without special permission. If the terns are protected during the time that they are laying and until the eggs hatch, they will increase very fast, as the mortality is very small.

The birds arrive at the Key about the middle of April and leave from August 15 to the first of September; I am told that they all leave at one time and in the night. The eggs were all hatched on the date I left the Key, July 15.

Our fellow member, Rev. H. K. Job, who accompanied Mr. Burton, supplements the statements of the warden in the following letter:

I went with Mr. Burton, the new warden, to Bird Key, Dry Tortugas, arriving there May 19. I was with him the first four days of his stay, instructing him in scientific observation and in photography.

There are two species of birds breeding, the Sooty Tern and the Noddy. The former are by far the more abundant, numbering, at a guess, five to six thousand. Of the Noddies, I should say, there were hardly a thousand. There were also some Man-o'-war Birds resorting to the key, but not breeding.

At the time of our arrival, most of the Noddies had a fresh egg in each nest, and perhaps about half the Sooty Terns had also a fresh egg. Some eggs had already been taken, it was said, by a party. This, however, did no damage, for by the end of my stay, the 22nd, nearly all seemed to have laid, and they were protected thereafter. No noddy had more than one egg, and in only three of the Sooty Terns' nests, out of thousands inspected, did I find as many as two.



SOOTY TERNS ON BIRD KEY, FLORIDA. PROTECTED COLONY.



SOOTY TERN AND YOUNG, BIRD KEY, FLORIDA.

The nests of the Noddies possibly could be counted, being built upon the bay cedar bushes, but to accurately count those of the Sooties, on the sand under this thicket, would be next to impossible.

The opportunities for bird-photography upon Bird Key are simply amazing. The Noddies are perfectly fearless, and the Sooty Terns, though more nervous, are yet very tame indeed. I could focus, even upon the latter, on their nests, at a distance of only three or four feet.

As the warden will be able to make a more complete report, I will not attempt to describe the habits of the birds.

Upon my return, stopping at Key West, I called upon Commandant Bicknell, in command of the Naval Station. He was very kind, expressing sympathy and great interest in the work of bird protection, regretting that many of the people of Florida seem "determined to make of their beautiful State a lifeless, treeless desert as fast as they possibly can," and promised to do all in his power to prevent this sad issue.

I also made a tour through the Key West markets, and found one stand, kept by a negro, where eggs of the Sooty Tern, locally called "Egg Bird," were on sale, at 15 cents a dozen. The man had only a few dozen on hand, and *said* they were brought from the Bahamas.

During my short stay on Bird Key warden Burton stopped several parties of marines from the fort in attempts to gather eggs, and was doing his work faithfully and intelligently, entering into the spirit of it.

Bird lovers will profoundly sympathize with him in the tragic death of his little son upon the lovely key, sacrificed in the cause of bird protection.

Respectfully submitted,

HERBERT K. JOB.

Our warden in Monroe County, Mr. G. M. Bradley, has been continuously employed since the last report, during which time he has cruised hundreds of miles along the coast and among the keys where thousands of birds still breed. He has also patrolled on foot the swamps where boats could not penetrate. On one occasion he just escaped being bitten by a large cotton-mouth moccasin snake. He has every part of the territory under his care posted with warning notices and has watched and warned many boat loads of cruising tourists and hunters. Many visits have been made to the city and island of Key West, which is in Monroe County, although it is over 70 miles from his home. His excursions have extended as far north as Chokoloskee on the border of Lee County, 60 miles away, and eastward his patrol has extended to Key Largo. There is no doubt that it is well known in all that district that a deputy sheriff is continually on the lookout for game and bird law violations and the moral effect is excel-

lent. Prior to June all of the wardens' journeys were made in a row or sailboat which was found to be too slow to be effective. Since that date Mr. Bradley has been using the launch 'Audubon' which was provided by the Florida Audubon Society. His movements now are much more rapid and plume hunters could not escape arrest should any come into his territory.

In May two members of the American Ornithologists' Union, Messrs. H. K. Job and A. C. Bent, visited this section of Florida to study and photograph birds and while there spent a great deal of time with our warden. At the request of the Chairman they reported on the condition of bird protection work in Monroe County. The report is so interesting and valuable that it is embodied herewith.

MY DEAR MR. DUTCHER:—

In response to your request we will try to briefly describe the conditions as we found them, in southern Florida this spring. Under the guidance of your wardens, Messrs. Guy M. Bradley and Wm. R. Burton, we visited and inspected during April and May, quite thoroughly, nearly all the principal rookeries in southern Monroe County, from Whitewater Bay and the everglades southward to the coast, and on the mangrove keys from Cards Sound to Indian Key and Cape Sable.

Our first trip, two miles inland to Bear Lake, served to locate a small rookery of Wood Ibises, consisting of about 20 nests, from 12 to 15 feet up in the tops of red mangroves, on a small island. The nests at this time, April 27, all held young birds of various ages. In order to reach this rookery Bradley had to carry our canoe on his back for two miles through a thick tangle of mangrove forest, which is enough to discourage the average native nest robber.

It required three days of hard work to visit the big rookery at Cuthbert Lake, which lies about seven miles inland, nearly on the edge of the everglades, and can be reached only by laboriously poling and sculling a small skiff through a chain of six lakes connected by narrow, tortuous creeks, overgrown with a thick tangle of red mangroves. The rookery itself is a mangrove island of less than two acres, on which we estimated that there were at least 4000 birds nesting. About one half of the colony were Louisiana Herons, of which fully three quarters had young of various ages on May 1. The White Ibises of which we estimated that there were about 1,000, were just beginning to lay and had from one to three eggs in each nest. There were about 600 Florida Cormorants, about 200 Anhingas, and about 100 Little Blue Herons in the colony, all of which had nests with eggs and with young. We counted 18 American Egrets, and found their nests with eggs, as well as with young of various ages, some of which were

nearly grown. We also counted 12 Roseate Spoonbills, as they left the island, but found only three of their nests, two with eggs and one with two young birds less than half grown. A small flock of Wood Ibises flew from the rookery when we arrived, but we found none of their nests. A few Everglade Kites came here to roost at night.

But even this great rookery was far surpassed by one discovered in an almost impassable morass at Alligator Lake, about four miles inland from near Cape Sable; the mangrove islands, on which the birds were nesting, were well protected by impenetrable jungles of saw grass, treacherous mud holes, and apparently bottomless creeks of soft mud. The various species of the Heron family were nesting here in countless numbers, White Ibises, Louisiana Herons, Roseate Spoonbills, Snowy Herons and American Egrets; there was a perfect sea of nests and hosts of young birds in all stages of growth, most of them being hatched at this time, May 16; but the area was too vast and the traveling too difficult to arrive at any accurate estimate of their numbers or relative abundance. We were able to spend but one afternoon in the actual rookery and could get to but a small part of it. Wood Ibises were probably nesting beyond where we penetrated, and possibly other species.

Among the small rookeries we found a few things of special interest, notably a small colony of half a dozen pairs of Great White Herons, nesting on one of the smaller mangrove keys; the nests, on April 29, all held young birds, some just hatched and some fully grown.

These birds are common among the Keys and we frequently found nests of this species and Ward's Heron from which the young had flown. Both of these species are extremely wary and do not need much protection.

On a large, partly sandy key we found a colony of Laughing Gulls preparing to breed; also a breeding colony of about 40 pairs of Least Terns, a few Wilson's Plovers, and a few Black-necked Stilts, all of which had fresh eggs on May 8.

A flock of about 100 Black Skimmers constantly frequented a flat, muddy island in one of the bays, but we could find no evidence of their breeding.

We made a special effort to locate the breeding grounds of the Man-o'-War Birds, which were everywhere abundant among the Keys, but were unsuccessful. We discovered several of their roosts, one of which contained from 1,000 to 1,200 birds. We were forced to conclude that they do not breed in this region at all or that they breed at a much earlier or a later date.

In Southern Florida, as elsewhere, the plume hunters have done their work thoroughly, but there is not much to be feared from them in the future, simply because there are very few desirable plume birds left for them to hunt. The American Egrets and Snowy Herons are so reduced in numbers that it does not pay to hunt them. There are, however, a few of these birds still left in nearly all of the less accessible rookeries, so that,

under adequate protection, they ought to increase sufficiently to partially restock their former haunts.

The Louisiana and Little Blue Herons, particularly the former, are still very abundant and as they are not sought after by plume hunters, they will continue to hold their own for a long time to come.

The White Ibises are still very abundant, but as they are killed in large numbers by gunners in the winter and the young are much sought after by the natives for food, they need protection.

The Roseate Spoonbills are steadily decreasing in numbers from the same cause and certainly need most stringent protection to save them from extinction. Their breeding grounds are restricted to the most inaccessible localities from which they can be very easily driven by persecution; their beautiful plumage makes them attractive prey for the sportsmen and tourists.

You are certainly fortunate in your selection of wardens for the protection of this inaccessible region, and it would be hard to find better men for this work than Messrs. Bradley and Burton. The rookeries are so widely scattered and traveling is so difficult, either on land or water, that it is almost impossible for two, or even three, men to cover this whole region at all thoroughly. The native conchs and negroes, many of whom are desperate characters, can, by watching the wardens' movements, visit the rookeries with impunity and make wholesale depredations on the young herons, ibises and even cormorants for food. Several expeditions of this kind have already been broken up by the judicious employment of negro spies, who have kept the wardens informed.

The most effective work against the plume hunters can be done by working against the purchasers of plumes, thus destroying the demand, rather than against the hunters themselves, who are expert woodsmen and very difficult to catch. All of the principal rookeries and roosts have been thoroughly posted and whenever we went to explore a new one, Bradley always carried a supply of warning notices, which he nailed to trees or stakes in conspicuous places.

The natives are beginning to realize that the birds are to be protected, and that the wardens are fearless men who are not to be trifled with.

The Bradleys have the reputation of being the best rifle shots in that vicinity and they would not hesitate to shoot when necessary. The Bradleys and Burton together would be more than a match for any party they are likely to meet.

A power launch of light draft would aid them materially in moving about quickly, as many days are wasted in trying to beat through the narrow channels in a sail boat.

We sincerely hope that no efforts will be spared to thoroughly protect these rapidly diminishing colonies of interesting water birds, some of which are not to be found elsewhere within the limits of the United States.

Very truly yours,

A. C. BENT.

HERBERT K. JOB.

Audubon and Educational Work.—The report of Mrs. Kingsmill Marrs, Chairman of the Executive Committee, gives in detail the activities of the Society for the past twelve months.

“I can report progress for the year in increasing membership by which the work has spread into eleven new counties; much interest has been aroused in the State which we hope will help the introduction of Nature Study, including bird study, in certain grades of schools. This matter is left optional with County Boards, but its adoption and incorporation in the “State Course of Study” is a cause for congratulation considering the antagonistic attitude by many toward bird protection three years ago when the society was founded.

“There should be no feeling of discouragement if our membership does not increase as rapidly as like societies in other States. Present membership, 656; gain in the year, 256. Leaflets distributed, 3,500.

“Warning notices sent out, 250 exclusive of those posted in post-offices and those placed by courtesy of the Southern Express Company in its offices. Local secretaries, 8. Massachusetts Audubon Charts, 15, in charge of local secretaries who lend them to schools. During the summer vacation several charts have been retained for bird classes. Four prizes were given, at close of school year in Orlando, to children of ten or twelve years for bird chart compositions; the list for competition was open to any school using the chart, but few teachers interested their pupils, fearing local prejudice against bird protection. We have 53 teachers as members; 36 have joined the past year.

“Some 300 letters have been sent to members of the Legislature, horticulturists, agriculturists, principals of schools and individuals, with educational or statistical leaflets. Many articles have been written on bird protection, bird study, and the value of birds to farmers and fruit growers; these have been published in the ‘Times Union’ by the courtesy of the editor, Mr. Wilson, in ‘The Agriculturist’ by Mr. Painter, and in ‘The Southern School and Home.’ Frequent editorials, the value of which in reaching homes where our leaflets might not, are greatly appreciated. Money to the amount of \$300 was chiefly subscribed by members of the Society for building a naphtha launch for the use of the game

warden in Monroe County. Contributions have also been given by various members and friends of the Society to defray the salary of the warden at Cape Sable from September to December, otherwise a most efficient and valuable man could not have been kept at his post, owing to lack of money in the Thayer Fund. A more liberal support of the Thayer Fund is urged.

"The Florida State Federation of Women's Clubs have a sub-committee for the preservation of birds, and its chairman, Mrs. Graves, has done efficient work at Greencove Springs and Ormond, our Society helping by leaflets, charts, etc.

Thanks are due to our vice-president, Mr. R. W. Williams, Jr., of Tallahassee, who has rendered our Society and the State most efficient aid toward bird protection, and for the efforts of Mr. W. N. Sheats, State Superintendent of Instruction, in behalf of 'Nature Study for Schools,' whereby the introduction of bird study is now a possibility."

Mr. R. W. Williams, Jr., the Florida member of the A. O. U. Protection Committee, says: "The sentiment against the useless slaughter of birds in my State is growing and I believe I foresee an awakening to the true value of our avifauna. I was delighted to receive information, a short time since, that 'bullbat' shooting had almost entirely ceased in my county. I wrote a very strong letter of condemnation of the practise to an influential friend in Tallahassee and requested him to use his utmost efforts to discountenance the 'sport.' I was greatly pleased and gratified to receive an assurance that he would do all in his power to discourage it. This, coming as it does from an old offender, is cheering.

"During the last session of our Legislature in April and May, 1903, persistent effort was made to exclude from protection the terns. Through the earnest effort of Dr. DeWitt Webb, a representative of St. Johns County, we were able to defeat the measure in the Senate, notwithstanding its passage by the House. I would be ungrateful if I did not also acknowledge with gratitude the splendid service of Hon. W. Hunt Harris, the senator from Monroe County, without whose assistance the bill might have passed the Senate. The vote in the House was astonishingly encouraging to those interested in bird protection, for, while the bill passed that body, the minority vote nearly equalled that of the

majority. It demonstrates the lively interest that is taken in bird protection, even by men who ordinarily would vote for a bill at the request of a fellow legislator when doing so would in no way reflect upon them in the eyes of their constituents.

"During the year a prosecution was instituted in Jacksonville against a young man for removing some young mockingbirds from their nest. The prosecution was based upon a mistaken set of facts and was forthwith dismissed. The young man, instead of removing the birds from the nest, was endeavoring to replace them, a sudden gust of wind having dislodged them. This, too, demonstrates some progress in protection.

"The Florida Audubon Society is very active and is accomplishing a great work in the right direction, *i. e.*, educating the people to the value of birds; the time is not far distant when the subject will form part of the school and college curriculum.

"Progress in this direction must be slow. Prejudices and instincts of generations must be overcome; all the signs, however, are encouraging."

GEORGIA.—*Legislation.*—After a long, hard fight, extending over three legislative seasons, the A. O. U. model bill became a law by approval August 15, 1903, but by its own provisions does not go into effect until January 1, 1904. In addition to the non-game bird law the game law was greatly improved by materially shortening the open seasons.

Warden system.—No wardens were employed by the Thayer Fund, but during the coming season it is proposed to extend the system on the Georgia coast to all localities where birds are found breeding in colonies of such size as to warrant the necessary expenditure.

Audubon work.—In June last Dr. E. E. Murphey, of Augusta, wrote the Committee as follows: "Within the last few days I have been approached by several of the most influential and prominent people of our city in regard to inaugurating the Audubon movement here. I believe that the time is ripe for us to do this and trust that within a very few weeks you may shade Georgia on your map."

Later a letter was received from Prof. Starnes, of the Experiment Station, saying, "I shall endeavor to push matters on to a

thorough organization. I am so greatly interested in the subject, and feel so strongly the importance to the agricultural interests of the State of a working Audubon Society, that I cannot cut adrift until one is fairly underway. Do not conclude, therefore, that nothing will be done in Georgia to further the cause, if we appear somewhat inactive for a while. Our efforts shall now be directed to getting the Mourning Dove transferred from the game list, and the Meadowlark from the proscribed list to the protected list."

The above interests coalesced, resulting in the organization of a society which already numbers among its members some of Georgia's best and most public spirited citizens. There is a great work for them to do which will need all the push and energy that can be gathered together. One of the most important activities of the Society will be to see that the provisions of the two new bird and game laws shall be presented by the Judges of the Superior Courts to the Grand Juries at each regular term of said courts. A second and no less important matter is to see that large numbers of the educational leaflets issued by the National Committee are distributed throughout the State among the agriculturists, the press, and especially among the schools, in order that the public may be fully instructed regarding the great economic value of the birds of Georgia.

HAWAII.—The following letter from Mr. Henry W. Henshaw, a Fellow of the American Ornithologists' Union, gives a clear and interesting outline of bird matters in the Hawaiian Islands. He says:

"Yours at hand. I framed a bill for the protection of the island birds, which was practically an embodiment of the A. O. U. model law. Unfortunately it failed of passage, being killed by the sportsmen of Honolulu, or more particularly by one sportsman. This was particularly exasperating, as in framing the statute I kept specially in mind the needs of the sportsmen, well knowing that without their approval it was hopeless to present the bill. Had I been in Honolulu I have no doubt the bill would have become a law, as it was probably through a misapprehension of the facts that any opposition to the clauses affecting game birds developed.

"I may attempt another bill, practically the same one, this

session, but not unless I can be down there to explain away any opposition. However, I must say that the passage of a law for protection is not of so much importance in the islands as would appear, simply because its provisions cannot be enforced. Game wardens are quite out of the question. There is no money to pay them, and practically very little game to preserve or to regulate the shooting of. The small insectivorous birds, which it is of the greatest importance to protect and preserve, all live in the remote and dense, uninhabited forests, where surveillance is impossible. Nevertheless the fact that there is a law with penalties for infraction is of itself a certain though insufficient protection, and can be invoked in such extreme cases as the collection of birds for millinery purposes.

"The most hopeless feature of the whole business is the undoubted fact that Hawaiian birds are fast dying out from some one obscure cause or from a combination of causes. There is now, so far as I can ascertain, no indiscriminate killing of the native birds, and very few are sacrificed by the leis hunters. Under similar conditions our birds would increase fast enough, but both large and small are disappearing and no one has suggested an adequate cause. About five years ago Perkins collected in a certain locality in Kona, where he found three rare species to be quite common while the commoner species were in swarms. He says the locality was simply a bird Paradise. Last year I visited the place, in which probably a gun has not been fired since Perkins was there. Ten days of the most careful search failed to discover a single individual of either of the three species, and the common birds were anything but abundant. It was a cattle range in Perkins's day and is now, and the only change I was able to note was an abundance of the Mynah which in Perkins's time was probably not there at all. Yet the Mynah, so far as I can see, does not meddle with the native birds.

"I have gone into this subject at some length in my recently published 'Birds of the Hawaiian Islands,' though about all I say is that I do not know anything about the matter.

"So it is a bit discouraging to try and frame laws for the protection of birds from men when, as a matter of fact, they require to be protected from an unknown enemy rather than from man."

IDAHO.—*Legislation.*—The non-game birds of this State have no legal protection whatever. Next session of the legislature, 1905.

Audubon work.—There is no organized society at the present time, although quite recently the Committee received an inquiry from a citizen in Weippe asking for information regarding Audubon work and method of organization.

ILLINOIS.—*Legislation.*—No change in the non-game bird law. The A. O. U. model law is in force.

At the session of the legislature last winter the game laws were amended so as to prohibit the shooting of Ruffed Grouse and Prairie Chickens for four years. Another amendment prohibits the sale of Illinois killed ducks, and limits the bag which any one man may make in a day.

Warden system.—No wardens were employed by the Thayer Fund. However, the State game wardens are very active and there have been a number of prosecutions of men who have disregarded the Prairie Chicken law. Fines were inflicted and a salutary lesson taught. One Chicago millionaire who went to the scene of his shooting in an automobile was captured on the way back with Woodcock in his possession. It was before the opening of the season and the man was fined.

The small boy has been taught to respect the song bird in Illinois. It is the Italian workman who is the worst offender. He goes out Sunday and shoots everything in sight. Many of these Italians have been caught and fined, but their fellow countrymen are slow to learn a lesson.

With the exception of one dealer, the bird sellers of Chicago have ceased to traffic in native American birds. The one offender was fined heavily at one time but he still plies his trade, though he does it half secretly. It is more than probable that ere long a means will be found to put an end to his illegal business.

Audubon work.—Mr. E. B. Clark, the Illinois member of the A. O. U. Protection Committee, says: "The year in Illinois has been marked by an increase of interest in the preservation of bird life fully as great as in any year since the phenomenal change in public sentiment regarding bird protection which took place a few years ago. The agreement with the millinery manufacturers

is shown to have had excellent results. There is an almost utter absence of gulls, terns and other protected birds from the hats shown in the great stores where the women in Chicago and of the country round about do the greater part of the purchasing.

“The gulls and terns have been unusually plentiful during the fall migrations along the west coast of Lake Michigan. I have seen more Bonaparte Gulls than during any season for twelve years past.

“The protection situation in Illinois may be summarized under the one word, progress.”

The Secretary reports a rapidly growing interest in Audubon work throughout the State, that the membership is increasing, and that branches are being established in some of the larger cities, although this special feature does not grow as rapidly as could be hoped. Large numbers of leaflets have been distributed, 1500 having been sent to milliners in the State, 2000 to State Superintendents of schools for teachers, and many to Farmers' Institutes, for distribution. A generous and public-spirited woman, a member of the society, presented 56 colored slides to illustrate a lecture which is now in use and is making many friends for the birds.

The press of the State is giving material aid by the publication of articles about birds; bird charts are being placed in schools. The Federation of Women's Clubs is helping, every club having had at least one bird program, and many having had special meetings; in Ravenswood the club members passed resolutions strongly condemning the wearing of plumage.

Miss Drummond, the Secretary, from whose report the above facts are gleaned, very pertinently quotes: “Plenty of people wish well to any good cause but very few care to exert themselves to help it. Some one ought to do it, so why not I?”

The Farmers of Rockford Township have taken such a splendid advance step in forming an association for controlling and regulating hunting on their farms that their Constitution and By-Laws are given in full in the hope that the farmers of other States may follow this most excellent example.

CONSTITUTION AND BY-LAWS OF THE ROCKFORD TOWNSHIP
FARMERS' ASSOCIATION.

This Association is formed for the purpose of controlling and regulating hunting on and over farms owned by or rented by us.

Article I.—That the name of this Association shall be the ROCKFORD TOWNSHIP FARMERS' ASSOCIATION.

Article II.—The officers of the Association shall consist of a President, Vice-President, Secretary, and Treasurer, who shall be elected annually on the first Monday of December of each year by a majority of members present.

Article III.—The President shall preside at all meetings and upon request in writing of five members shall call special meetings at any time. The Vice-President, in the absence of the President, shall take the chair.

The Secretary shall keep all records and any or all correspondence, shall collect dues and other income.

The Treasurer shall receive from the Secretary all moneys of the Association, and shall pay out the same on warrant of the Secretary. He shall make an annual statement which shall be verified by the books of the Secretary.

Article IV.—This Constitution may be altered or amended at any annual meeting or adjourned session thereof by a majority of members present.

By-Laws.

Article I.—Any farmer may become a member of this Association upon payment of a fee of 75 cents to the Secretary.

Article II.—Each member shall post in five or more conspicuous places, notices prohibiting hunting or trespassing upon the premises.

Article III.—Each member shall interview, as far as possible, any person found hunting upon the premises, and if after the interview such person persists in hunting, such member shall go before the nearest justice of the peace or magistrate and cause to be issued a warrant for trespass against the offending person.

Article IV.—Each member shall use especial effort to prevent hunting on Sunday on his premises, as such hunting is particularly objectionable to the members of this Association.

Article V.—Any member may grant any person well known to him the privilege of hunting on his farm; provided, that he accompany such person.

Article VI.—Each member shall use every effort to prevent the wan-

ton destruction of birds, and promote the strict enforcement of the game laws of the State of Illinois.

The Mayor and Council of the city of Evanston, appreciating the economic and æsthetic value of birds in the parks and city limits, passed a special ordinance prohibiting their molestation by the use of firearms, slingshot, bow and arrow, pelting with stones or otherwise, and also forbade the taking of eggs or nest under a penalty of not less than five nor more than twenty dollars for each offence.

The Governor, also, in his Arbor Day proclamation called the attention of the citizens to the necessity for bird protection and asked that exercises tending to show the value of birds be held in connection with the tree exercises.

INDIANA.—*Legislation.*—There has been no change in the non-game bird law, the A. O. U. model being still in force. The next session of the legislature will be held in 1905.

Warden work.—No wardens were employed by the Thayer Fund.

Audubon work.—The Secretary makes the following admirable report of progress:

“I have been in the thick of the work, troubling myself not at all with the way what we accomplished might work up into a report; chiefly concerned in getting in what work I could in ways that seemed to me most likely to count for the birds.

“Do you know Indiana? It is admirably located to ‘work out’ the old Roman idea of development from a center in Audubon work, as in many other things, and so a story of Indianapolis work serves as a sort of type story for a good many cities and villages in the State.

“Here we have a strong Audubon Society; not large in numbers, but large in accomplishment, considering the number. Every one works; no one has to be entertained. We have a number of open meetings in the year with interesting and timely talks or papers. Aside from this the Society expends its effort in two directions, work in the schools and in the press.

“The school work is very interesting. Every spring we muster all our members capable of being used in this way, to give one or

more afternoons each week to the school work. Then we give 'bird talks' in schools. The School Superintendent so arranges that the talks work in with the nature study the pupils are doing in their regular school routine. There were seven of us giving talks last spring, and from chance meetings with them I find that they all feel that this work among the pupils is of great value. Pupils give close and intense attention to 'bird talks,' lasting from thirty to forty-five minutes; they stay after the talk, and school is dismissed, to ask questions about the birds they have seen, nests they have found. The teachers enjoy the work almost as much as the pupils; through this work a good deal is achieved for the birds, but as one watches the interest and enthusiasm developed by the boys and girls, one cannot but see that the study of the birds does much for them. I was pushing my wheel along the banks of a creek in one of the parks, when two boys came running toward me and called as soon as within hailing distance to know if I was not the lady who talked about the birds to school 38. As soon as I said that I was they shouted 'Wait a minute; we'll boost your wheel up that bank for you,' and they not only 'boosted' the wheel but staid with me all afternoon, and I learned while with them how very much the bird work does in the way of broadening the horizon for these little ones who have so little of opportunity and know so little how to use what they have. Some of the teachers told me that the pupils had been impatient more than a month for their 'bird lecturer.' As far as we can, the State Society tries to have the bird talks given in the schools throughout the State; they were given in a good many schools last year, other than Indianapolis schools, and will be given in more next year.

"Prof. Amos W. Butler is one of our strong working members, and as Secretary of the State Board of Charities is about the State a good deal; incidentally, he gets in touch with a good many people interested in bird work and serves as a sort of Field Secretary for the Audubon Society; besides this, he starts, at every opportunity, an interest where none exists.

"Besides the school work and the work of the various societies and individuals we have attempted some work through the press. The newspapers are glad to publish anything of interest we can furnish them.

"In the year just closing Mr. Woollen furnished a series of papers regarding the birds and plants around Indianapolis. These were so timed that they could be used in the nature study work in the schools. I furnished a series of 'City Bird Sketches,' from week to week, very simple and non-technical, written after talking with some of the supervising principals, to make a sort of local guide for the teachers and pupils of the birds to be found about the city at the time. For instance, in January winter birds were discussed; in February, 'Birding on Washington Street' (Birds of the Bonnets); late February, the Bluebird; then the Robin and Meadowlark.

"This newspaper work has proved of a good deal of value and we are now planning to extend it through the State. We shall have sketches in as many of the State papers as we can get the material for, and also in at least one set of 'patent insides.' The only limit to this sort of work is the getting people who can and *will* write the sketches. Almost all our people are so busy that they think they cannot take the time to write; indeed, what Audubon work is done in Indiana is done by busy people who have to slip it in as best they may, with their regular work.

"The work in the schools receives such recognition that the city librarian has agreed to add enough bird books to meet the demands of the teachers and pupils, at least in part. This year the attendants at the library tell me that the stock of bird books was only a drop in the bucket, compared to the demand. I am now working out a list of books, numbers of copies of each needed, etc. They agree that these books shall be in and ready for distribution by the time the spring nature work opens in the schools.

"I do not know how many societies we have in the State, but the bird work, organized or not, is progressing. I had a report last week from a bird club in Hanover. This week I am corresponding with some of the teachers and newspaper people in Noblesville, looking toward an organization among those interested in the work there.

"I greatly regret that all I can give you now in the way of a report is this inadequate and informal letter. Another time, with the work in hand, I trust that I may be able to meet your requirements and send a report that can be properly so called."

IOWA.—*Legislation.* — There will be a session of the legislature in 1904, commencing in January, when an effort will be made to have the A. O. U. model law adopted. Inasmuch as only a few non-game birds are now protected, the passage of a new and comprehensive law is very important.

Warden system. — No wardens were employed by the Thayer Fund.

Audubon work. — The Secretary of the Schaller Society reports as follows: "As to our work: We have one illustrated lecture in the field and have distributed many of the excellent educational leaflets issued by the National Committee.

"Our proposed work for the coming winter will center in the one object to get a bill passed in our Legislature prohibiting trap shooting in our State.

"We would suggest and beg that the National Committee take up the subject, and publish some literature upon the matter of live bird shooting from traps, that could be used for distribution in all States where the barbarous custom is not prohibited by law. Nebraska passed such a law last winter and the 'sports' all come across the river and hold their shoots in our own State, at Council Bluffs and Sioux City. I wish you would send me a strong argument to be put into a circular for distribution for our campaign."

There are indications that Audubon work will soon be greatly extended in Iowa by the organization of other societies, which may be joined in a State body.

KANSAS.—*Legislation.* — The non-game bird law is totally inadequate as it only protects eight species and two of these may be killed, provided the owner of an orchard is willing to say that he thinks the said birds are harming his trees. An effort was made by our fellow member, Prof. D. E. Lantz, to attach the main features of the A. O. U. model law to a game bill that had already been introduced. In this he was successful, but the bill was killed owing to determined opposition to some of its other provisions. The next session of the legislature will be in 1905.

Warden system. — None employed.

Audubon work. — There is no society in the State, although there is great need for one. Prof. Lantz wrote the National Committee Feb. 12 that he was shipping daily from the laboratory of the Agri-

cultural Experiment Station nearly \$200 worth of rodent poison sold to the farmers at actual cost of the materials. This was used to kill pocket gophers and prairie dogs. There is certainly need for educational work among the farmers of Kansas who permit and probably themselves kill every hawk and owl they see, not knowing that these birds live very largely upon the very rodents that they buy poison to kill, at the rate of almost \$200 per day. It would be a far wiser and more economic movement to spend this daily sum in bird literature to circulate in the rural districts in order that the agriculturist may learn the good that the 354 species of Kansas birds are doing for the farm interests. Let some of the bird lovers of the State take this matter to heart and organize for the protection of the birds and the conservation of one of the most important assets of the Commonwealth. The press should also take up this matter, for Kansas is far behind some of her sister States whose agricultural interests in no way compare with hers.

KENTUCKY.—*Legislation.*—The A. O. U. model law is in force. The next session of the legislature will be in 1904.

Warden system.—No wardens were employed by the Thayer Fund.

Audubon work.—The society is small and rather inactive. However, there are some individuals in the State who are doing excellent work for the birds. Mr. C. W. Wilson of Mayfield writes as follows: "I am resolved to remain, or get in close touch with your grand work, and to do at all times all I can for the protection of our birds; I want to be used. When our County Teachers Institute convenes this summer I want to distribute some suitable literature and get one of the teachers to make a talk on the subject. We must reach the children of Kentucky in the common schools. I feel sure of this."

Mr. R. H. Dean of the U. S. Weather Office, State College, writes: "I have been requested by the Dean of the State Normal School to lecture before the school on birds. There are teachers in the school from over the State generally, and such a lecture properly prepared will no doubt do much good." Later he wrote: "Much interest was taken in the talk and the pictures. It is my intention to obtain as complete a set of bird slides as possible and to repeat the lecture at intervals in this institution, State College, and at other places."

LOUISIANA.—*Legislation.*—There was no session of the legislature during 1903, but one will convene in May, 1904, when a renewed and determined effort will be made to pass the A. O. U. model law. It is vitally important that Louisiana should have the very best of bird and game laws, so many of the northern birds make this State their winter home. It is useless to try to preserve birds at their breeding homes if they are to be wantonly slaughtered at their winter homes.

Warden system.—None can be employed by the Thayer Fund, although the extensive coast line, which is an ideal place for water birds, should be systematically patrolled. Without legal backing money spent for warden service is simply wasted.

Audubon work.—The report of the Executive Committee is here given in full, as it is very interesting and complete:

“Work accomplished by the Louisiana Society since the date of incorporation, November 22, 1902. Giving due consideration to the difficult conditions to be met in a fight for bird protection in southeastern Louisiana, and especially at New Orleans, the Louisiana Audubon Society may be allowed to feel some little satisfaction over the work accomplished during the last year. In one particular, the curtailment of the shooting of song birds under fancy French names at certain seasons of the year, the Audubon Society has had to face the prejudices and traditions of at least five generations. The Wood Thrush, or Speckled Caille, the Cat-bird, or Black Caille, the Tanagers (in fall plumage), or Yellow Cailles, the Kingbird, or Black Grasset, and the Red-eyed Vireo, or Green Grasset, have been the prey of many of the so-called sportsmen of Louisiana, but particularly of New Orleans, since the days of the first French establishments. As far as securing a prohibition of this kind of shooting is concerned, so far the Audubon Society has been unsuccessful. The ignorant interposition of the local trappers of birds, and dealers in live birds, men whose interests are affected in the case of only a few species, has defeated practically in toto the Audubon Society's efforts at restrictive legislation. The same interests that defeated a bird protection bill introduced at the 1902 session of the Louisiana General Assembly by Mr. Frank M. Miller, now President of the Audubon Society, prevented the passage of a city ordinance introduced before the

City Council of New Orleans August 25, 1903, since the organization of the Audubon Society. Protection for a host of insectivorous birds could almost certainly have been secured in either case had the Audubon Society been willing to compromise matters with the bird dealers. The crux was the trapping of Cardinals and Mockingbirds. The proposed bill in either case would have been the A. O. U. model law, and as this prevented the killing and trapping of any song or insectivorous bird whatsoever, the bird dealers stepped in and used their influence to secure the substitution of a bill drawn up in an ignorant and careless manner, and from the very nature of the point of view of its framers, giving practically no protection to song and insectivorous birds, except in the case of the city ordinance, which prohibits the sale of all birds save a few excepted species, for ornamental purposes. The few non-game birds protected from the gunner are those that happen to be the desiderata of the trappers. As these birds had to be mentioned to entrench the privileges of the trappers, it was no trouble to mention that they should be protected from the gunners. The assortment is, nevertheless, rather a peculiar one: Cardinal, Mockingbird, Oriole, Bluebird, Nighthawk, and Whip-poor-will. When the bird dealers drew up their law before the Louisiana legislature, they appeared to throw in with the names of the cardinal and the mockingbird, which are not to be molested except for 'domesticating purposes,' the names of a few other birds of which they happened to think, so as to appear to be concerned in the protection of the song and insectivorous birds of the State. In the matter of general protection of non-game birds, the city ordinance copies the State law.

"Though the actual results of legislation in favor of non-game birds is small, the question has been thoroughly ventilated, and the moment of the whole matter has been impressed on some part of the population. Education as to bird protection has been secured and their integrity and not the stock of their information will be at fault if legislators before whom the question is brought in future do not uphold the decision of enlightenment in half the States in the Union.

"As to the protection of game, the society has been able to pursue an active course, as the game laws of the State are more nearly

adequate for the conditions. Prosecutions for killing deer and papabottes (Bartramian Sandpipers) out of season have been secured, and a wholesome fear of violating such laws as do exist has been easier to secure than the winning of councilmen and legislators to the views of bird protectionists, or for that matter, in getting them to take any view but a jocular one, and even in some instances, any view but an unprincipled one.

“Five hundred appeals to the people of Louisiana have been issued since last December, and the better part of them have been circularized. A part of this appeal was published in ‘Bird Lore’ shortly after the appeal was issued. To facilitate the observance of the game law, the Society has issued 100 large cards giving the closed seasons. These have been distributed to postmasters and clerks of courts over the State. One hundred cards of the same size offering a reward of \$25.00 for the arrest and conviction of anyone violating the non-game or game provisions of the State law have also been issued.

“The Educational Leaflets received from the National Committee have been distributed among the members. Local secretaries have been appointed in several parts of the State. The membership of the Society at present, including associates and life members, is about eighty.

“Between the present time and the convening of the Louisiana General Assembly for the session of 1904, the Audubon Society will have a great work on its hands in bringing the question of bird protection before the legislators of the State. From the work along this line that has already been done, there will not be a great deal of difficulty in convincing the law makers from the country districts and from the smaller towns that bird protection is an essential for any civilized community. There are no indications that there will be any serious opposition from any part of the State except the southeastern, and the interests of the other sections properly aggregated will outweigh any combination of bird dealers, market hunters, misguided ‘sportsmen,’ and corrupt and indifferent legislators.

“One pleasant feature of the work of the past year is that the milliners of New Orleans have established with the Audubon Society the same cordial relations as have been established between

the New York Society and the milliners of the metropolis. The recently enacted law for bird protection in New Orleans carried its one good feature, the prohibition of the use of birds for ornamental purposes, to an absurd extreme, and as the law stood at first, milliners could not even handle duck, goose or turkey feathers. With the help of the Audubon Society the law was amended to protect all native birds except the above species and the dove, which practically means pigeon.

“Several considerations, including financial ones, have made it impossible for the Louisiana Audubon Society to have a delegate to represent it this year at the deliberations of the several Audubon Societies convened in Philadelphia. The executive committee trust, however, that by submitting the foregoing report they will be able to expose the conditions in Louisiana almost as clearly as if the committee were represented in the person of any of its members.”

MAINE.—The non-game bird law is still satisfactory, no changes having been made in it by the legislature of 1903. An effort will be made to protect the beneficial hawks and owls as soon as public opinion is educated sufficiently to warrant the movement. The attention of the sportsmen of Maine is called to the fact that the game laws give no protection whatever to any wild ducks except “wood duck, black duck, gray duck and teal”; all the other species of the Anatidæ are left without legal protection: This is wrong and should be remedied. The American Eider was formerly a common breeder on the Maine coast but is yearly becoming more rare owing to the fact that almost every set of eggs that is laid is at once taken by some fisherman. Unless a law is passed making a close season for a term of years, this splendid duck is doomed to extinction in this State. The spring shooting of plover, snipe and sandpipers should be abolished, as it is wrong in principle.

Warden system.—The result of the work of the ten wardens employed is very satisfactory, showing on their part great fidelity to and an intelligent interest in the trust committed to them.

Mr. A. H. Norton, a member of the Union, at the request of the Chairman, visited every portion of the coast and thoroughly inspected the wardens' work. He states: “While all of the wardens were very kind and interested in the success of my inspection,

I would like to make especial mention of Mr. Fred Rackliff, who rendered gratuitously invaluable aid; Capt. Hall of Matinicus Rock, for making my stay there successful and pleasant; Mr. Martin Talmon and wife of the same place for entertainment and many kindnesses; Mr. and Mrs. Robinson of Libby Island for acts of courtesy, and Capt. and Mrs. Small of Cross Island for entertainment and aid of much value. The work was indeed pleasant and one in which I take great interest." The report of Mr. Norton is so exhaustive and interesting that it is thought best to quote from it very freely:

"On June 20, 1903, I paid a visit to the Night Heron colony in Falmouth. This is on the main land, upon the estate of Gen. John Marshall Brown, of Portland, which is his country home, known as Thornhurst. This colony is within ten minutes' walk from a much traveled town road, traversed by an electric car line. Under date of Feb. 7, 1903, Gen. Brown wrote me that the birds have been in his woods for twenty-five years, to his knowledge, where they have been protected by him; he thinks they occupy twenty acres.

"On the date of my visit the birds seemed to be enjoying security; no evidence of shooting (which is the real danger threatening the nesting species) was observed. The nests were built near the tops of tall, slender pines and many of the young were large enough to clamber from the nest out on the branches. The crows, which were abundant, seem to destroy some of the eggs, as I found a number of shells that clearly had been broken by these birds. I visited the tern colony in charge of Mr. Cushman and found it in good condition.

"Mr. G. E. Cushman, warden, has charge of the above mentioned colony, also of the tern colony on Bluff Island. He reports an increase of six hundred terns during the season, and adds: 'The eggs were so plenty one had to walk carefully to prevent stepping upon them.'

"On June 30, I boarded at Portland the little packet 'Mineola' for a trip of 65 miles east to Port Clyde. Passing the Outer Green Island, six miles east of Portland, about half-a-dozen terns were seen over the shore of the island, one of which was carrying fish! The war manœuvres on this coast this summer, it is to be feared, may again cause these birds to abandon the place, as it is used as a base for the targets for the heavy guns at the forts inshore.

“Whenever outside islands or ledges were passed in Casco and Sheepsbat Bays, flocks of from seventy-five to four hundred Herring Gulls were seen resting upon them, though none are known to breed west of No-Mans-Land off Penobscot Bay.

“At Metinic, in a swamp well protected by undergrowth and very difficult of penetration, fresh signs of Black Ducks were found, and near the house of Mr. Snow, owner and warden, several nests of Savanna Sparrows and Spotted Sandpipers were seen. He then took me to Metinic Green Island, the home of thousands of terns, the only Laughing Gulls now known to breed in Maine, and of a good number of Sea Pigeons and a few Leach’s Petrels. This is one of the largest Tern colonies in Maine, vying with Machias Seal Island for second rank to Matinicus Rock. A very large proportion of these are the Arctic Tern but the Common Tern is in good numbers. None of the young were yet large enough to fly but were in well fledged condition, while many nests with eggs were still to be found, and one had to walk with care to avoid stepping on nest or young.

“The adults were very tame, and this applies also to the Sea Pigeons and even the Laughing Gulls. Quite a number of the Pigeon’s nests were found but none had hatched.

Eight Laughing Gulls were counted at one time, and three nests were found containing eggs. The colony was in an excellent condition at the time of my visit. Mr. Snow had a notice posted at each landing, and Metinic was well supplied with them. With the protection now afforded it is to be expected that the Laughing Gull, now nearly exterminated in Maine, may again become well established.

“I then proceeded to Deer Isle as a base of operations in Penobscot and Jerico Bays. Mr. Fred Rackliff, who is well acquainted with the sea birds and their ways, and is a boatman of excellent skill and judgment, most generously supplied a small boat and outfit and accompanied me on this trip, making it possible to cover much more satisfactorily than could have been done with a sail boat, these bays of small and rough ledges.

“We visited in Jerico Bay, Southern Mark Island, on July 4. Two Eider Ducks were seen to leave the shore. One nest was found containing two eggs; by placing one of these in a pool of

water it was found to be nearly or quite fresh. An empty Black Duck's nest was also found here.

"On the western point a colony of about 200 Common Terns was found. These had been robbed of eggs, as two empty nests to one with eggs were found, and no young were discovered.

"Mr. Rackliff visited this island last year and found that only a few pairs were there then. On the same day we found at White Ledges, locally called Way or Whale Ledge, an Eider Duck's nest with four eggs, also two empty nests. We saw a small flock feeding, which swam away, but four ducks with one drake remained not far away, and were supposed to be birds making this ledge their home. This small ledge is in two parts, each part containing less than half an acre. The birds all breed on the southern one, which is low; it is covered with coarse gravel and small pebbles, bound together with a small amount of turf, supporting five or six species of sea plants.

"This is rapidly yielding before the storms of winter, and possibly one or two winters may close the history of this resort. With the influence of protection there is much probability that the birds will adopt one of the near islands or ledges as a breeding place; without this these ducks will no doubt leave the bay entirely, thus reducing the number, already small, very seriously. Here we found five gulls' nests, in one of which the eggs were just hatching.

"The 'Three Ledges' just east of Fagg Island, where we camped, and the Green Ledge, a little south of the three, where a small number of terns were breeding last year, showed only two or three empty nests; it seemed reasonable to suppose the new colony at Southern Mark Island was composed of the birds which were here last year.

"On Saddle-back Ledge, where one or two pairs of Eider Ducks are said to breed, we saw no ducks nor found any nest; one or two could easily have been overlooked. On the northern part of this island we estimated the terns at 300, and on the southern part at 100; some eggs had evidently been taken, but the condition was better than at Southern Mark Island. Quite a number of young terns were found and the adults, though wilder than at Metinic Green Island and Matinicus Rock, were less so than at Southern Mark Island.



FIG. 1. PUFFINS, MATINICUS ROCK, MAINE.
Most southerly breeding place on North Atlantic Coast.



FIG. 2. NEST OF AMERICAN EIDER DUCK, MAINE COAST.

"At Great Spoon Island we found only Petrels, Spotted Sandpipers, Song and Savanna Sparrows. At Little Spoon Island, we found two pairs of terns and about four hundred adult gulls, which had hatched well, and seemed to have suffered little or no disturbance.

"Gulls were still breeding on the Black and the White Horse Ledges, but no young were seen nor were any empty nests observed. Cormorants were present but no nests were found.

"At Spirit Ledge no gulls nor terns were breeding, but we saw four Eider Ducks and found three nests, the eggs in neither of which seemed advanced in incubation, while one of them contained an incomplete set of eggs. A few Sea Pigeons were probably breeding, but it was impossible to find a nest.

"At Black Rock we found two gulls' nests with eggs, and four Sea Pigeons were probably breeding.

"On Heron Island we found a colony of gulls numbering a thousand or more. This colony was in excellent condition, very few eggs being found. The gulls were tame and the young were abundant. We found two Night Heron nests here, and it seems likely that this bird may increase.

"At Haulibut Ledge about one hundred Common Terns were breeding on the southeastern ledge. No young were seen. Here we saw no Eider Ducks nor any nest, but Capt. Conary informed me that notwithstanding the fact that none have bred here for a few years, he discovered a nest this year with five eggs which he believed would hatch. As I found the excrement of a brood of young birds, not terns, in several spots under flat rocks on the shore, there seems little doubt that this nest hatched as predicted.

"In concluding with Jericho Bay, I found that while the birds seem to be shifting to some extent, they are also collecting into better colonies for protection, and are increasing quite rapidly. The Southern Island colony is practically a new one and probably a permanent one. At both Saddle-back and Haulibut Ledge the increase since your first report is gratifying.

"The same may be said of the Herring Gulls, *i. e.*, they are uniting and increasing quite rapidly; while decreasing on the smaller ledges, for instance White Ledge, and disappearing from Spirit Ledge, on Heron Island the increase is decided and grati-

fying, the colony containing not far from a thousand adult gulls against four hundred in your first report. (*Cf.* Auk, XVIII, p. 99.)

“The increase at Little Spoon Island is less decided, probably owing to the fact that this is an outside island and suffered less (than Heron Island) before protection became so well established.

“The few Eider Ducks here are the remnant of a once goodly number breeding in this section. I think they are still robbed of their eggs. Every effort must be made to save this noble duck as a summer resident and breeder, not only for Maine but the United States. If it could be possible to give the breeding colony absolute protection for a few years we could reasonably expect a good result, as has been shown by the gulls and terns. Though this bird, within the memory of the present generation of middle-aged men, bred from the western side of Penobscot Bay easterly to the present location of the colony, and at several other places east to Machias Bay, it is now reduced to the small number breeding in Jericho Bay, and a colony on Old Man Island.

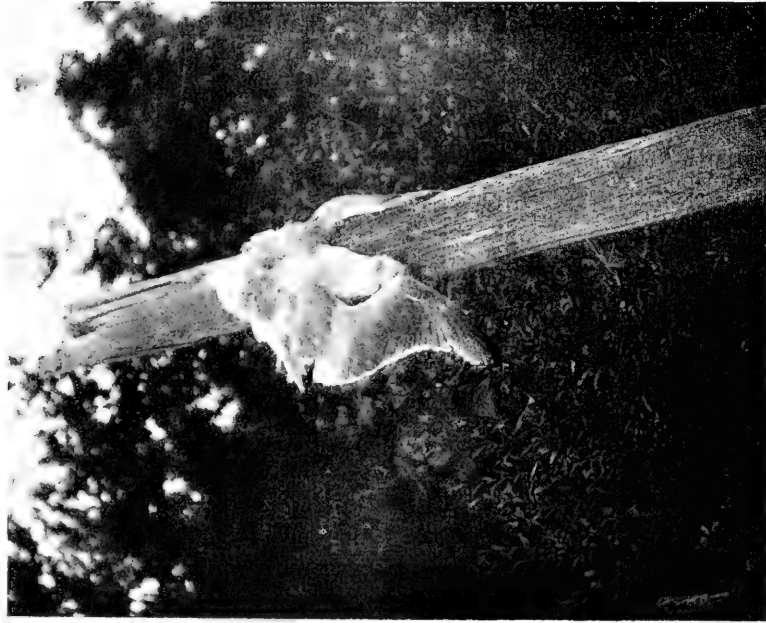
“With the exception of the extinction of the Masons Ledge and Green Island colonies, the Sea Pigeons seem to suffer no molestation. In this bay their nests are nearly inaccessible.

“Finishing the inspection of this bay July 13, we went to Penobscot Bay to investigate the condition of the colonies under the care of Capt. H. T. Ball of Eagle Island.

“Sheep Island was occupied by a colony of Fish Hawks which had ten nests which I saw.

Colonies of Terns were found on Sloop Island and Channel Rock on July 17. On Sloop Island fifty nests with eggs or young were found; probably 75 to 100 pairs breed here. On Channel Rock, a small pinnacle-like ledge with grassy top, about fifty terns were breeding. I was convinced that some eggs had been taken from these islands. Notwithstanding these facts many small young were seen, and the adults were moderately tame.

“At Bradburys Island it was impossible to get ashore without finding one of the warning notices well placed. That the colony of Herons had not been disturbed seemed certain. The luxuriant undergrowth had not been trampled around the rookery, and we found the Great Blue Herons pleasingly tame. A few young were



HERRING GULL, CAUGHT BY FOOT IN SPRUCE STUB,
GREAT DUCK ISLAND, MAINE.



BLACK GUILLEMOTS, OR SEA PIGEONS, ON A PROTECTED ISLAND
IN MAINE.

taking short flights from the nest, and most of them were well grown. Every nest seen was clearly occupied. Here the birds breed in a piece of woods extremely difficult of penetration by reason of fallen logs and a dense undergrowth of shrubs and weeds. In a two acre lot 20 nests were counted, and this was a small section of the area covered by the birds. Capt. Conary informed me that a small colony of these birds had started breeding upon White Island, owned by himself.

"July 18, 1903, we visited Great Duck Island, and it seems needless to say that the colony was in excellent condition. Not a nest containing eggs was seen. The adult gulls allowed one to approach within 36 feet in some instances, and settled again as soon as we had passed. The young ran before us like flocks of hens, whenever we rounded a turn in the road. Mrs. Stanley, wife of the warden, said, 'We had as soon any one would come ashore and carry off one of our hens as to take one of the gulls.'"

Great Duck Island is probably the most ideal spot on the Atlantic coast for a bird colony, as it is some distance from the mainland. The birds all congregate at the southernmost end of the island, where the Great Duck Lighthouse is located. The head-keeper of the light is the warden and is deeply interested in the welfare of the colony. He reports: "The area occupied by the birds this year is materially larger than during 1902, and as near as I can judge, about 3,000 young gulls were hatched and reached maturity. In addition to the gulls some 2,000 Leach's Petrels were also raised, besides numbers of several species of land birds. The mortality among the adult and young gulls was quite heavy; the former were killed by being caught in brush or trees and the latter principally by being dashed against the rocks by the heavy surf. I estimate that not less than 500 gulls were killed by these several causes."

There is also a large colony of Herring Gulls on Little Duck Island, the increase of the colony in 1903 being about 1,300 birds. The warden, Mr. D. Driscoll, reports that the birds were not molested.

Resuming Mr. Norton's narrative: "On July 22 I was landed on Matinicus Rock; fog, heavy sea and wind combined to keep me here until the 28th, giving ample time to observe this interesting resort for birds.

"The mortality of Terns at this rock, as at all other places in Maine, has this year been very slight. Capt. Hall and his assistants have observed that during a brief period of mortality, earlier this year, the old birds were bringing very little food ashore.

"Capt. Hall has the esteem of his assistants, and they all take a personal interest in the birds, and it is evident that the latter receive absolute protection. They are almost without fear of man, and I had an excellent opportunity to observe them at short range; large flocks could be gathered at the boat slip by use of fish livers or anything that would float. As they alighted upon the rocks or hovered close at hand, the field glasses made their identification as Arctic Terns positive. It was only the day before I left the Rock that a small number of Common Terns were found. These were back of the beach on the inside of the northeast point. Many of the young terns were on the wing, some being with their parents as far away as Matinicus.

"Nearly all of the Sea Pigeons had young and were busy bringing food ashore. This seemed to consist entirely of rock eels (*Gunnellus gunnellus*).

"Four Puffins are here this year, an increase of one pair since last year. These were so tame that I crept, mostly in open sight, within thirty feet of them, focused my camera, and secured a photograph of the whole group. I did not see them carry fish ashore and doubt if they had young at that time. Mr. Talmon, one of the light-keepers, is sure that he had seen them carry food this year. There being no mistake about this, it is my opinion that the young died of some natural cause. Their nest, if they had one, had not been discovered. It is much to be hoped that these birds shall receive especial care, and none be taken for any purpose whatever until a safe increase has occurred.

"It is interesting to note that six Laughing Gulls paid a temporary visit of a couple of days to the Rock this spring.

"On July 28, Mr. Martin Talmon of Matinicus Rock Light took Capt. Mark Young and myself to No-Mans-Land. We were under obligations to Capt. Hall for his naphtha boat on this occasion. Capt. Young took much pains to show us about the island, and his gulls. These latter were in their usual excellent condition, showing the unmistakable evidences of unmolested birds. The young were

everywhere to be found, often running before us in little flocks, while the earliest ones, just beginning to fly, rose and circled over the island or settled again a short distance away. Some were a short distance from shore with the old birds. These were the first young gulls seen on the wing. Capt. Young justly takes considerable pride in the magnitude and good condition of this colony; he runs a gang of lobster traps around the island this summer, and while attending to the business of fishing, pays almost daily visits to the place. This constant oversight, coupled with his determination to protect the birds, insures them absolute security.

"A few Petrels were to be found breeding here. Colonies of from 10 to 40 Sea Pigeons are on Green Ledge, east of Matinicus, Two Bush, and Two Bush Ledge, between Matinicus and No-Mans-Land. These have not been disturbed.

"July 29, from the steamer 'Frank Jones,' examination was made of the colonies of Terns on Ship and the two Barge Islands. On Ship Island a colony of some size, fully equal to that seen last year, was observed, and on the Western Barge 50 to 75, while on the Eastern Barge 20 or 30 were ashore, and rose as we passed near their resort.

"This day was consumed in reaching Jonesport; the following one, July 30, was lost owing to a dense and persistent fog, my boatman not being willing to go out. The next morning was clear and an early start was made for Cone and other islands.

"Cone Island is the least satisfactory of all the colonies. Capt. O. Cummings informed me upon my arrival at his station, that the gulls have not bred well this year, but many use the island as a resting place. This I found to be true. Indeed, only three or four gulls acted as though they were breeding, by hovering over the island and cackling at our approach. The ground was so swampy that no nest was found. These were the only gulls ashore. On the knolls, several different ones, on the sea beach and at certain wet places the quantity of freshly dropped feathers bore indisputable evidence of the visits of gulls habitually. It was said that these visits were made during the high water, at which time the birds do less fishing than on the low water.

"I found the notices well posted. Capt. Cummings said that the only explanation he could offer for the few birds breeding was

that his station, which is one-half a statute mile (coast survey measure by me) from their breeding ground has been receiving extensive repairs, the carpenters making the usual noise of this trade. He also stated that the foxes liberated there some time ago are dead. This I could not verify. I was also told by him that about 200 gulls were breeding upon Flint Island, and about 100 terns on Pot Rock; the former is quite a high, large island. I took considerable pains to go here and land, and walk across the island and up on its highest part, but no gulls were to be found at this time. Pot Rock is very small, and landing was impossible, but by passing near it, I am sure that no terns were breeding there. I found Capt. Cummings very kind, obliging, and seemingly anxious to do his duty to you. Yet his manner made me especially particular to investigate each statement made by him.

“To summarize: There are practically no gulls breeding on Cone Island this year, nor are there, so far as I now know, any between the Duck Islands and Pulpit Rock. Many Gulls continue to rest on Cone Island.

“After visiting these places I directed our course to Egg Rock, which was swept by sea during June, 1902, causing the terns to abandon it; a colony of several hundred terns is now re-established. These I believe to be mostly Common Terns. This rock is much exposed and surrounded by a shallow shore, and as the sea was extremely rough I was not able to land; leaving the launch, I rowed in a small boat as near as possible and discharged a gun. This caused all of the old birds to rise from the rock at once, giving a view of the entire colony. This rock is but one and a half miles from Capt. O. B. Hall's station and in open view of it; it is very well located for protection.

“Proceeding from here to Freemans Rock the same results were experienced. No young terns were seen at sea in this section of the coast nor indeed at Libby Island. The Freemans Rock terns are largely Arctic Terns. In addition to the terns and guillemots on this rock, terns on Egg Rock, and Black Ducks on Great Wass Island, Capt. Hall has a colony of about a dozen Blue Herons on Great Wass Island.

“July 31 I started from Jonesport for Cross Island, and all colonies between these points. The sea had abated during the

night, and with the assistance of Mr. Daniel French, warden and deputy sheriff, a thoroughly skilful surf and boatman, I was able to land on all rocks and islands where birds were breeding.

"Pulpit Rock was the first in the course. This at high water forms two separate rocks, but at a little ebb tide the connection is completed; nevertheless owing to the perpendicular walls of the outer rocks one cannot reach its top from the inner one, but must make a separate landing at a particular shelf, and even this is done at some hazard in calm weather, and not at all in moderately rough weather, hence the central part is seldom visited, judging from appearances. The inner part is much easier to land upon and I believe that some eggs have been taken from it. As we approached about 50 Double-crested Cormorants rose from the rocks and flew about for a few moments before leaving. A thorough search of both parts of the rock revealed none of their nests, and Mr. French said they had not been known to breed there.

"A few Sea Pigeons breed here, fifteen old birds being seen and one nest with young was discovered.

"While the gulls present were estimated at eight hundred to a thousand, I think that comparatively few of the number breed, for if they did one could not step upon these small rocks without walking on the nests; in reality the nests are quite scattering. Almost all had hatched, and the young were hiding in clefts of the rocks on the outer rock, which is the highest and largest, and is devoid of all vascular plants. On the inner rock they also hid in clefts, and under the vegetation, which was rather abundant. Here we found two nests with eggs.

"Most of the young were nearly large enough to fly, and frequently with startling screams leaped over the crags, using their wings to break the fall, landing rather clumsily, but unharmed on the covered rocks below.

"On the outer rocks the birds, I think, had been practically unmolested and not seriously on the inner one. Probably the number of gulls breeding is between two and three hundred. It is five nautical miles from Libby Island Light and a little more than ten from Crumple Island.

"Our next stopping place was the Brothers, two islands of high

granite ledge covered with vegetable loam, and the decaying remains of a spruce forest. At half tide, or even higher, they are connected by a bar. On the western one possibly two pairs of gulls were breeding, but the nests or young were not found. On the eastern one a good sized colony of gulls was breeding, probably a thousand or more. The southern seaward side of this island presents a perpendicular wall of granite nearly a hundred feet in height, and many gulls breed in perfect security upon its rifts and shelves. Many young were seen here nearly full grown, hiding upon the gray rocks where their colors were in harmony with their surroundings. On the top of the island, among the fallen logs and elsewhere, many nests were found; quite a number still contained eggs and some had clearly been robbed. I believe that more eggs had been taken here than at any other gull colony in Maine. Yet many young were also found, showing that the eggging had been sporadic. The birds were, on the whole, not seriously interfered with and were tame. I also discovered that some Petrels breed here.

"It is a fact of interest that as I walked over the top of the western island a gull dashed many times at me, coming within five or six feet of my head. Terns frequently do this but gulls very seldom.

"Libby Island Light was next visited. We were directed to North Libby Island where the terns breed. This is an excellent island for their needs and probably 1000 to 1500 terns of both species are here. Mr. French who kept Libby Island light for eleven years previous to 1895, and visited the place on this date, the first time since leaving there, assured me that the increase since that time is at least 75 per cent. The colony occupies the entire eastern end of the island, which is a quarter of a mile wide, while the length of their area is somewhat less. Most of the young were fully fledged and sat upon the rocks of the shore, flying as we approached; a few small young and a few eggs were also seen.

"From here we went to Cross Island, where I remained with Capt. Small at the Life-saving station. He very kindly gave me much aid in securing a boat for Machias Seal Island.

"As the next morning (August 2) afforded a 'good chance' to

go there, well knowing that it might be days before another opportunity came, we took an early start. When half way across two young terns with their parents were seen at sea. When about four and a half miles from the island the first Puffin was seen flying homeward.

“Machias Seal Island consists of the island which bears the name, containing about twenty acres, and Gull Rock, containing about two acres. They are separated by a shallow passage, passable to small boats at low water. Gull Rock lies a quarter of a mile east of the northeast point of Seal Island. This is a low granite ledge without soil, much seamed and cracked. The seams in a few instances afforded nourishment for beach plantains and *Tissa marina*. The rock is covered with a greenish yellow lichen.

“This ledge is completely swept, it is said, by the sea during heavy weather, and was swept during the rough weather experienced July 31 while I was at Jonesport. Notwithstanding this statement many young terns of various stages of growth were seen here, and indeed the colony seemed to be in a good condition.

“These islands are little visited except by the lighthouse attendants, and this rock is exempt from the causes which have acted on Seal Island. This rock affords no opportunity for other birds to breed.

“Machias Seal Island is also a low island with an abundance of vegetable loam and is well clothed with herbage, chiefly grass. The variety of plants is surprisingly small, and most of the characteristic ones of the region are absent. It rises like an isolated hill-top from the deep, submarine plain, and is swept on all sides by the powerful tide current from the Bay of Fundy. Indeed, this current is one of the potent factors to be considered in reaching the island, for in a calm a craft is at its mercy, being borne onward as it happens to run.

“The island has no beaches, the only semblance to one being strewn with angular blocks of granite. The southern and southwestern end is a mass of granite, presenting an impassable barrier to the ocean's storms. This rises not more than forty feet above sea level; yet, though so fully exposed, the sea is never known to have broken across the island, as it frequently does at Matinicus Rock which is much higher.

"History shows that two centuries ago hundreds of seals resorted here to rear their young.

"Of the birds the most interesting are the Puffins. These breed in a pile or windrow of large angular blocks of granite, which have the appearance of a sea wall. Doubtless the wall was formed by the action of the sea during tempests of extreme violence, but at ordinary times the sea does not come within two hundred yards of it, and between it and the sea line grow grass and other land plants. I am told by Mr. Everett Smith of Portland, who visited the island about twenty years ago, and Mr. A. C. Bent of Taunton, Mass., that no Puffins breed elsewhere in the vicinity of Grand Manan. This fact gives an additional interest to this colony and emphasizes the importance of having it thoroughly protected.

"The Puffins are much tamer than Sea Pigeons and are possessed of great curiosity, or, it might be said, they are less prudent than Sea Pigeons. From the edge of the rocks where they breed it is certain that their nesting will not be much interfered with, but shooting the birds must be constantly guarded against.

"Inspection of the mass of rocks where they breed shows considerable quantities of straw scattered in every passage to the bed rock, dropped by the birds in building their nests. By watching them go in and out to feed their young, one could easily see that every opening of the wall leads to several nests, probably a nest at the extremity of every passage. While 33 Puffins was the largest number seen by me at one time, Mr. John Ganang, superintendent of the masonry of the Lighthouse Department, who had spent more than a week here in his official capacity, told me that three hundred is the number resorting here. Mr. Ganang's statement I considered entitled to confidence as I found him to be a gentleman of candor, judgment and refinement, and with a fondness for birds and plants.

"This indicates an increase in the number of Puffins during the twenty years that have elapsed since Mr. Smith's visit, when sixty was the number. But this is the natural outcome of the protection afforded them by Captain Seeley, a protection which seems to have been absolute.

"It was a most interesting spectacle to see the top of the wall adorned by the above-mentioned 33 Puffins, resting here seemingly

and probably in social enjoyment before leaving for the fishing grounds. They were more restless than Sea Pigeons and moved about with an awkward walk, and frequently flapped their wings. On leaving they went away from the island entirely, and for the next three hours, had one arrived here only two or three would have been observed.

"After the time mentioned one came from the sea and circled about, then another and another, until ten were circling. In this flight they passed over their nests and then circled towards the sea, which limited the outer edge of the circle, then returning to repass the nest, thus describing a perfect circle or, as Dr. Coues expressed it, a 'wheel'. But frequently they took a course across the center of the wheel, and described a letter S. Often as they passed over the nest they uttered a deep sound, which though in several syllables had a resemblance to a groan issuing from the chest. I could not determine whether each bird held several small fish in its bill, or a squid with dangling arms. From the direction they came, the northward, it would indicate that their feeding ground was in the direction of Grand Manan channel and the course of the several I have seen at sea supports the indication.

"Upon alighting they hurried without delay into the wall of rocks, often two or three into the same opening, and with little pause they reappeared and put out to sea. Hardly had these disappeared when another party returned, and so onward; they did not arrive in these compact groups, but came singly and in pairs, and being delayed by our proximity, gathered into flocks.

"Common and Arctic Terns evidently were the only terns breeding here, and this year I did not see even the *Sterna portlandica* phase of the latter. These birds occupy the entire island for breeding, but have decreased since my last visit. Those remaining were quite tame, and no dead ones were seen to indicate shooting. The lightkeeper keeps a dog and a cat, and I was told that the dog ate many eggs and the cat caught quite a number of birds. The wife of the assistant keeper told me that they had killed their cat, owing to its destructiveness to the birds. I asked the value of the dog, suggesting that we would be glad to have it off the island. His answer was evasive, but he said he would make provision to send it ashore. Owing to the lateness of

the season and the delay incident to communicating with the shore it is doubtful if this is done. If another year could be begun free from such drawbacks it is probable that the birds would abundantly prosper.

"Probably 3000 terns are still upon the two islands. As the Seal Island is covered with grass the young are not easy to find, and very few were seen; some had already flown, as I saw them at sea.

"The Light is supported by the Dominion Government and it seems quite important to impress upon, not only the keepers of the lights, but also the inspector of the district, the need of protecting the birds here *now*. The keepers are furnished not only with rations but drinking water from ashore, requiring frequent trips of the supply vessel. The discipline is less strict than on our light-house boats and the crews, in part at least, wander over the island at will, and it was insinuated that the birds are the sufferers. I posted three notices here and one on Gull Rock as you wished.

"This island is the location of some of the largest Petrel colonies of Maine, the birds burrowing into the soft earth on every part of the island. These had suffered some destruction, as the wings of a number were seen near the buildings, no doubt having been caught by the cat, as the burrows had not been disturbed.

"Owing to the distance of this place from any shelter, sailing men are not willing to remain out over night, and indeed few are willing even to go there except with perfect weather conditions.

"At five P. M. we started on our return, reaching Cross Island at midnight. Curiously enough, the next day dawned calm, and a trip to the Seal Island would have been impossible.

"This morning Capt. Small took me over to the Old Man Island where we were able to land and examine the condition of the gull colony. Everywhere among the trees the ground is covered with a dense tangle of brambles and weeds making travel very difficult. There were here no indications of any disturbance of the gulls or their nests. The latter were placed along the shore on the edge of the precipice and on shelves of the cliffs. Search among the weeds showed many young concealed there. This island is in direct view of Capt. Small's station.

"Capt. Small told me that a good-sized colony of Eider Ducks

breed here. On this particular morning (Aug. 3), none of the birds were at the island, only one having been seen in the channel half way across to Cross Island. The morning previous, however, as I sailed for Machias Seal Island, about a dozen females were seen close to the shore of the Old Man, and flew about as we passed it. It affords secure concealment for their nests, none of which we saw. I was told by two other men, Capt. Fred Walden of Cross Island, and Capt. Ackley of Cutter, neither having any knowledge of Capt. Small's statement, that this duck breeds on the Old Man. Unmolested ducks would have been hatched some time previous to this visit, so no time was spent in looking for their nests.

"On the same morning we visited the Double Headed Shot. The outer one of these islands only is inhabited by the gulls, perhaps fifty in number. This colony, although near Capt. Small's station, is not increasing. My attention was attracted to the signs of minks on this island, and as it is said that ground or beach nesting birds cannot increase where these mammals exist, I was led to account for the small number of gulls here through this cause. It is to be expected that this island will be abandoned by the birds in a short time.

"On August 8 I inspected the last colony, that at Bluff Island in Saco Bay. This is a colony of Common Terns, probably numbering now nearly a thousand. Strattons Island, which is close at hand, is not inhabited by the birds. These terns have long been protected by the owner of the island, Mr. Jordan. Their feeding grounds extend from near the Saco River to Cape Elizabeth, the largest number resorting to the river mouths at the Scarborough marshes. At the time of my visit large numbers of the young were fishing here with their parents, and at low water they sat in large numbers upon exposed sand spits. On the island some young were just hatching, and all stages of growth were still to be found. Quite a number of abandoned nests with faded eggs were found. Haying operations were in progress and a number of dead young were found which had been accidentally killed. Upon the whole the colony was in good condition and the increase has been a positive one.

"I took the opportunity of posting muslin warning notices on all of the islands visited.

“At one point I was told that gull shooting was still practised at Eastport; while waiting at Lubec for the steamer to Portland I made a trip to Eastport, but I saw no shooting. The City Marshall there was well acquainted with the law and assured me that no shooting is done now. The conditions certainly are gratifying, and it is the subject of general comment all along the coast that the birds are much more numerous and tame than they have been for years.”

Mr. Norton has also prepared a special report on the ‘Food of Protected Birds on the Maine Coast,’ which on account of its great interest and importance is here subjoined in full.

“Notes on the Protected Birds on the Maine Coast with Relation to Certain Economic Questions.”

“The most important determination concerning the food of the protected bird was the demonstration, in support of previous observations, that the Gulls and Terns are insectivorous to a considerably greater extent than has generally been supposed.

“I have known for several years that the Common Tern feeds, in this State, to a great extent upon the large winged ants which swarm along the coast. Other insects often occurred in the stomachs examined.

“The Arctic Terns were supposed to be more thoroughly piscivorous, but the examination of six or seven stomachs last year showed that they also eat ants to some extent. One of the four stomachs examined this year was filled with adult moths belonging to the Noctuidæ.

“Wishing to preserve a series of young Herring Gulls, half a dozen of different sizes were taken on Little Spoon Island. Upon examining their stomachs it was found that this series, taken on the low water, contained almost no fish, but all contained ants in varying quantities, only one being full. The contents of this full stomach was analyzed by Dr. Sylvester D. Judd of the Biological Survey, with the following result: 1 bug, 12 carabid beetles, 1 click beetle, 1 scarabæid beetle, 1 cerambycid beetle, and 384 ants, *Camponotus pennsylvanicus*. Dr. A. K. Fisher informs me that ‘These insects are all neutral and of no great economic impor-

tance.' However true this latter statement is generally, locally the ants are regarded as injurious to the white spruce and fir which compose the largest part of the arboreal flora of the coast of Maine. While there is no proof that they kill the trees, they quickly fill the dead trunks with their burrows and impair the value of the wood for fuel. The fact that Gulls feed upon grasshoppers is variously attested at Matinicus.

"From the very complex conditions governing the habits of marine animals, little of a positive nature can be derived from the fishing habits of these voracious, almost omnivorous, birds.

"It is, however, stated by the United States Fish Commission that the 'Gulls probably feed more upon herring food than herring themselves.' (Cf. Moore, Rept. U. S. Fish Com., 1896, Appendix 9, p. 404.) It might with much truth be said enemies of the herring. The squids, *Loligo peali* and *Ommastrephes illecebrosus*, are acknowledged as the natural enemies of this fish. Both gulls and terns feed upon squid, the extent undoubtedly being governed by their abundance and the ease with which they are to be captured. Both at Little Spoon Island and No-Mans-Land pieces of large squid, *Loligo peali*, were seen in the nests of gulls, with the young birds. Both at Matinicus Rock and Machias Seal Island, squids, *Ommastrephes illecebrosus*, were found to enter into that of the Arctic Tern. While these creatures are enemies of the herring, they are an important article of bait for the fishermen, and enter to an important extent into the diet of the codfish and pollock.

"While it is probable that the gulls do not seriously trouble lobster fry, it is, on the other hand, clear that they render the lobster fishery a service in destroying large quantities of sea urchins at certain seasons. It is an acknowledged fact among lobstermen that the lobster is partial to rocky bottoms well clothed with kelp (*Laminaria*), where hiding places are abundant amid protectively colored surroundings.

"The herbivorous sea urchin (*Strongylocentrotus drobachiensis*) cleans the bottom of marine vegetation, to the detriment of the lobster's interest. The Eider Duck and American Crow also feed extensively in winter upon the echinoderms.

"It is by some claimed that the gulls are injurious to pasture, and even that they kill the trees where they breed. Concerning the last

statement, it is based upon imperfect observations, for while it is true that the gulls seem to be very partial to areas of dead and decaying wood lots, as they are at Little Spoon, Heron, Duck, Otter and Brothers Islands, and also formerly Cone Island, it is highly probable that they are attracted there by the security they afford, and in no small degree by the abundance of insect food, as I have just observed they use. On the other hand, it has clearly been determined that the spruce is subject to the attacks of several insects, to a serious extent. This matter has been made the subject of a bulletin by the United States Department of Agriculture (Bulletin No. 28, Division of Entomology, 1901, N. S.).

“Not only are the lumber regions affected, but the islands as well; two instances having fallen under my notice. One of these cases was a tract of several acres of standing spruce on Metinic Island, certainly not used by any sea-birds. The other one is the island of Seguin, once heavily wooded but now, through the attack of an insect, entirely devastated. Beyond the possibility of a question, no birds were instrumental in this destruction. The other islands named, where the gulls now breed, undoubtedly owe the death of their timber to a similar cause and in no way to the birds.

“Here it might be emphasized that these dead trees are often riddled by the large ants, which are eaten so extensively by the gulls and terns.

“Concerning the question of the birds injuring the pasture, the belief is based upon equally unscientific grounds. I have observed that some of the islands having a surface soil composed of deposits of drift, gravel and loam of varying coarseness, yield an abundant return in hay or vegetables. As instances, I can mention Bluff, Metinic, Metinic Green Islands, the two Green Islands east of Metinic, parts of No-Mans-Land, Matinicus, Seal and Libby Islands. Of this list Bluff, Metinic Green, and Libby Islands are now the homes of many terns, which cause no complaint from sheep raisers on account of the pasture.

“Metinic Green Island, which has only three sheep, has a stand of hay waist high, while Bluff Island returned a profitable harvest of the same product this year.

“The two Green Islands formerly supported large colonies of terns, while the smaller one had, in former days, a colony of about

50 Laughing Gulls. One of these has for many years been used as a farm and the other as a pasture, but no complaint was ever heard of this richly soiled island being injured by birds. Seal Island was also similarly inhabited by terns, previous to the millinery demand for their skins, but now is without birds, except Petrels; yet it has an abundance of grass and clover in spots.

“Certain other islands, as Otter Island, Great Spoon, Cone, and the Brothers Islands, and a large part of Little Spoon Island, are covered with a deep stratum (in some places certainly three feet deep) of red vegetable loam, quite unproductive.

“As striking instances of the unproductiveness of the pure vegetable loam, Matinicus Rock and Machias Seal Island are to be mentioned. At Matinicus Rock successful gardening is confined to three or four vegetables, cabbage, endive, parsnips, and perhaps another, potatoes, beans, etc., dwarfing. In such crevices and pockets as contain soil, it is wholly of the kind under consideration.

“At Machias Seal Island the soil is quite similar, and similar results were found until gravel from the ash heap was abundantly supplied, when the conditions improved.

“The complaint against pasture damage was from Little Spoon Island. This is an island of diversified conditions, forest or vegetable loam, shallow gravel over ledges, and some profitable drift loam. The pasture is not abundant, and the complaint is wrongly placed upon the birds.

“In conclusion, Heron Island affords interesting conditions. There the grass crop was good, but not equal to that of many other islands. The flock of sheep was not equal to its pasturing possibilities, much of the grass maturing and raising seed. It was there very noticeable that the sheep fed very largely in the proximity of the gulls' nests; that part of the island where fewest gulls were breeding was little grazed by the sheep. There it was quite evident that the gulls did not render the feed distasteful to the sheep, as the latter could have abandoned the part of the island where the birds were abundant.”

Audubon work.—The Society was organized late in 1902 and now has a membership of 200, scattered throughout the State. One of its objects is “To cherish an interest in birds and encour-

age the study of Natural History." It now has six local branches. During the year large numbers of warning notices, furnished by the National Committee, have been distributed. By the courtesy of the Vice-President of the Maine Central R. R. Co. warning notices were displayed in all of the steamers of the line and also on the steamer 'Frank Jones' of the Portland, Mt. Desert and Machias Steamboat Co.

MASSACHUSETTS.—Legislation.—During the session of 1903 several improvements in the bird laws were made; herons and bitterns are now protected and the possession of any such bird or part thereof, whenever or wherever taken, shall be punished by a fine not exceeding ten dollars for every bird or part thereof; the open season for snipe and plover is shortened six weeks in the spring, shooting not being allowed after March 1. The anti-plumage wearing clause is made to include birds not heretofore protected. The legislative sessions are held annually.

Warden system.—One warden was employed on the Weepecket Islands, who reports that the terns breeding there passed an undisturbed summer and made a normal increase. In this connection it is a pleasure to refer to an article by Prof. Lynds Jones in 'The Wilson Bulletin,' No. 44, September, 1903, pp. 94-100, entitled, 'The Terns of the Weepecket Islands, Massachusetts.' This paper is a very valuable contribution to the life history of the terns and confirms in every respect the report of warden Charles O. Olsen.

Mr. George H. Mackay, who has so long and successfully protected the gulls and terns of the Muskegets, writes: "They have enjoyed the same protection as heretofore, having been cared for as usual. Both the Terns and Laughing Gulls have had a good season and the latter especially show a very considerable increase. I think, regarding bird protection as a whole, that we now have the public pretty well on our side. It has taken some years to accomplish it, but we are practically there. Little remains to be done now in this State except to prohibit the sale during the close season of shore, marsh, and beach birds taken outside the State."

At the suggestion of Mr. Mackay the special report of Mr. Frederick A. Homer regarding the terns of Penikese Island is appended in full. This report shows so conclusively what perfect

protection will do for a colony of birds, and is so encouraging to all bird lovers, that it is with pleasure the Committee gives it the widest publicity :

NEW BEDFORD, MASS., Oct. 8, 1903.

MR. GEORGE H. MACKAY,

My Dear Sir:—

Yours of Sept. 30 at hand and noted.

This has indeed been an exceptional year for the terns of Penikese. Their number seems to be increasing yearly, and all the people who have had occasion to notice them say, as I do, that they have never seen so many before. Having been disturbed but little during their breeding season the result was an early hatch of great numbers and a very early departure for their southern home. There have been no crippled young this year, as we had no sheep, and we have had to destroy only about half-a-dozen for damaged wings, etc.

A boatman of this city who displayed about a dozen eggs was arrested and fined \$20. He probably will not take any more eggs, and it will be a warning to others.

The writer spends four or five days of each week at the island from first of April to last of November, and there is hardly a person lands on the island without his cognizance or permission, and there is no reason why these birds should not increase rapidly. My observation leads me to state that they do increase, and if they were not molested at the south, where I understand they are captured in great numbers for their wings, Penikese would not be large enough for them. I have noticed for the past few years an increasing number nesting on the neighboring islands and on the main land to the north of them.

Of course one must take some interest in these creatures who visit you yearly whether you are willing or not, but I can see that in a few years, unless we extend our cultivated land, we shall have more of them than we care for; this is in the future, however.

My notes very carefully taken record the following :

May 7.—Early in the morning, weather cool and hazy with wind very light from the east, the terns arrived in full force.

May 24.—The first egg was found by the writer.

June 25.—The first young tern was found.

July 14.—Some of the young could fly.

August 4.—The terns commenced to leave in small flocks.

Sept. 14.—They had deserted us entirely.

My brother and myself have had a very enjoyable season at the island in spite of the rather unfavorable summer weather; now we are having the weather of the year for our pleasure.

We have had no plover at the island yet, in fact very few shore birds stopped here.

Yours, with kind regards,

(Signed) FREDK. A. HOMER.

Mr. Jno. E. Howland of Vineyard Haven, a true sportsman who takes great interest in the protection of birds, writes: "We had more Heath Hens on the Island the past fall than in any season for fifteen years past. I was at the South Shore a number of times, and should say unquestionably all gulls that summer with us were more numerous than a year ago. I have never seen more Laughing Gulls about than this year.

"Regarding the rookery of Night Herons, I am pleased to say that, as far as I know, not a gun was fired or an egg taken. Our club own both sides of this rookery and we hope to purchase this piece; we have about four hundred acres in two plots. The Heath-hen if let alone for a few years will be quite plenty. Quail were more numerous than any season in ten years past."

Mr. Ralph Hoffmann, a member of the A. O. U. Protection Committee, reports as follows: "The beneficial hawks and owls are still outside the pale. We hope to do something for them this winter.

"The question of further protection for shore birds is one that has especial interest for the writer of this report. I should like to see the open season for the big birds shortened, and the little birds, including the Least, the Semipalmated, Bonaparte's, Solitary, and Spotted Sandpipers, the two Ring-necks and the Sanderling, excluded from the list of game birds and protected throughout the year. These confiding birds do not offer sport in the sense in which the more wary birds are said to offer it, and a community that is becoming steadily more interested in living birds can put these birds to a better use than as food. I venture to prophesy that it will at some future time seem as strange to us to offer peep in the market as it does now to see sky-larks in the French and Italian markets.

"Capt. Collins has, as heretofore, seen to it that existing laws for the protection of birds are well enforced."

Audubon work.—The report of the Society shows continued and successful activity. "Since the last report the Society has gained 346 members, making the total number of persons enrolled 5,708. There are now 116 local secretaries, covering 117 places.

"The work of distributing circulars, including a large number of Educational Leaflets, has been carried on as extensively as last

year, and a good number of copies of the laws have been posted. Two illustrated, traveling lectures have been almost constantly in use, and many expressions of appreciation have been received. Four traveling libraries have been circulated continuously.

"All violations of law brought to the notice of the Society have been reported to the State officers, the Fish and Game Commission.

"There has been a good demand for the two bird charts published by the Society, and a new calendar for 1904, is to be issued this fall.

"The following meetings have been held: A course of six lectures, by Mr. Frank M. Chapman; a free lecture or public meeting, by Mr. William Lyman Underwood, which was much enjoyed; and a field meeting, or bird walk, open to Associate members, to which a few Junior members were invited.

"A suggestion received by us could, perhaps, be best carried out by the National Committee, if it approved the plan, and I am asked by our Directors to refer it to you for consideration, namely, an exhibit at the World's Fair in St. Louis, in 1904. Such an exhibit, if participated in by all, or by most of the societies, would show something of the work that is being done, and open the eyes of those who have not yet considered the subject. The leaflets and specialties (such as our bird charts and calendars) published by each society could be shown, and the addition of stuffed birds from which the feathers most objected to are taken, together with a few beautiful hats that are approved (with perhaps a few objectionable ones as a contrast), would make it interesting and striking."

MARYLAND.—*Legislation.*—The next session of the legislature will commence in January, 1904, and an effort should be made to amend the present law so it will follow more closely the A. O. U. model law.

Two of the most valuable birds in the State, *i. e.*, the Flicker and Mourning Dove, do not receive full protection. This is a short-sighted policy, as both are far more valuable as insect and weed-seed destroyers than they are for food. The State Fish and Game Protective Association should take this matter in hand and urge the substitution of the A. O. U. model law for the present statute.

Warden work.—No wardens were employed by the Thayer Fund.

Audubon work.—The Society seems to have become moribund. This is to be regretted, as the necessity for active protection and educational work was never greater than at the present time, nor was there ever a period in the history of bird protection when so many people are ready to take an interest, if the matter is properly presented to them. The National Committee is small in numbers and has so large a field to cover that it necessarily depends upon local effort to accomplish local good.

MICHIGAN.—*Legislation.*—As proposed in the last annual report, an effort was made to amend very slightly Section 14, Public Acts of 1901. The amendment passed the House but was not successful in the Senate, therefore the non-game bird law is unchanged. The next session of the legislature will be in 1905.

Warden work.—One warden was employed to guard a very large colony of Herring Gulls, which occupy a rocky island in the northwestern part of Lake Superior, just south of the International Boundary. These birds had an uninterrupted breeding season and consequently a normal increase.

It was discovered that a taxidermist of Detroit was preparing for millinery use gulls and terns contrary to law. The matter was brought to the attention of the proper authorities, and they interviewed the party, who did not deny the fact, but promised not to offend any longer.

Audubon work.—During the present year the Michigan Ornithological Club was reorganized. One of its objects is the study and protection of birds. It publishes a quarterly journal devoted to birds and is thus doing a valuable educational work.

MINNESOTA.—*Legislation.*—During the session of 1903 the A. O. U. model law was adopted. The next session of the legislature will be held in 1905.

Warden system.—No wardens were employed by the Thayer Fund.

Audubon work.—The Secretary reports: "During the year several articles on care and protection of birds have been published in our papers, upon request of the Society.

"A society has been organized by Mrs. Mary E. Lewis at Grand Rapids, Minn.

"Mrs. J. B. Hudson, of Lake City, again exhibited her collection of birds' nests at the State Fair, while Mrs. Chas. W. Aker exhibited weeds furnishing food for birds.

"Next year we hope to obtain slides for stereopticon lectures."

The Duluth Humane Society is taking an active interest in bird protection and offers a reward of \$10 for information which will lead to the arrest and conviction of any person killing song birds or robbing nests.

MISSISSIPPI.—*Legislation.*—Section 1134 of the Annotated Code, 1892, protects three species of non-game birds, *i. e.*, the Mockingbird, Catbird and Thrush; all of the other valuable non-game birds are without protection.

There is ample reason for the following editorial in 'The Meridian (Miss.) State': "Bird protection is going to be made an economic issue in every Southern State before many days, and the army of sentimental advocates will be reinforced by the utilitarians, who, while caring nothing for the beauty of the feathered songster or the music he makes, are very much alive to his usefulness in exterminating insects that kill crops, and are determined to stay the hand of the snarer and wanton bird killer before it is too late and the insects have taken possession of the land. Wherever common sense prevails, this cause will find advocates, and the 'State' would like to see bird protection made an issue in Mississippi politics next year."

The next session of the legislature will commence in January, 1904, and it is the imperative duty of the members to pass the A. O. U. model law, which has already been adopted by the following Southern States: Virginia, Kentucky, North Carolina, Tennessee, Georgia, Florida, Arkansas, and Texas.

South Carolina, Alabama, Mississippi and Louisiana are the only Southern Coast States that give none or but little protection to their valuable birds.

MISSOURI.—*Legislation.*—None was accomplished. Why the effort for a satisfactory law was defeated is best told by officers of the Audubon Society.

"And what of Missouri? Solitary and alone she stands in her humiliation and helplessness. Her general assembly has adjourned with contemptuous indifference toward her needs in

this regard, leaving the song birds of her forests, the game birds of her fields and mountains, and the fish of her sparkling streams at the mercy of the market hunter and the ruthless destroyer, the patrons of cold storage warehouses, the trapper and the dynamiter, all of whom may soon be expected to wipe out what little wild life yet remains in the State, after the previous years of unbridled and defiant slaughter.

“Why does Missouri occupy this unenviable position? For a year or more the Secretary of this Society, assisted by the two other members of its Executive Committee, has been laboriously at work drafting and creating a bill which has been pronounced nearly perfect by the judicial and expert authorities of other protected States, by the U. S. Department of Agriculture, and by various Agricultural and Horticultural Societies of Missouri. The bill was submitted to the Joint Committee upon bird and game legislation in the Senate and House at Jefferson City and, with a few unimportant changes, adopted as their own. The two committees were not only satisfied with the bill, but were in a measure enthusiastic over it. No doubts were expressed about its passage; but, in the meantime, delegations from the game dealers and patrons of cold storage warehouses visited Jefferson City to oppose the bill. Immediately after their departure enthusiasm for the bill waned in the Senate, and when it was reported a furious onslaught was made upon it by a senator who led the opposition to a similar bill two years ago. The bill was loaded down with injurious amendments, and sent back to the committee, where it slept forever afterwards, despite the efforts of the Audubon Society to have it reported; the bill died with the session without the Senate getting an opportunity for a final vote.

“In the House the bill was never reported, but remained in the hands of the committee. It is unnecessary for us to make any statement as to why the bill was not pushed in the Senate for he who reads can understand.

“Gov. Dockery’s request in a special message to the General Assembly for effective game and bird legislation, the pleadings of thousands of Missourians and the Press throughout the State to enact better protective laws, were treated with the utmost contempt and disregard by the joint committee on bird and game legislation.”

Some further light is thrown on this matter by the St. Louis 'Star' in its edition of July 1: "About the cruelest thing perpetrated by the boodlers in the last Legislature was to defeat the bill of the Audubon Society for the protection of the birds. Men must be greedy indeed, when protection must be bought for the feathered songsters."

The next session of legislature will be held in 1905.

Warden system.—No wardens employed by the Thayer Fund.

Audubon work.—The officers of the Audubon Society, with commendable pluck and nerve, say: "Notwithstanding the failure to get legislation at the recent session, the Audubon Society does not purpose to give up the fight. It believes the great majority of the people of Missouri are in favor of bird, fish and game protection, and it further believes that their voice must finally be heard."

MONTANA.—*Legislation.*—The non-game bird law is imperfect, inadequate and not enforcible, as the penalty is altogether too severe. The ordinary juryman will not convict when a penalty is out of all proportion to the magnitude of the violation.

The next session of the legislature will be held in 1905.

Warden system.—No wardens were employed by the Thayer Fund.

Audubon work.—There is no society in the State, and seemingly little interest exhibited by the citizens, either in bird study or protection.

The press of Montana should agitate the matter and enlist the sympathy of the public in this important subject.

NEBRASKA.—*Legislation.*—No change in the non-game bird law. At the last session of the legislature a law was passed prohibiting pigeon shoots at traps. This excellent measure was the result of the united efforts of the Nebraska Humane Society and the Omaha Audubon Society.

The next session of the legislature will be held in 1905.

Warden system.—No wardens were employed in this State.

Audubon work.—The Nebraska Ornithologists' Union is doing excellent work in popularizing the study of birds in the State and in uniting all the students in a Union that cannot help exerting a good influence for bird protection. "At its last annual meeting the

Union elected enough new members to make the total present membership reach the goodly number of nearly two hundred, and it has also ratified all that has been done in connection with establishing an Audubon auxiliary in the State.

“The amount of bird protection sentiment which we found in the State Legislature was something most gratifying. There are three members of the present State Legislature who are members of our Society.

“At the State Horticultural Society the sentiment in favor of bird protection developed in the discussions was not only unanimous but surprisingly strong.”

The Department of Public Instruction has issued a pamphlet for the use of the schools of the State, entitled ‘Special Day Programs,’ among which is ‘Bird Day’. Thirty-three pages of valuable ornithological matter is presented in a popular form that teachers can use to advantage to interest and instruct the children.

An independent society has been organized in Omaha that has been doing an aggressive work among the children. The Secretary presents the following very interesting report:

“The Omaha Audubon Society was organized June 23, 1902. In looking back over the fourteen months of the life of our Society, the Secretary is more gratified than otherwise, not that we have accomplished so very much, but that we are in a way now to do much.

“Our energies so far have been expended upon the children; and we consider our greatest accomplishment the enrolling of over ten thousand junior members last spring. More than fifteen thousand Audubon buttons were sold to school children in the year. We have chosen the Meadowlark as our representative bird; and his friends are many in the State. We enjoy the enthusiastic coöperation of the teachers, many of whom are numbered among our members.

“During the year some thirty-five different schools were visited by our President, Dr. Towne, and Vice-Presidents, Arthur Pearse and Rev. John Williams. The children have taken up the work with an enthusiasm very gratifying. We have gained the friendly coöperation of the police and have printed over the signature of the Chief of Police, warnings against the destruction of birds, their

nests and eggs. These warnings are posted in the parks, woods, and all places frequented by birds. We discovered there was a veritable egg collecting industry among boys; this we reported to the game warden and the police of the city, and it will be stopped.

“We have no arrests to report, but a number of ‘conversions’, results of mild persuasion.

“We were instrumental in the passing of the Loomis bill prohibiting live bird-trap shooting. Another bill of ours, prohibiting the plucking of live birds or fowls, was passed and went into effect the first of last July. We presented a resolution at the last general meeting of the Woman’s Club endorsing the action of the New York Audubon Society and Millinery Merchants Protective Association, which was passed; nearly all the women present pledged themselves not to wear the plumage of any of the prohibited birds. We are now trying to bring about an agreement with the retail millinery trade of this city.

“This may look like a small year’s work, but it was done by busy people. We have been sorely hampered by lack of funds, and for that reason, our distribution of circulars and literature has been far from what we would have wished.

“We have great hopes for the coming year. We intend this winter to extend our paying memberships and otherwise increase our treasury that we may be able to carry out our plans for literature, tracts, etc. We are desirous of placing the charts of the Massachusetts Society in our schools.”

NEVADA. — *Legislation.* — In some respects the non-game bird law is good, but it needs to be made more comprehensive in order to protect the beneficial hawks and owls, and doves at all times instead of only a portion of the year. The next session of the legislature convenes in 1905.

Warden system. — No wardens were employed. There are many shallow lakes and tule marshes in Nevada where large numbers of birds still breed. If the funds at the disposal of the Committee during 1904 will permit the expenditure, wardens will be engaged to protect the grebes, gulls, terns, ducks, avocets, herons, pelicans and other water loving birds during the breeding season.

Audubon work. — No society has as yet been organized in this State.

NEW HAMPSHIRE.—*Legislation.*—No change in law. A. O. U. model law in force.

Warden system.—No wardens were employed by the Thayer Fund.

Audubon work.—The Secretary submits the following résumé: "The work of the Audubon Society has been substantially a continuation of that of last year.

"The illustrated lecture entitled 'Our Personal Friends, the Birds,' with the accompanying lantern, has been loaned to all who applied for it. The circulating library has proved to be very welcome in the small town where books concerning birds are difficult to obtain. Leaflets and circulars have been distributed at large. Publications which have been specially in demand are Mr. Hoffmann's 'Help to Bird Study,' Miss Merriam's 'How Birds affect Farm and Garden,' and Prof. Weed's 'Mission of the Birds.' Other pamphlets issued by the Biological Survey and the A. O. U. have proved to be of great interest. Special effort will be made next year to circulate the series of Educational Leaflets published under the auspices of the National Committee of Audubon Societies.

"The Bird Charts are still in demand and have been supplied free of cost to schools which were not in condition to purchase them.

"The 'Outline of Bird Study,' prepared by our Society and adopted by the school committee of Manchester, has been introduced into several other cities and towns.

"The State Fish and Game Commission has coöperated with us in the enforcement of the existing bird laws, which are in conformity with the A. O. U. model law. Fines have been imposed by the commissioners. As there has been no appeal from their action no cases have as yet come into court."

NEW JERSEY.—*Legislation.*—The A. O. U. model is still in force. During the legislative session of 1903 the clause in the game law permitting the killing of Flickers for two months in the year was repealed and spring shooting of snipe or shore birds was stopped. These amendments were decidedly advance movements. New Jersey will do well to follow the example of New York and Virginia in stopping spring shooting of wild ducks and geese. It

is wrong in principle and wasteful to kill any game birds while they are on their northward migration to their breeding homes.

Warden system.—Two wardens were employed and were visited by Mr. W. D. W. Miller, a member of the A. O. U., who makes the following exhaustive report.

“Beach Haven.—On July 6 I arrived at the breeding grounds below Beach Haven, which are under the protection of Captain Rider of the United States Life Saving Station at this point. Here I saw over one hundred Laughing Gulls flying about over the grassy marshes where they breed. Noted less than half as many terns. All of whom I inquired told me that the latter were scarce. Clapper Rails were common. With Captain Rider I searched for nests but was unable to find a single one of any kind. The reason for our failure was, according to the Captain, that the unusually high tides in June had swept away all the eggs and young of the gulls and rails. Why we could find no nests of the tern he was unable to say, as this bird nests on higher ground than the others.

“Of other birds noted the most interesting was the Piping Plover, and as there were two of these birds together it seems probable that they were breeding. Ospreys are scarce here.

“Stone Harbor.—I arrived at Captain Ludlam’s station at Stone Harbor on July 7, and stayed until the 9th. I found this warden greatly interested in the birds and their preservation, and from all I could hear he had strictly protected the birds in his vicinity. According to him the number of Clapper Rails which started to breed had been very large this year and the gulls had been of about the same abundance as the year before. The number of gulls’ nests had been approximately three hundred, but all of these, together with the young rails, had been completely destroyed by the abnormally high tides of June 22 to 25.

“I saw several hundred gulls at one time over the breeding marshes here. Found none of their nests, however. The captain had been told that the gulls do not make a second attempt to breed if their first set is destroyed, and he now believes this to be true, for he had seen no signs of rebuilding since the tides had subsided nearly two weeks before. Clapper Rails were heard commonly, and with little effort we found two nests, containing six eggs each.

Terns were very scarce here, apparently even more so than at Beach Haven, for I saw not more than fifteen all told.

"I noted no Least Terns nor Black Skimmers at either locality visited. Both species formerly occurred at these points.

"As being practically the only breeding grounds of Laughing Gulls and Common Terns on the New Jersey coast at the present time, it seems to me very desirable that the protection of these two colonies should be continued. The success of the terns largely depends upon the prohibition of all spring shooting after they have reached their breeding grounds. I was informed by Captain Ludlam that large numbers of terns arrived at his locality in the spring but were driven away by the shooting, a very small number remaining to breed. If spring shooting is stopped and the birds rigorously protected the terns will undoubtedly increase in numbers."

Audubon work.—The Secretary reports as follows: "The Audubon Society has 566 members, the greater part of the new ones being children. During the past year two leaflets have been written by members of the Society. Altogether over 1,000 leaflets have been sent out, and about 125 letters written.

"An effort will be made during the coming year to insure the protection of Robins, and also to create more interest in birds among the children in the State.

"Fifty-three towns and fifteen counties are represented in the Society."

NEW MEXICO.—*Legislation.*—The non-game bird law of this State is fairly comprehensive and if properly enforced will protect the birds. In addition, Sec. 3, of Chapter 51, Acts of 1899, gives authority for any owner or lessee of lands to post his premises and thus prevent any person shooting thereon. A violation of this provision is a misdemeanor.

The next session of legislature will be held in 1905.

Warden work.—No wardens were employed by the Thayer Fund.

Audubon Society.—There is none at present in the Territory.

NEW YORK.—*Legislation.*—No change was made in the non-game bird law; however, the game law was greatly improved by the passage of a bill introduced by the Hon. Elon R. Brown abol-

ishing spring shooting of ducks and geese. These birds cannot now be legally killed in New York State between January first and September fifteenth. Other beneficial amendments were made regarding possession, sale and transportation of woodcock, quail and grouse.

Sessions of the legislature are held annually.

Warden system.— Three wardens were employed by the Thayer Fund to care for the breeding colonies of terns on the north and south ends of Gardiner's Island and on Fisher's Island. The latter colony suffered somewhat from the swarms of rats on the island. The warden used poison to destroy them and in one day found 47 dead ones near the nesting grounds. The south colony on Gardiner's Island was flooded early in the season and many eggs were destroyed, while the north colony was raided by a boat's crew from the U. S. vessel 'Chesapeake', who took many eggs. Notwithstanding these unfortunate incidents the birds made a fine increase. During the southward migration in September larger numbers of terns were seen on the New York coast than for many years. In New York Harbor, as far up as the Jersey ferries, it was not unusual to see a score or more of them while crossing the Hudson River.

During the past year suits were commenced against two of the large department stores of New York for having on sale protected birds. In both cases the defendants settled by payment of a nominal fine and the entire costs in the cases, thus establishing the legal fact that protected birds cannot be sold for millinery ornaments in New York. These suits were started before the agreement was made between the Millinery Merchants Protective Association and the New York Audubon Society and the American Ornithologists' Union.

In many parts of the State the farmers and sportsmen are organizing associations for the protection of game and birds in their several localities. These societies will be the means of doing a great amount of real protective work.

The Chairman of the National Committee has suspected for some time that illegal shipments of live native birds were being made from the port of New York. This suspicion was verified last spring when he caught a dealer, one G. Seville, with a large

number of Bluebirds, Red-winged Blackbirds, Song and Savanna Sparrows in his possession. The arrest of the dealer followed; he escaped from the State and is now a fugitive from justice.

Audubon work.—The Society is aggressively active, as its report shows: "The Society has kept steadily at work during the past year, but there is no gauge to measure the annual harvest. It is to be hoped that the seed sown may be of a perennial nature.

"Immediately following the annual meeting last year in October, 1500 warning notices to dealers were sent out, calling the attention of the entire millinery and game trade of New York to the law of the State for the protection of birds, and stating that the New York Audubon Society would bring action in every case of violation brought to its notice. The determined and dignified stand thus taken was, undoubtedly, directly responsible for the proposition made last spring by the wholesale milliners of New York which resulted in the step, considered by many the most important event in the history of bird protection, namely, the agreement between the Millinery Merchants' Protective Association on the one hand, and the Audubon Society of the State of New York on the other. The conditions of this agreement saves our American song birds from the clutches of the millinery trade, and banishes from the American market all gulls, terns, grebes, hummingbirds, and after January, 1904, even the 'Bonnet Martyr,' the egret, for the term of three years.

"In addition to the 'Warning to Dealers,' this year the Society has issued 'The Aigrette: An Appeal to Women,' by Mrs. May Riley Smith.

"The Educational Leaflets issued by the National Committee, of which we are sending out 10,000 copies, we find invaluable. Would that every child in the State might own a set of them!

"The law posters have been more widely distributed this year than ever. Finding that lack of sufficient appropriation would prevent the Forest, Fish and Game Commission from complying with our request that the law should be posted on all lands belonging to the State, the Society furnished 1,000 muslin posters, which the Commission placed throughout the Adirondack region. The secretary of the Adirondack Guide Association was also sup-

plied with 100 muslin posters, which were scattered throughout the Fulton Chain. In all nearly 4,000 posters have been distributed throughout the State by the Society.

"That the attempt to place them in all stations of the New York Central R. R. system met with failure is a matter of regret.

"A large quantity of our literature was sent to the State Fair at Syracuse.

"The total number of leaflets distributed during the year is over 18,000.

"A lecture by Miss Mary Mann Miller, especially adapted to children, has been added to our lantern outfit. Not as many applications for the use of the lantern and slides have been received this year as might be wished, but we hope, by means of this new lecture, to greatly increase the demand for them. The outfit will be loaned to any responsible person in the State of New York, who will comply with the conditions.

"The Society has given out many more sets of the colored wall charts issued by the Massachusetts Audubon Society. Besides being loaned to school and club rooms, these charts have been placed, in many instances, during the summer months, in public libraries, thus keeping them constantly in use. Most gratifying reports come to us of the pleasure they give and the interest in bird study they arouse.

"Twelve new Local Secretaries have been appointed during the year.

"The New York Society grows slowly; the total membership is 4,207.

"Mr. Chapman kindly gave a lecture for the benefit of the Society, at Delmonico's, which netted over \$350. This financial help enabled the Society to contribute \$100 toward the funds of the National Committee, and no money has been more gladly paid out from the treasury of the New York Audubon Society.

"The marked increase in requests for lecturers that have come to the Society during the year, indicates a strong advance in popular interest in bird study.

"The New York State Assembly of Mothers' annually sends for a report of the Society's work. This organization is one with which it is most important to be affiliated.

"A constant watch is kept at Albany upon all bills introduced in the legislature, that no backward step shall be taken to disturb the present law.

"Owing, undoubtedly, to the general circulation of the 'posters,' many complaints of illegal shooting have been reported. In one instance a farmer was charged with boasting of having shot 25 robins in one morning; due steps were taken, the local warden informed, and Audubon leaflets sent to the offender. A letter has been received from the latter saying that he had been maligned, that he realized now the value of the birds to agriculture; whether this change of opinion is due entirely to the higher education produced by reading Audubon leaflets, or comes from a salutary fear of legal action on the part of the Society, the result is satisfactory, in that the popping of the gun is diminished.

"The New York Society has lately run upon a rock which has for a time wrecked our hopes in one community. A local secretary had succeeded in attracting a little group of children and was entering enthusiastically upon the work when a man appeared shooting promiscuously, and telling the inhabitants the secretary had no business to interfere with him, as he had a 'permit.' In a short time the town was demoralized, and the secretary disheartened. The matter ought to meet with the utter disapprobation of all bird lovers, for it shows a serious danger which in its moral effects might prove of even greater harm than 'murderous millinery.'"

NORTH CAROLINA. — *Legislation.* — During the last session of the legislature a game and non-game bird law was enacted which embodied all the main features of the A. O. U. model law. In other respects the game law is far in advance of any law that has ever before been in force in this State.

Warden system. — During the past breeding season three wardens were employed, all of whom did effective and valuable service. From their very frequent reports to Secretary Pearson of the Audubon Society, under whose direction they worked, we have the assurance that the coast breeding birds, such as gulls, terns, skimmers and snipe, have enjoyed a freedom from persecution that has long been absent. The reports show a very material increase in the bird life of the coast region. It is proposed, as far as the

funds at the disposal of the National Committee will permit, to continue the protection in order to save from destruction the water birds that migrate from the north and winter on the North Carolina coast. It seems unwise to preserve the bird life on the North Atlantic coast if it is not to be cared for in its winter home. Of one of the wardens Secretary Pearson says: "We must keep this valuable man in our service. I have never met a man who knows him who does not declare him an exceedingly strong and fine character. I believe most profoundly that he is doing a grand work in educating public sentiment in that coast country."

The shallow sounds and water ways of the North Carolina coast are so very extensive that it seems imperative that the chief warden should be furnished with a good seaworthy power boat, in order to move rapidly from place to place. The naphtha launch experiment in Florida has proved so very successful that the National Committee feels warranted in urging the friends of bird protection to make special contributions toward a fund for the immediate purchase of two 25-foot naphtha launches, one for use in North Carolina, and the second in Northampton and Accomac counties in Virginia.

Audubon work.—Audubon work is progressing finely in this State. Some details are furnished by the Secretary: "The work of the Audubon Society of North Carolina for the past year may be summed up under four heads.

"*First*, the securing of legislation which extends protection to the non-game birds, and gives the Audubon Society the power of naming game wardens throughout the State.

"*Second*, Efforts to build up the membership of the Society.

"*Third*, The cultivation of a better sentiment throughout the State for bird and game protection. To this end over fifty thousand circulars have been distributed, articles prepared and published in the press of the State, and the Secretary has given more than thirty public lectures and talks on the subject. A junior department has been established, with Mrs. W. C. A. Hammel, of Greensboro, as Secretary.

"*Fourth*, The securing and paying of Bird and Game Wardens. By the aid of the Thayer Fund three wardens were kept on the coast the past summer with the result that about two thousand

Wilson's Terns, Royal Terns and Black Skimmers were reared, where heretofore probably not over one hundred have been reared annually.

"Eighteen wardens with full police powers are now in the field. Within the last four months these wardens have secured twenty-two convictions for violations of the Bird and Game laws.

Regular members	(annual fee, 25c.)	. . .	350
Junior members	(" " 10c.)	. . .	400
Sustaining members	(" " \$5.00)	. . .	331
Life members	(\$10.00, paid once)	. . .	<u>25</u>
Total			1106"

OHIO.—*Legislation.*—No change in the law, the A. O. U. model law being still in force. Next session of legislature, January, 1904.

One of the most important duties of the Audubon Society during the coming legislative season will be to see that no amendments are made to the present perfectly satisfactory non-game bird law. Extreme vigilance and the examination of every game or bird bill that is introduced is the only way to prevent adverse legislation.

The following item appeared in the 'Citizen' of October 30: "Game Law Changes. The coming legislature will be asked to repeal the dove clause in the game law." To offset the above the Audubon Society should circulate freely throughout the State, Educational Leaflet No. 2, which conclusively proves that the dove is one of the most valuable birds existing, as it is the greatest of the weed-seed destroyers.

The narrow escapes in Florida and Wyoming should be an object lesson to the Audubon societies in all the States that have legislative sessions in 1904.

Warden work.—No wardens were employed by the Thayer Fund. However, those employed by the State are extremely active and are enforcing the statutes.

Audubon work.—The comprehensive report of the Recording Secretary is herewith submitted: "The Ohio Society has grown rapidly during the past year, having now a membership of about 350, exclusive of junior members and of the chapters which have this year been formed in Cleveland, Columbus and Home City.

Increased attendance at our monthly meetings and the constantly increasing demand for literature made on the Corresponding Secretary indicate the growing influence and force of our work.

“One public meeting was held during the year, an illustrated lecture by Mr. William Hubbell Fisher, the President of the Society, on the ‘Folk-lore of the Stork.’ The lecture was preceded by a few remarks on Audubon work, thus bringing the matter of bird protection before many to whom it was a new subject.

“The lecture was well attended and greatly enjoyed, and its results were seen immediately in the admission of many new members, the formation of a branch society in a suburban town, and a large influx of back dues from delinquent members. A small admission fee was charged, and the proceeds considerably increased the funds of the Society.

“In addition to Mr. Fisher’s lecture, addresses at the monthly meetings have been made. The public are always invited to the meetings, at which the business is disposed of as quickly as possible in order to give time for the address, field notes, and general discussion. The members of the Society give frequent talks in the schools of Cincinnati and suburbs, and assisted the schools in the celebration of Arbor Day by supplying speakers and sending to each school a copy of a circular letter to be read in connection with the exercises. A circular letter was also sent by the corresponding Secretary to the various Teachers’ Institutes held throughout the State. The result was especially encouraging at Trimble, Ohio, where the wish to form a branch society is manifested.

“The warning notices furnished by the Thayer Fund have been posted widely through the State, and a large amount of literature has been distributed by the Corresponding Secretary. The schools, especially in Hamilton County, work with us, and the results are encouraging, though we constantly feel that the most which we can do is much less than is needed for the work.

“The Cuvier Club of Cincinnati has worked with us on many occasions, furnishing us with a meeting place, and doing splendid work last year in the enforcement of the bird law. The A. O. U. law has been a great satisfaction to all interested in bird protection, and milliners throughout the State have been successfully prosecuted for its violation.

"In the ensuing year the Society expects to continue the same lines. We shall repeat and extend our aggressive work in the schools. Most of the members of the central society are Cincinnatians, but we hope this year to extend our work more widely through the State and form more branch societies, which can assist us in this. A law committee will be appointed to take charge of all questions that may arise in the enforcement of the bird laws."

OKLAHOMA TERRITORY.—*Legislation.*—An effort was made to pass the A. O. U. model law, but it was not successful, notwithstanding it was advocated by some very earnest people.

The present law is worthless, but it cannot be improved until the next session of the legislature, which will be held in 1905.

Warden system.—No wardens were employed in this Territory, owing to lack of legal backing.

Audubon work.—The Society is local and seemingly inactive; no reports or communications have been received recently from it by the National Committee.

OREGON.—*Legislation.*—During the present year the A. O. U. model law was adopted in this State. Fortunately for the protection Committee and the citizens of Oregon one of our members is a resident. He took the legislative work in charge and without any compensation except that which always is received by a person who performs a civic duty, camped over four weeks at the Capitol. His experiences, which are not strange to other members of the Committee, are so instructive to the public, that they are given in some detail: "The A. O. U. Bird bill passed the lower house to-day (Feb. 4, 1903). This is my fourth week here and I think the last, as the senate will not take so much time to consider the bill. I had the bill all but passed but found that the committee had cut it up so that its author would not know it. In Section 7 they wished to include the crow among the prohibited birds, to which I made no objection and told them to insert the name after the English Sparrow but otherwise to let the section remain unchanged; a few moments before the bill was to come up for final vote I learned the committee had also included "All kinds of hawks, owls," and ending with the words "Passer domesticus" as a kind of amen, to give an air of wisdom to the rest of the

work, though the "English Sparrow" was the first bird mentioned in the excluded list. My only recourse was to have the bill referred again to the committee, and we began all over. To prevent opposition from those bound to consider certain species harmful, I revised the section and put in a clause legalizing the killing of birds when in the act of catching domestic fowls or destroying growing crops, throwing the burden of proof on the defendant; this pleased the committee and passed the bill."

Warden work.—No wardens were employed by the Thayer Fund.

Audubon work.—The State Society still continues its activity, especially along educational lines, as its report shows: "The A. O. U. model bird law has passed the legislature this year and Oregon is now one of the States whose bird laws are entirely satisfactory. It is largely due to the efforts of Mr. Clarence Gilbert and Mr. A. W. Anthony that this improvement has become possible.

"A large number of notices have been placed throughout the country giving a list of birds protected by the model law; these have proved particularly effective. During the occasional storms along the coast towns the Alaska Thrush and Meadowlarks are driven to the tide lands where formerly they were slaughtered in great numbers. This year very few were killed, the Alaska Thrush being seen in numbers about the homes.

"Six Bird Clubs are in active work in the State. In several of these societies prizes have been offered to the school children for the best essays on Oregon birds and their habits. The John Burroughs Club of Portland offers an annual prize to all school children of Oregon of the ninth grade for knowledge of native birds, and has, within the past few weeks begun a regular department in the 'Club Journal'; other literary work is also in progress.

"The State Society was this year handicapped in its work, but hopes next year to carry out the following plan: to reach by personal correspondence the teachers of the rural districts, so widely scattered throughout the State, and to offer special prizes to the pupils for the best essays on personal observations of the birds. The writer of the best essay is to receive a special prize.

"In regard to work in rural districts and small towns, it is sug-

gested that the National Committee send to the country papers from time to time short news items of interest relating to its work, and request publication of same. We believe that especially in small towns throughout the West such a course would be beneficial."

PENNSYLVANIA. — *Legislation.* — There has been no change in the law; the same doubt as to which non-game law is in force still exists. This matter should be settled by a test case. The next session of the legislature will be held in 1905.

Warden system. — No wardens were employed by the Thayer Fund.

Audubon work. — The report of the Secretary is as follows: "There has been the usual increase in membership, and several new local secretaries have started to work in towns that have heretofore had no members. Educational leaflets have been distributed and copies of the bird laws posted wherever it has been possible.

"Miss Justice continues her good work with the traveling libraries, and reports 14 libraries of 10 books each, which have been sent to 11 counties during the year."

The society issued the following excellent circular of instruction to its members: "The constable of each township or borough in Pennsylvania is the person authorized by law to arrest violators of the bird laws, and he must make a report under oath to the Court of Quarter Sessions of his county at each term, of all violations occurring in his township or brought to his notice.

"Members of the Audubon Society wishing to have violators of the law arrested should bring the matter to the attention of the constable of their township and see that he follows it and reports on it as required. If he fails he should be reported to the Judge of the Court. A constable failing in his duty can be prosecuted and fined \$50."

The National Committee commend this plan to the other Audubon societies.

Prof. H. A. Surface, of the Pennsylvania Department of Agriculture, is doing a most excellent educational work. He is issuing for free distribution in the State, monthly bulletins of the Division of Zoölogy. These are filled with just the kind of scientific

knowledge put in popular form that the citizens should have, especially those that live in the rural districts, or are interested in any branch of agriculture. It would be a very wise expenditure of public money for every State to follow the example set by Pennsylvania and Delaware.

RHODE ISLAND. — *Legislation.* — There was no change in the law at the session of the legislature. At the next session an effort should be made to protect all the beneficial hawks and owls. Sessions of the legislature are held annually.

Warden system. — No wardens were employed by the Thayer Fund.

Audubon work. — The Secretary reports: "The work of the year has been confined to the regular work of the Board of Directors and of the various committees. We have seven local secretaries in the State. Our traveling lecture has been used in many places and our library is constantly loaned. In Providence two lectures have been given under the auspices of the society, 'The Bird Life of Islands,' by Mr. Frank M. Chapman, and another by Mr. F. Schuyler Mathews. We have assisted financially in placing bird charts in the country schools of the State.

"A millinery committee has sent circulars to all the local milliners, but it was thought best not to go on with the work when the Board of Directors voted to concur in the action of the National Committee and the Milliners' Protective Association.

"We have distributed Audubon literature throughout the year.

"For the coming year the Board of Directors feel strongly that our work should be chiefly in the line of strengthening our own Society by appointing more local secretaries, by securing new members, and stimulating interest throughout the State. We have been asked by the Bird Commissioners to assist them by securing deputies in various towns. We are at present striving to find persons ready to act in this capacity."

Later the Secretary wrote: "Since I sent the report of our Society we have secured four new local secretaries in towns previously without branches and have aided the Bird Commissioner in finding persons to act as deputies. Just at present there is a good deal of interest in bird protection because of the wholesale slaughter of Robins and other song birds by Italians."

SOUTH CAROLINA.—*Legislation.*—The present law is unsatisfactory in that it is not comprehensive. During the 1904 session of the legislature an effort will be made to have the A. O. U. model law passed. South Carolina is the only Atlantic Coast State that has not adopted the model law. It is therefore very important that this extensive gap in the coast line should be closed, in order to fully protect all the existing breeding colonies of sea birds.

Warden system.—No wardens were employed by the Thayer Fund, nor can any money be used until legal protection is given the sea birds; as soon as this is done wardens will be secured to see that the laws are properly enforced.

Audubon work.—The small society that formerly existed has given no evidence of activity for a year or more; however, the press of the State shows an intelligent interest in bird protection. The following editorial from the 'State' of Columbia, of July 2, is worthy of the careful consideration of the citizens: "With the disappearance of bird life there has been a vast increase in uncanny insects. Almost every fruit, vegetable, shrub and flower has its own enemy, and gardeners are compelled to spend much time and money in fighting them. The shade trees of Columbia are dying rapidly and no one can or will check the disease. Something must be done at once to arrest the further march of destruction. A few thousand dollars a year, with the enforcement of laws against animal pests and human marauders, may result in the saving of millions of dollars to South Carolina. The responsibility rests with the legislature, and it cannot be laughed away."

TENNESSEE.—*Legislation.*—During the session of 1903 the A. O. U. model law was adopted. This admirable improvement was due entirely to the devoted and energetic work of Senator J. M. Graham, who introduced the bill in the Senate, assisted by Representative Birdsong in the House.

The initial movement in this great work was made many months before the legislature convened, by Senator Graham, who wrote to the National Committee for information regarding good bird legislation. From that day until the law went into effect he was untiring in his labors to give legal protection to the birds of Tennessee, thus conserving one of the best assets of the State. The next session of the legislature will be held in 1905.

Warden system.—No wardens were employed by the Thayer Fund. The State officials, however, are alive to their duties. Mr. J. A. Acklen, State Game Warden, writes as follows: "The enforcement of our laws for the protection of both game and non-game birds is a difficult task in this State. I have labored for years on the subject, and only succeeded in our last Legislature in establishing the Department of Game, the whole expense of which Department I am bearing out of my individual means. You may judge from this as to how I feel on the subject."

Audubon work.—There is practically none done in the State at the present time. The following editorial from 'The Nashville American,' of March 19, is such excellent advice to farmers that it is given in full in the hope that many thousands of the tillers of the soil will read and follow its counsel: "A birdless land is a dreary land; where the silence is unbroken by the song of birds there is loneliness that is oppressive. Imagine a farm without the cheering presence and music of birds. Think of the fields and woods barren of feathered songsters. They are well worth protecting and preserving on purely sentimental grounds, but aside from sentiment they are worth protecting because of their great value to the farmer and gardener and to nearly every tree and flower that grows. They are as truly the friends of the farmer as the seasons—the wind and the rain and the sunshine, the light and warmth, the frost and dew, and all the elements of nature's alchemy. He is a primitive farmer who does not appreciate the value of birds."

TEXAS.—*Legislation.*—During the legislative session of 1903 a game and bird law was adopted that is one of the best in force in the United States. Section 2, which covers the non-game birds, is the A. O. U. model. The radical change caused by the passage of this most excellent and much needed legislation has caused a flutter of organized opposition to the enforcement of the law by the pothunters and market shooters, who are combining to test the constitutionality of the law. On the other hand, the true and enlightened sportsmen of the State, together with the bird lovers and others who believe that birds have an economic value, are prepared to defend the law and propose that it shall be upheld by the best legal talent obtainable. That the Commonwealth owns

the wild birds and animals found within its borders there is no doubt, and consequently has full police powers over them, and can say through the legislature when they can be killed and by whom, or can say that they shall not be killed at all, as has just been provided in the case of the non-game birds. (See the opinion of Judge Treiber, under Arkansas, *antea*, p. 111.)

Warden system.— No wardens were employed by the Thayer Fund, owing to the fact that the new law did not go into effect until after the breeding season was finished. In 1904 it is proposed to carefully guard any and all of the colonies of coast birds that are large enough to warrant the expenditure.

Audubon work.— There is one local society in the State; however, there is a great and growing interest in bird protection which must eventually result in the formation of a strong society. The limits of the State are so large that it seems desirable that at least four societies should be organized. The women's and farmers' clubs are doing effective work in the study and protection of birds. In this connection mention must again be made of the great services rendered to the State of Texas by Prof. H. P. Attwater, a member of the A. O. U., whose efforts were untiring to pass the new game law, and to bring to the knowledge of the agricultural folk of the State the true relation of birds to crops. Three thousand warning notices were furnished by the Thayer Fund and sent to Prof. Attwater, who has had them distributed throughout the State. The officials of the Southern Pacific and the San Antonio and Aransas Pass Railway Co., voluntarily offered to distribute and display in all of their stations in Texas copies of the warning notice. By this means a very wide distribution was given to the provisions of the new game law. This important and public spirited action should be followed by the officers of other railroad corporations, not only in Texas but throughout the United States.

Under the Federal Law, known as the Lacey Act, transportation companies are liable for carrying illegally killed game and birds, and therefore they should, as has been done by the above mentioned companies, make the game laws as widely known as possible, especially those laws that seek to prevent market shooting and pot-hunting for cold storage houses.

It is stated that the Mexican Boll Weevil destroyed 940,000

bales of Texas cotton in 1902, and a much larger amount in 1903. *Is not this a reason for caring for Texas birds?*

UTAH.—*Legislation.*—Although the non-game bird law was passed as late as 1899, it is not at all satisfactory, only a portion of the birds being given protection.

The agriculturists of the State, having the most direct monetary interest in this subject, should take the matter up at the next session of the legislature, which convenes in 1905.

Warden work.—No wardens were employed.

Audubon work.—There is no Audubon Society at present in the State. The press from time to time calls the attention of the citizens to the necessity for bird protection. The following excerpt from an editorial in the 'Utah Herald,' Salt Lake, is excellent:

"Protect the Birds. It is to be hoped that people who make a practice of killing the birds will not need more than a warning to induce them to desist. Should they continue, however, prosecutions should be instituted and convictions secured wherever possible. These birds are not fit for food. They serve a useful purpose in the destruction of insects that destroy fruit, grain and other necessary agricultural products, and they are entitled to the full protection of the law."

Mr. John A. Widtsoe, Director of the Agricultural Experiment Station at Logan, voices the true idea in the following words: "In the arid States, where animal and plant life is less abundant than in the humid States, it is very desirable to use every endeavor to protect the animals as well as the plants that we possess."

VERMONT.—*Legislation.*—The effort to pass the A. O. U. model law during the 1902 session of the legislature was not successful; the present law in many respects is a good one.

Warden system.—No special wardens were employed.

Audubon work.—The Corresponding Secretary gives the following report of the year's work: "The year 1903 has brought much encouragement to those interested in Audubon work in the State. Membership has not increased as rapidly as we could wish, but a sustained effort has been made to broaden the interest, and encourage among all our people a living interest in the living bird, for the enrichment of life from the æsthetic side.

"The subject of bird protection by the farmer, not legal protection, but individual protection, such as can result only from an intelligent comprehension of the economic value of birds to our agricultural interests, was ably presented by our member, Amos J. Eaton, at the Dairymen's meetings held last winter under the auspices of the State Board of Agriculture. No topic awakened a deeper interest. Mr. Eaton had only the Massachusetts charts for illustration. A lantern and slides would have been of great value, and we earnestly hope financial aid may come to us in this matter. Our wish is that this feature of the work may be extended through the Granges of the State.

"We have had the hearty co-operation of our State Superintendent of Education, Hon. Walter E. Ranger, who has also furnished us with much valuable printed matter for distribution, which was issued by the Board under his direction. The interest of bird study is deepening in our schools. We number among our members teachers in our normal schools, which will insure definite aid to those soon to be enrolled among our teachers.

"During the month of August the interests of the Audubon Society were presented at several of our summer schools; and met with much intelligent appreciation. Nature work in its largest sense, which means one's relations to the world about him, is the growing idea underlying the world of our educators.

"We have now three libraries in circulation among our schools. We place a copy of 'Bird Lore' upon the table in the reading room of our town library."

VIRGINIA.—*Legislation.*—During the last session of the legislature an excellent game law was adopted, including the main features of the A. O. U. model; besides this, spring shooting of snipe and shore birds was stopped, the open season for wild fowl and upland game birds was materially shortened, and the sale and export of game from the State was prohibited. For this admirable legislation special mention is made of the intelligent work of Senators Keezell, Halsey and McIlwaine, and Delegates Caton, Christian and Mathews, who were untiring in their efforts to make the game laws of Virginia stand in the front rank of modern and enlightened protective statutes. The next session of the legislature will be held in 1904.

Warden work.— Eight wardens were employed, as usual, to guard the very extensive series of breeding grounds in Northampton and Accomac Counties, which extend from the mouth of Chesapeake Bay northward to the Maryland line. Warning notices were prepared and were liberally posted throughout the State. The new law unfortunately did not go into effect until too late to prevent some eggging; however, the breeding birds had a reasonably favorable season and some increase was made. Before the next breeding season the public will have learned about the law and the penalties for its violation, and the moral effect will be good. The territory to be guarded is very large, is distant from dwellings, and it is difficult to prevent eggging, a custom that has been followed by the baymen for generations. There is urgent need for a naphtha launch, in order to have a single warden who can move rapidly from place to place. The warden should be appointed by the State authorities with full police powers; his compensation can be provided for by the Thayer Fund. From the reports of wardens and several well-known ornithologists who visited this territory during the past breeding season there seems to have been little or no mortality from shooting the adult birds. The bird colonies above referred to suffered an excessive mortality of young or unhatched eggs by reason of some exceptional high tides during June. Such mortality must be expected almost annually at breeding grounds that are at best not over one or two feet above the normal high tide mark. A severe and continued easterly storm on the Virginia coast brings in a tide that usually covers all but the highest portions of the beach and marshes. For this reason it is imperative that these colonies of sea and marsh birds should be carefully watched and protected from the raids of egggers and gunners.

Audubon work.— The Secretary reports as follows: “The Audubon Society of Virginia was organized Sept. 29, 1903, and has distributed a large number of warning notices supplied by the National Committee.

“A mass meeting of school children was held at Falls Church, when the school was presented with the Massachusetts Audubon Society Bird Charts.

“The Society is now planning to print copies of the game laws

in full for distribution throughout the State, and expects during the coming year to establish a large number of local societies, particular efforts being made to enlist the school children."

WASHINGTON. *Legislation.*—During the 1903 session of the legislature the A. O. U. model law was adopted. The next session of the legislature will be held in 1905.

Warden system.—No wardens were employed by the Thayer Fund.

Audubon work.—There is no society at present organized in the State, although inquiries have been made by persons interested in bird protection work in the schools which may result in one being formed at no very distant day.

WEST VIRGINIA. *Legislation.*—The present law is somewhat uncertain in its terms, but until the adoption of the A. O. U. model law can be secured, it will protect the valuable birds of the State, if it is properly enforced. The next session of the legislature will be held in 1905.

Warden system.—No wardens were employed by the Thayer Fund.

Audubon work.—There is no society of this name in the State, although the West Virginia State Protective Association is reported to be doing an excellent and aggressive work; it has not as yet become affiliated with the National Committee.

WISCONSIN.—*Legislation.*—No change was made in the law; the A. O. U. model law is in force. The next session of the legislature will be held in 1905.

Warden system.—No wardens were employed by the Thayer Fund.

Audubon work.—The Secretary reports as follows: "During the year our Society has conducted the usual bird-study classes; the publication of its monthly magazine, 'By the Wayside,' has been continued, as has the circulation of the Society's slides and lecture; and the signing of an Audubon pledge by 1260 children in our public schools has been secured.

"The only work at present planned for the coming year is that of getting new lectures to send out with our slides. The school children are now so interested in birds that it no longer seems necessary to offer prizes for essays on birds. A milliner recently

said that she could no longer sell a hat with even a portion of a bird on it to any woman who had a child in our public schools.

"We are hoping to be able to get some one prominent in ornithology to lecture at our annual meeting next spring.

"The membership is now 22,214."

WYOMING.—*Legislation.*—No change; the A. O. U. model law is still in force. The next session of the legislature will be in 1905.

Warden system.—No wardens were employed under the Thayer Fund.

Audubon work.—Eternal vigilance is the price of good bird laws. How the Wyoming Audubon Society prevented the passage of an outrageous amendment to the present perfect law is best told by President F. E. Bond: "I learned from my home paper that three gun clubs in Cheyenne had held a mass meeting and adopted resolutions recommending amendment of a new game bill then pending in the legislature. One of these resolutions demanded that the Mourning Dove, which was protected by our 'model law' of 1901, be placed upon the list of game birds where it might be shot for sport and the table. I at once wrote to the Game and Fish Committee of both houses, the introducer of the bill, some influential State senators, and the officers of the Audubon Society, asking that the dove be let alone. My correspondence arrived too late to accomplish anything in the House for the bill had passed that body, with a dove slaughtering amendment, before the letters arrived. However, our friends lost no time when they understood the situation. They succeeded in making quite a sortie on the ranks of the enemy. The Senate struck out the obnoxious amendment and the House afterward concurred without a fight. I think from the letters I received that the protection people put up a good fight.

"We are glad that the model insectivorous and song bird law of Wyoming is still intact and believe we can so maintain it against all comers. The law is strengthened by every failure in attempts to amend it.

"Some effort was made to amend the game bird law by making the close season cover the months of spring migration, but this failed, owing to the efforts of the gun clubs, and because no one

was on the ground to lead the fight against them. The leaven is working, however, and I should not be surprised if we were strong enough to abolish spring shooting of water fowl in two years more. At any rate we will try it with better hopes of success than we had this year.

“Although no new Audubon societies were organized in Wyoming in 1903, public sentiment favoring bird protection has increased throughout the State.

“The effect of protection upon the wild birds could not be more pronounced than in Cheyenne, except in a locality where birds, under similar conditions, were more abundant. During the breeding season a number of the common forms are gradually assuming the aspect of indifference to man which is characteristic of the common fowl and pigeon, fearlessly occupying boxes and coigns of advantage about out-buildings, porches, etc., or nesting in the trees and vines of the dooryard. Foraging about the lawns in the immediate presence of the children of the household, is a daily occupation of the Robins. It has been surprising to observe how soon these common favorites respond to the *laissez faire* treatment and show their confidence in immunity from molestation. The fearlessness, one might almost say domesticity, of the Robins in Cheyenne is a matter of common knowledge among the people who are becoming pardonably proud of an uncommon condition, and jealously defend the law and doctrine which makes it possible.

“The Wyoming Society offers no suggestion for future work of the National Committee. Our population is sparse, and scattered over an area of about 98,000 square miles, and we are not in financial condition to offer aid to National work, although greatly interested in it. No doubt that a wide circulation of the educational leaflets would greatly assist us in the formation of new societies, but we are not now able to afford them in any considerable quantities.

“I hope the time will come when the annual report of the National Committee on bird protection can be published in quantity and given wide circulation through the Audubon Societies. It would materially encourage and aid bird protectionists everywhere.”

THE THAYER FUND.

The Chairman submits the following statement of subscriptions and disbursements for the fiscal year ending November 1, 1903, to the correctness of which he certifies.

NEW YORK, NOV. 1, 1903.

WILLIAM DUTCHER, *Chairman,*

IN ACCOUNT WITH THAYER FUND.

Balance brought forward from 1902 \$143.77

RECEIPTS.

Subscriptions.

Thayer, A. H.	\$1000.00	Watson, J. S.	20.00
Thayer, J. E.	500.00	Greene, Miss M. A.	20.00
Fay, Mrs. S. B.	200.00	Van Name, W. G.	15.00
Freer, C. L.	100.00	Smith, W. M. and wife	15.00
Hemenway, A.	100.00	Parsons, Mrs. M. L.	10.00
Macy, Mrs. V. E.	50.00	Baird, Miss L. H.	10.00
Warren, Miss Cornelia	50.00	Herrick, H.	10.00
Stone, Mrs. E. J.	50.00	Hicks, J. D.	10.00
Dodge, W. E.	50.00	Emery, Mrs. L. J.	10.00
Warren, S. D.	50.00	Gelpcke, Miss A. C.	10.00
Dodge, C. H.	50.00	Gwynne, E. A.	10.00
Vanderbilt, G. W.	50.00	Wadsworth, Mrs. W. A.	10.00
Fuertes, L. A.	30.00	McEwen, D. C.	10.00
Raymond, C. H.	25.00	Collins, Miss E.	10.00
Hecker, F. J.	25.00	Dickerman, W. B.	10.00
Sage, Mrs. S. M.	25.00	Gatter, E. A.	10.00
Elliot, Mrs. M. L.	25.00	Shiras, G., 3rd.	10.00
Osgood, Miss E. L.	25.00	Derby Peabody Club	7.00
Kennedy, Mrs. J. L.	25.00	Robbins, R. E.	7.00
Robbins, R. C.	25.00	Varick, W. R.	5.00
Parker, E. L.	25.00	Day, F. M.	5.00
Eno, H. C.	25.00	Chamberlain, L. T.	5.00
Sharpe, Miss E. D.	25.00	Van Orden, Miss M. L.	5.00
Pinchot, Mrs. J. W.	25.00	Taylor, Mrs. L.	5.00
Dorr, G. B.	25.00	Thomas, Mrs. T.	5.00
Hoyt, F. R.	25.00	Gray, Mrs. F. T.	5.00
Crane, Miss C. L.	20.00	Shattuck, G. C.	5.00
Shaw, Mrs. P. A.	20.00	Howland, Miss I.	5.00
Conn. Audubon Society	20.00	Howland, Miss E.	5.00

Holt, Mrs. H.	5.00	Sand, Miss I. L.	5.00
Brooks, S.	5.00	19 contributions from	
Nicoll, B.	5.00	\$3.60 to \$1.00 each	34.60
Lord, Miss C.	5.00		
Willis, Mrs. A.	5.00	<i>Sale of Leaflets.</i>	
Wheeler, S. H.	5.00	Nat'l Committee No. 2	4.65
Cox, J. L.	5.00	" " " 3	31.13
Fairbanks, Mrs. E. C.	5.00	Ed. Leaflet No. 1	34.03
Students, Miss Baldwin's		" " " 2	30.33
school	5.00	" " " 3	27.88
Chafee, Z.	5.00	" " " 4	20.43
Bowman, E. A.	5.00	" " " 5	17.68
Duncan, A. B.	5.00	Protection Com. Reports	33.35
Ricketts, Miss J.	5.00	Florida Audubon Society	
Hardy, Mrs. R.	5.00	for payment of warden	60.00
Fairbanks Museum	5.00	" purchase of launch	300.00
Donaldson, J. J.	5.00	Deficit	158.90
Weld, G. F.	5.00		<u>\$3915.75</u>

EXPENDITURES.

<i>California.</i> — Printing and bird book		\$2.85
<i>Colorado.</i> — Warning notices	\$15.00	
Bird books for Junior Audubon Society	<u>6.55</u>	21.55
<i>Connecticut.</i> — Chairman, trav. expenses		2.10
<i>District of Columbia.</i> — Telegrams		3.17
<i>Florida.</i> — R. D. Hoyt, trav. expenses	20.00	
J. O. Fries, exp. in re Pelican Island	7.70	
" affidavits " "	4.50	
Map50	
Express	2.15	
Negatives	1.00	
Telegrams	4.98	
Signs, Pelican Island	2.00	
Printing	2.75	
Wardens, four	575.00	
Purchase of launch 'Audubon'	300.00	
Expenses " "	<u>76.09</u>	996.67
<i>Georgia.</i> — Printing	39.05	
Printing and distributing 8,000 copies of Agric.		
Exp. Station Bulletin advocating model law	48.00	
Telegrams	8.59	
Express75	
Certified copy of law	<u>5.95</u>	102.34

<i>Illinois.</i> — Printing	6.88	
Express	1.25	
Telegram	<u>.40</u>	8.53
<i>Kansas.</i> — D. E. Lantz, trav. exp. to Legislature		6.25
<i>Louisiana.</i> — Express		1.30
<i>Maine.</i> — Wardens, eleven	325.00	
A. H. Norton, trav. exp. inspecting breeding colonies	91.08	
Warning notices	15.00	
“ “ posting same, D. S. Conary	5.00	
Express	1.90	
Telegrams	<u>.60</u>	438.58
<i>Massachusetts.</i> — Warden, one	30.00	
Express	<u>6.15</u>	36.15
<i>Michigan.</i> — Printing	8.25	
Express40	
Warden, one	<u>15.00</u>	23.65
<i>Nebraska.</i> — Express		1.15
<i>New Jersey.</i> — Trav. exp. W. De W. Miller, inspecting colonies	7.45	
Ac. cost lantern at lecture	7.50	
Chairman, trav. expenses	2.85	
Telegram50	
Wardens, two	<u>40.00</u>	58.30
<i>New York.</i> — Chairman, trav. expenses	40.62	
E. Hicks, trav. expenses	10.00	
Telegrams	2.92	
Express	1.20	
Sebille case in police court	2.80	
Wardens, three	<u>70.00</u>	127.54
<i>North Carolina.</i> — Warning notices	28.00	
Printing	40.75	
T. G. Pearson, trav. expenses	66.30	
Telegrams	2.33	
Express65	
Wardens, three	<u>304.00</u>	442.03
<i>Ohio.</i> — Express85
<i>Oregon.</i> — A. W. Anthony, trav. exp. to Legislature		32.20
<i>Pennsylvania.</i> — Printing	1.50	
Express	<u>.60</u>	2.10

<i>Tennessee.</i> — T. G. Pearson's trav. exp. to Legislature	47.31	
Express	3.00	
Printing	30.00	
Telegram	<u>1.42</u>	81.73
<i>Texas.</i> — Warning notices	42.00	
Printing	11.50	
Express	1.40	
Telegrams	<u>1.20</u>	56.10
<i>Vermont.</i> — Printing	2.75	
Express	<u>.35</u>	3.10
<i>Virginia.</i> — Warning notices	28.00	
Charts	2.40	
Express	2.20	
Printing	4.13	
Chairman, trav. exp. to Legislature	43.58	
Telegrams	3.70	
Wardens, eight	<u>230.00</u>	314.01
<i>Wyoming.</i> — Express		1.35

General Expenses of Committee.

Printing 100,000 educational leaflets and other leaflets and circulars	606.82	
Advertising50	
Postage	264.52	
Protection Committee Reports (5000)	112.25	
Slides for Audubon Societies	33.85	
Clasp envelopes	21.69	
Press clippings	21.24	
Letter cases	11.17	
Card cabinet and cards	8.85	
Maps and Charts	2.25	
Bird Drawings for educational leaflets	54.00	
Express	2.71	
Memorial to War Dep't in re Philippine Islands	7.00	
Sundries	<u>5.30</u>	1152.15
		<u>3915.75</u>

Audubon Society Subscriptions to Fund for Clerk Hire.

Vermont \$25.00	District of Columbia	50.00
Illinois 25.00	Florida	50.00
New Hampshire 25.00	Minnesota	25.00
Massachusetts 100.00	New York	100.00
Pennsylvania 50.00	Connecticut	25.00
Oregon 15.00	Ohio	25.00
Rhode Island 10.00	North Carolina	<u>50.00</u>
	Total	575.00

ENDOWMENT FUND FOR THE PROTECTION OF NORTH AMERICAN BIRDS.

Total amount of Fund, November 1, 1902	227.58
Interest earned	9.18
Total amount of Fund, November 1, 1903	\$236.76

Deposited in Freestone Savings Bank of Portland, Connecticut, by direction of Council of American Ornithologists' Union, incorporated in 1888 at Washington, District of Columbia.

FORM OF BEQUEST.

I do hereby give and bequeath to "The American Ornithologists' Union" of the City of Washington, District of Columbia, for the Endowment Fund for the Protection of North American Birds, — — — — — dollars.

LIST OF COMMITTEES.

A. O. U. PROTECTION COMMITTEE FOR 1904.

- WILLIAM DUTCHER, *Chairman*, 525 Manhattan Ave., New York, N. Y.
- ABBOTT H. THAYER, Monadnock, N. H.
- ARTHUR H. NORTON, Westbrook, Maine.
- RALPH HOFFMANN, Belmont, Mass.
- JAMES H. HILL, New London, Conn.
- WILLIAM L. BAILY, Ardmore, Pa.
- FRANK C. KIRKWOOD, Baltimore, Md.
- T. GILBERT PEARSON, Greensboro, N. C.
- ROBERT W. WILLIAMS, JR., Tallahassee, Fla.
- FRANK M. MILLER, New Orleans, La.
- FRANK BOND, Cheyenne, Wyoming.
- MRS. FLORENCE MERRIAM BAILEY, Washington, D. C.
- EDWARD B. CLARK, Chicago, Ills.
- MRS. LOUISE MCGOWN STEPHENSON, Helena, Arkansas.
- H. P. ATTWATER, Houston, Texas.
- A. W. ANTHONY, Portland, Oregon.

Subcommittee on Laws.

- THEODORE S. PALMER, M. D., Washington, D. C.

A. O. U. COMMITTEE ON FOREIGN RELATIONS.

WILLIAM DUTCHER, New York, N. Y.

FRANK M. CHAPMAN, New York, N. Y.

CHARLES W. RICHMOND, M. D., Washington, D. C.

THEODORE S. PALMER, M. D., Washington, D. C.

RUTHVEN DEANE, Chicago, Ills.

NATIONAL COMMITTEE OF AUDUBON SOCIETIES.

WILLIAM DUTCHER, *Chairman*, 525 Manhattan Avenue, New York.

Subcommittee on Relations with Millinery Trade.

THEODORE S. PALMER, M. D., Washington, D. C.

FRANK M. CHAPMAN, New York, N. Y.

WILLIAM DUTCHER, New York, N. Y.

DIRECTORY OF AUDUBON SOCIETIES, 1904.

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Colorado. President, W. G. SPRAGUE, Denver; Secretary, Mrs. M. A. SHUTE, Capitol Bldg., Denver.

Connecticut. President, Mrs. M. O. WRIGHT, Fairfield; Secretary, Mrs. W. B. GLOVER, Fairfield.

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Iowa. President, Mrs. JAMES B. DIVER, Keokuk; Secretary, Mrs. L. E. FELT, 524 Concert St., Keokuk.

Schaller Audubon Society, Iowa. President, Mrs. H. A. McLAUGHLIN, Schaller; Secretary, Miss J. E. HAMAND, Schaller.

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Lake City Audubon Society, Minnesota. President, Mrs. G. F. BENSON, Lake City; Secretary, Mrs. C. A. KOCH, Lake City.

Missouri. President, WALTER J. BLAKELY, St. Louis; Secretary, AUGUST REESE, 2516 North 14th St., St. Louis.

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Nebraska, Omaha. President, Dr. L. R. TOWNE, Omaha; Secretary, Miss JOY HIGGINS, 544 So. Thirtieth St., Omaha.

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New Jersey. President, ALEXANDER GILBERT, Plainfield; Secretary, Miss JULIA S. SCRIBNER, 510 E. Front St., Plainfield.

North Carolina. President, J. F. JORDAN, Greensboro; Secretary, T. GILBERT PEARSON, Greensboro.

North Dakota. President, —; Secretary, Mrs. C. M. COOLEY, Grand Forks.

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Oklahoma. President, H. D. WHITE, Enid; Secretary, Mrs. ADELIA HOLCOMB, Enid.

Oregon. President, E. W. TALLANT, Astoria; Secretary, Mrs. J. E. GRATKE, Astoria.

Pennsylvania. President, WITMER STONE, Academy of Natural Sciences, Philadelphia; Secretary, Mrs. EDWARD ROBINS, 114 South 21st St., Philadelphia.

Rhode Island. President, Prof. ALPHEUS S. PACKARD, Brown University, Providence; Secretary, Miss MARTHA R. CLARKE, 89 Brown St., Providence.

South Carolina. President, Miss C. H. POPPENHEIM, 31 Meeting St., Charleston; Secretary, GEO. S. HOLMES, Charleston.

Tennessee. President, Prof. CHARLES A. KEFFER, Univ. of Tenn., Knoxville; Secretary, Mrs. C. C. CONNER, Ripley.

Texas. President, Miss MILLIE LAMB, La Porte; Secretary, Miss HOPE TERHUNE, La Porte.

Vermont. President, Mrs. FRANCES B. HORTON, Brattleboro; Secretary, Mrs. FLETCHER K. BARROWS, Brattleboro.

Virginia. President, JOHN B. HENDERSON, Jr., Washington, D. C.; Secretary, Mr. E. C. HOUGH, Falls church.

West Virginia (branch of Pennsylvania Society). President, WITMER STONE, Academy of Natural Sciences, Philadelphia; Secretary, Mrs. E. ROBINS, 114 S. 21st St., Philadelphia.

Wisconsin. President, Prof. O. B. ZIMMERMAN, 222 Charter St., Madison; Secretary, Mrs. R. G. THWAITES, 260 Langdon St., Madison.

Wyoming. President, FRANK BOND, Cheyenne; Secretary, Mrs. N. R. DAVIS, 2216 Ferguson St., Cheyenne.

THE AUK:

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APRIL, 1904.

No. 2.

MASKED BOB-WHITE (*COLINUS RIDGWAYI*).

BY HERBERT BROWN.

ONE OF the rare, if not the rarest, native birds in Arizona to-day is the Masked Bob-white (*Colinus ridgwayi*). It is not only rare in Arizona but also in the Mexican State of Sonora, the original habitat of the bird. For the past several years it has been safeguarded by law in this Territory, but unfortunately there are none left to protect.

I have been told by men who were familiar with the Sonoite and Santa Cruz valleys, in the early sixties, that these birds were then common thereabouts. I have also been told that "in early days" they were plentiful in Ramsey's Cañon in the Huachucas, and also on the Babacomori, a valley intervening between the Huachuca and Harshaw ranges. I remember hearing of them being there in 1881, but did not see them. Some ten years ago a market collector worked the Ramsey Cañon country and reported that he had not only taken the bird but an egg also. That he did these things I am extremely doubtful. To say positively that he did not would be to bump against a serious proposition, but he so warped the truth concerning other alleged remarkable finds that the late Major Bendire, one of the most honorable of men, upon the discovery of attempted fraud, refused further to examine material sent him by the party in question. I am, however, of the belief that these birds were in the cañon when white men first

entered that section of country, and it is possible that a few were still there on the discovery of the Tombstone and Harshaw mines, but if so they were speedily trodden out of existence by the inrush of fortune hunters. I mention this Ramsey Cañon business for the purpose of establishing the eastern boundary line of their former habitat in Arizona.

Prior to 1870, but just when I cannot now say, Major Bendire, then a Lieutenant of Cavalry, was stationed at Camp Buchannon, on the Sonoite, almost in the very heart of the country where the Bob-whites used to be, but, oddly enough, he did not see or hear them. At that time the valley was heavily grassed and the Apache Indians notoriously bad, a combination that prevented the most sanguine naturalist from getting too close to the ground without taking big chances of permanently slipping under it. For many years Indians, grass, and birds have been gone. The Santa Cruz, to the south and west of the Sonoite, is wider and was more heavily brushed. Those conditions gave the birds a better chance for life and for years they held tenaciously on. Six or seven years ago I was told by a ranchman, living near Calabasas, that a small bunch of Bob-white Quail had shortly before entered his barnyard and that he had killed six of them at one shot. It was a grievous thing to do, but the man did not know that he was wiping out of existence the last remnant of a native Arizona game bird. Later I heard of the remaining few having been occasionally seen, but for several years now no word has come of them.

I never found them west of the Baboquivari Mountains, and from my knowledge of the country thereabouts I am inclined to fix the eastern slope of that range as their western limit. Between that and Ramsey's Cañon, in the Huachucas, is a distance of nearly one hundred miles. Their deepest point of penetration into the Territory was probably not more than fifty miles, and that was down the Baboquavari or Altar valley.

In Sonora, Mexico, where I first met with the bird, it was known as Perdice, a name equally misapplied to *Cyrtonyx montezumæ*. Just why it, or in fact either of these birds, should have been so termed I do not know, but think it was probably a localism used by the rancheros to distinguish it from Codornice, by which two other species of quail were commonly known. It is not easy to

describe the feelings of myself and American companions when we first heard the call *bob white*. It was startling and unexpected, and that night nearly every man in camp had some reminiscence to tell of Bob-white and his boyhood days. Just that simple call made many a hardy man heart-sick and homesick. It was to us Americans the one homelike thing in all Sonora, and we felt thousands of miles nearer to our dear old homes in the then far distant States. The omnipresent hope of "striking it rich" has made life's burden light to many a weary man, and when the 'Perdice' made its sweet call only those who have been similarly circumstanced can appreciate it as we did. Then, though but a young man, I had spread my blankets over much of the frontier West, and no one felt that letter from home more than I did. This I know has but little to do with the subject at issue, but I wish to show my familiarity with the bird at the time its identity was later called into question. True, I believed it to be *Ortyx virgianianus*, "the Bob-white of the States," the same bird I had known as a boy in West Virginia, and as such I called attention to its being in Arizona.

In the spring of 1884 a man by name of Andrews, then living in the foothills of the eastern slope of the Barboquivaris, brought me a pair of these quail to Tucson. As I was on the point of leaving town for a business trip through the Territory I took the birds to the office of a friend and he promised to make them up as best he could for me. I then wrote a note to 'The Citizen,' a newspaper with which I was connected, stating that a pair of Bob-white Quail had been brought in, and so on. This note was subsequently republished in 'Forest and Stream,' where it was seen by Mr. Robert Ridgway, of Washington. He replied that there was no such thing as a Bob-white in Arizona and that the writer of 'The Citizen' article had probably mistaken some other well known form of quail for them. On being advised of this by Dr. Geo. Bird Grinnell, editor of 'Forest and Stream,' I went to my friend for the skins he had promised to make for me. To my regret I learned that the birds had been allowed to spoil and were then thrown out. Fortunately, or rather unfortunately as it turned out afterwards, portions of the birds were still to be had. These, through the kindness of Dr. Grinnell, were sent to Mr. Ridgway

and were by him identified as *Ortyx graysoni*, a Mexican species found in the neighborhood of Mazatlan. He expressed surprise at the bird being in Arizona. For my own collection I at once procured another pair. These latter birds were seen, examined, and commented on by W. E. D. Scott, E. W. Nelson, F. Stephens, and H. W. Henshaw, none of whom, with the exception of Scott, questioned the correctness of Mr. Ridgway's identification. Scott's remark was, after he had examined the birds a number of times, "I think they ought to be further inquired into," or words to that effect. Stephens was then in the country collecting for Mr. Brewster, of Cambridge, Mass. When in Sonora, just south of the Arizona line, he killed a male. On his return to Tucson we compared it with my specimens and found it to be the same bird. Mr. Stephens did not see the fragmentary skins that were sent to Mr. Ridgway through Dr. Grinnell, as stated erroneously by Prof. J. A. Allen in his very excellent article on 'The Masked Bob-white of Arizona, and its Allies,'¹ but he saw and compared his bird with a pair of perfect skins then in possession of the writer. Later, Stephens sent his bird to Mr. Brewster, by whom it was described as a new bird and named in honor of Mr. Ridgway; hence we have *Colinus ridgwayi*.

It was never my good fortune to see an egg of this bird. When the late Major Bendire was stationed at Camp Buchannon, he found a broken shell of what he then judged to have been the egg of an *Ortyx*. The Ramsey Cañon collector, elsewhere referred to, claimed to have taken an egg from the body of the bird he said he had killed, but as his one story rests on no better foundation than the other it can be taken for what it is worth. About 1885, I think, I offered to Mexican vaqueros, riding the Sasabe Flat and Altar Valley ranges, one dollar per egg for the first nest of Bob-white eggs found for me. Word was subsequently sent to me that a nest containing six eggs had been found on the mesa near the mouth of Thomas Cañon, on the eastern side of the Baboquivari Mountains. Unfortunately these precious things were lost through the cupidity of the finders whose expectations ran to more eggs, but while waiting for the increase the nest was robbed of the eggs

¹ Bull. Am. Mus. Nat. Hist., Vol. I, No. 7, 1886, pp. 273-290.

that were then in it. I was, however, notified of the find, but when I reached there I found only an empty nest, a bowl-shaped depression in a bunch of mountain grass. I have regretted many times that I did not dig up the "situation" and take it home with me, but I did not then dream of their future rarity. The eggs had undoubtedly been taken by some reptile or animal, as no broken shells were found to indicate that they had hatched. Later I offered five dollars for the first egg of a Bob-white brought to me. I received a quail egg from a party by the name of Sturgis, then living at La Osa, a few miles north of the Mexican line. He claimed to have personally taken the egg from the nest and knew it to be that of a Bob-white. Although I had my misgivings I paid the money and then sent the egg to Major Bendire for examination. He reported it to be nothing more than a very pale egg of a *Callipella squamata*. I then wrote to friends in Sonora, but they never succeeded in getting me the much coveted egg.

The causes leading to the extermination of the Arizona Masked Bob-white (*Colinus ridgwayi*) are due to the overstocking of the country with cattle, supplemented by several rainless years. This combination practically stripped the country bare of vegetation. Of their range the *Colinus* occupied only certain restricted portions, and when their food and shelter had been trodden out of existence by thousands of hunger-dying stock, there was nothing left for poor little Bob-white to do but go out with them. As the conditions in Sonora were similar to those in Arizona, birds and cattle suffered in common. The Arizona Bob-white would have thriven well in an agricultural country, in brushy fence corners, tangled thickets and weed-covered fields, but such things were not to be had in their habitat. Unless a few can still be found on the upper Santa Cruz we can, in truth, bid them a final good-bye.

CURVED-BILLED AND PALMER'S THRASHERS.

BY JOSIAH H. CLARK.

THE following is a comparison of the measurements of the eggs of the Curved-billed Thrasher (*Harporhynchus curvirostris*) from Ramos, State of San Luis Potosi, Mexico, where the elevation is about 8,000 feet, with those of Palmer's Thrasher (*Harporhynchus curvirostris palmeri*) from El Plomo, Sonora, Mexico, where the elevation is about 1,200 feet.

Having been located as a mining engineer in the above mentioned localities, I had the opportunity of making a study of these birds. I am aware that the same variety of birds under different conditions of altitude or latitude will vary both as to the time of nesting and the number of eggs to a set. So that two men may describe the nesting habits of a bird, and though they may agree as to the composition and position of the nest, they will give a different average for the number of eggs to the set, the date of nesting, and their measurements.

For example, Mr. G. B. Sennett says the Curved-billed Thrasher along the Rio Grande in Texas commences to breed in March and lays four eggs. Mr. Charles J. Maynard says that it lays four or five.

I examined over one hundred nests of this bird during the years 1899 and 1900 and in all only three times were there more than three eggs, and these were, one nest with four young, and two nests with four eggs each. For Ramos I would say that the average was less than three, also their earliest nesting in May. The reason that the birds do not nest earlier is because April and May are the hottest months of the year in this locality, and there is not so much for the birds to eat; the rains begin in June. An example of late nesting at Ramos is the Scaled Partridge. The natives tell me it never nests before the middle of July. I found nests of fresh eggs August 1 and August 25. From this it shows how important it is not to rely too much on facts from any one locality, but as these two localities are especially favored by these birds, and as they outnumber all other birds almost two to one, I could not help comparing them, and I would like very much for





FIG. 1. NEST AND EGGS OF CURVED-BILLED THRASHER. Typical nest in a Nopalo Cactus.



FIG. 2. NEST OF CURVED-BILLED THRASHER. Typical next in Cholla Cactus,

any one who may have notes on these birds further north to compare them with the following.

Although these localities are separated by over eight hundred miles, the climate is the same and the country looks the same; in both cases we have a few mountains between which lie immense mesas and valleys which are mostly timberless and waterless, but covered with a curious growth of cacti in which the birds nest. The cacti of each place are different with the exception of the cholla, which is common in both places, and singularly enough it is the most common nesting site.

The new nest of both birds is generally near the old one, usually in the same cactus, and sometimes the old nest made over.

Sometimes the nest is completed two or three weeks before the eggs are laid. Then again, if the nest and eggs are taken the birds will have another nest and eggs in from twelve to fifteen days, and the new nest is usually about fifty feet from the one taken, but if the first nest is not disturbed the new nest will usually be about five feet from the old one.

The nests of both birds are the same, made of thorny twigs; in fact, nothing grows there without thorns on it, so they can get nothing else. These sticks are six to ten inches long, and form the outside of the nest, which is lined with wire grasses; sometimes horse hair is used in place of the grass, or with it. The nests are externally about ten inches in diameter and eight inches deep; internally about three and one-half inches, both in diameter and depth.

These birds are common permanent residents of these respective places and may be seen in pairs throughout the year, using their old nest for a roost.

The following sets do not represent average sets, but I have selected them to show the range in measurements.

Following are the measurements in millimeters of ten sets of the Curved-billed Thrasher.

Set No. 6	30.95 × 19.05	30.83 × 19.05	29.45 × 19.20
" 9	29.81 × 19.00	29.05 × 19.52	28.03 × 19.75
" 27	29.80 × 19.45	29.30 × 19.65	28.40 × 19.33
" 57	28.29 × 19.45	27.95 × 19.46	27.48 × 19.71
" 4	33.50 × 21.08	32.12 × 21.54	

Set No. 1	26.82 × 19.98	26.21 × 20.46	24.26 × 19.62	
" 3	28.72 × 20.65	28.40 × 20.47	28.10 × 20.68	
" 32	28.95 × 19.90	28.67 × 20.13	28.52 × 19.94	
" 39	30.57 × 20.64	30.13 × 20.73	29.85 × 20.33	29.69 × 20.23
" 54	28.08 × 21.05	28.03 × 20.75	26.63 × 20.38	

The average size of 158 eggs is 28.97 × 20.37 millimeters.

Of the above sets, numbers 6, 9, 27 and 57 were laid by the same bird, numbers 6 and 27 were from one nest and numbers 9 and 57 from another nest.

This shows how these birds retain the same nest from year to year. The dates were No. 6, May 28, 1899; No. 9, June 11, 1899; No. 27, May 19, 1900; No. 57 June 5, 1900. Though the dimensions of these four sets vary, the color and markings of all are the same. This fact has often been mentioned in regard to Hawk eggs taken from the same nest on consecutive years.

Following are averages taken from fifty-eight sets, taken during two years. Average number of eggs, 2.72. Average height of nest from ground, 3.9 feet. Of these nests, forty were in cholla cactus, sixteen in nopalo cactus, and two in palma trees.

My earliest and latest records for fresh eggs were May 17 and July 2. The first brood is hatched about June 1 and leaves the nest in twelve days. The second nest is usually built by this time and the eggs are deposited shortly after.

On May 28, 1899, I found a nest with four young about two days old. This same pair of birds on June 11 had a new nest with three eggs. The male bird assists in incubation and also in care of the young.

Following are the measurements in millimeters of ten sets of Palmer's Thrasher.

Set No. 4	28.78 × 19.07	28.46 × 18.97	27.57 × 18.91
" 18	29.20 × 19.27	29.16 × 19.61	28.56 × 19.40
" 27	28.85 × 19.69	28.27 × 19.25	26.67 × 19.54
" 7	29.91 × 20.69	29.20 × 21.13	
" 12	30.71 × 20.44	30.32 × 20.43	29.19 × 20.63
" 13	30.95 × 19.82	30.85 × 19.82	
" 17	28.13 × 19.60	26.14 × 19.23	
" 19	30.78 × 20.52	30.52 × 20.45	30.00 × 20.20
" 22	32.60 × 20.00		
" 24	28.76 × 19.80	27.33 × 19.66	27.32 × 19.35

The average size of 79 eggs is 28.68 × 20.05 millimeters.

Of the above sets, numbers 4, 18 and 27 were laid by the same bird, a new nest being built for each set. The dates were March 14, 1898; March 30, 1898; and April 19, 1898.

The similarity of these nine eggs is very striking, and they differ a little in shape, which is elongate ovate, from all the other eggs.

Following are the averages taken from thirty-one sets. Average number of eggs in a set, 2.55. Average height of nest from ground, 4.2 feet. Of these nests twenty-seven were in cholla cactus, three in sibirica cactus, and one in palo verde tree. My earliest record for eggs was March 1, and most birds were nesting by March 14, and the second set is laid about April 20.

Generally the spots or specks are more thickly sprinkled on the eggs of the Curved-billed than those of Palmer's and the ground color is a little darker. But the description of one will do for the other.

The shape of the eggs varies a great deal, from ovate to elongate, or elliptical ovate.

The ground color is generally light bluish green, sometimes light green, bluish white or grayish white, minutely specked or spotted with cinnamon brown and lavender. In some eggs the markings are like fine pin points. The less the number of spots the larger they are. Usually there are not as many spots at the small end, and the spots are uniform over the middle and large end of the egg. In some eggs most of the spots are at the large end and in very few we have a wreath. In some the spots are so faint that they can just barely be seen. In no case are the markings so thickly sprinkled as in the average egg of the Brown Thrasher.

SAN CLEMENTE ISLAND AND ITS BIRDS.

BY GEORGE F. BRENINGER.

SAN CLEMENTE ISLAND lies fifty miles to the south from San Pedro, California, well out on the broad bosom of the Pacific. Midway is Catalina Island, that noted summer resort; and to the west, seventy-five miles from San Pedro, is San Nicholas. These islands, though distant by at least one hundred miles from Santa Cruz, Santa Rosa, and San Miguel Islands, are known collectively as the Santa Barbara group. It is but reasonable that they bear considerable affinity one with another in their flora and fauna, and while this is true in a way, there are instances quite to the contrary.

Geologically speaking these islands are the exposed tops of mountains, a sunken chain that ran parallel with the Coast Range. San Clemente Island, of which this paper treats, has an altitude of nearly 3000 feet, and a length of twenty-three miles by five miles wide. Frost is unknown, and in consequence vegetation grows rank most of the year.

Early in February of the present year (1903) I was instructed by the curator of the ornithological department of the Field Columbian Museum to make a collection of the birds on San Clemente and visit the other islands if possible. In accordance therewith I secured passage on a 33-foot gasoline schooner that made periodical trips to the island in quest of fish.

The length of my stay was gauged accordingly. On the island accommodations were secured with the man in charge of the San Clemente Wool Company's sheep. This man and his wife are the only inhabitants of the island, apart from a Chinese camp whose occupants remain on the island only during certain periods of fishing. The island is one of great interest alike to the ornithologist, botanist, and student of pre-historic man.

I found the rocky, surf-beaten shore tenanted by thousands of Black-bellied Plovers (*Squatarola squatarola*) in winter dress, and Black Turnstones (*Arenaria melanocephala*). A number of each were taken but proved so excessively fat that it was thought best to use the limited time on better material. The gulls found about

the island were the Western Gull (*Larus occidentalis*), Heermann's Gull (*Larus heermanni*), California Gull (*Larus californicus*), and the Glaucous-winged Gull (*Larus glaucescens*). The few individuals seen of *Larus glaucescens* were immature birds. Those seen of *Larus californicus* were migrating northward in small bunches. I had hoped to learn something of the nesting of *Larus heermanni* on the island, but in this I was disappointed. My host, who had spent most of fifteen years on the island, often found pleasure, from his solitary occupation, in noting the time different birds laid eggs. *L. heermanni* has never been known to nest on the island. *L. occidentalis* is the only one that brings forth its young there.

Out in the channel several lone individuals of the Black-vented Shearwater (*Puffinus gavia*) were seen skimming the swells. None were seen near land. A few California Pelicans (*Pelecanus californicus*) were seen among a number of Cormorants (*Phalacrocorax penicillatus* and *P. pelagicus resplendens*). Both of the cormorants nested on the island, but the pelicans are said to nest on some of the other islands. While rowing around the north end of the island my host pointed out to me nests of Fish Hawks (*Pandion haliaëtus carolinensis*), Bald Eagles (*Haliaëtus leucocephalus*), and Ravens (*Corvus corax sinuatus*), built on some projecting ledge or hole in the seawall. Our objective point, that morning, was a large rock, a mile distant from the end of the island, where my host said there was an eagle's nest, and at that date there should be eggs. As we neared the rock the huge nest, with a white head protruding, was outlined against the sky. Great seas broke about this time-worn mass of granite. A landing can be made only in calm weather. After the force of three or four swells had been broken, the boat was run up to the rock, and I jumped ashore and hastened upward while my man pulled the boat away to save it from being broken. The nest held two eggs, which were taken, but the one parent shot at was lost, falling in the surf or on the end of the island. Rough seas prevented a landing being made.

Up on a hillside, among green grass, my host pointed out another eagle's nest. The accumulation of years' repairing of the old nest had given it such height that a man standing by its side

could not see into the cavity. There were no indications of the occupancy of this nest. Very old birds prove vicious antagonists. A pair of eagles had used two nests alternately, one on each side of a deep gorge. As they have used one or the other during the past fifteen years they were known to be old birds, with a bad record. One season, at sheep-shearing time, one of the employees of the Wool Company, fresh from a land where there were no eagles, essayed to ride to the edge of the barranca and have a look at the young eagles. From above the old eagle swooped with unerring aim, and it was fortunate the grasp was not deeper, as with angry screams she flew away with his hat, dropping it into the sea. It was with this same eagle I was dealing. My man had gone down after the eggs, and while I was giving some minor directions, in an unguarded moment, a little dog that had followed from the house ran with a pitiful whine under my legs and curled up there in mortal terror. I had sat down on the ground, perhaps on account of proximity to the edge of the abyss and at the same time to have 'full swing' at rapid shooting. A moment after the dog had taken refuge an eagle came within a foot of striking me in the face with its wing. My gun came to my shoulder instantly. Bang! and a fine white-headed bird lay dying at the bottom of the barranca. The female, too, was secured.

Ravens (*Corvus corax sinuatus*) were numerous about the island; thirty-eight were seen circling over a small interior valley at one time. It was yet too early for eggs, though nests of previous years were seen along the seawall and in the side of the barrancas. At one place seven nests were seen in a space of less than one hundred yards. Even in this unfrequented spot the raven maintains his time-honored trait of the preservation of its kind by placing its nest in inaccessible places. Although shy birds at all times, curiosity gets the best of them now and then, and for this reason I brought away two fine skins.

One Western Red-tailed Hawk (*Buteo borealis calurus*) and a pair of Duck Hawks (*Falco peregrinus anatum*) were seen, and a male of the Duck Hawk was secured. White-throated Swifts (*Aëronautes melanoleucus*) were seen darting up and down some of the deep cañons. Hummingbirds were also detected, but the species could not be determined while in flight.

Particular interest attaches itself to many of the land birds. Centuries of isolation has developed habits and features quite different from the same species or closely related forms of the mainland. From association with most of the geographical races of *Melospiza* I have learned to frame Song Sparrows in the same scene with rippling brooks, moist meadows, and tule-bordered lagoons. Over the whole length and breadth of San Clemente Island there is no fresh water, except what may gather after a rainfall in the rock basins at the bottoms of the washes. There is absolutely no swamp ground, yet Song Sparrows are there in thousands, from the shores to the highest point of the island, feeding and nesting among the bushes of the hillsides, along with Bell's Sparrow (*Amphispiza belli*). On the mainland Bell's Sparrow marks the other extreme, making its home on the dry sage-covered mesas. Another departure is that of the San Clemente Wren (*Thryomanes leucophrys*), a numerous bird on the island, where it nests in the holes and crevices of the rocks. I am inclined to believe it also places its nest amid the protective arms of the prickly pear. *T. bewickii spilurus* and *T. b. leucogaster*, two closely allied forms of the mainland, both nest in holes in trees. The change is probably due to the conditions, for on most of the island there are no trees.

The same is true of *Carpodacus*, the form inhabiting the island being known as *Carpodacus frontalis clementæ*. The sheep-sheds at the ranch were lined with nests of this bird, old and new, and at that early date I took several sets of four and five eggs. There were some nests built among the spiny leaves of the prickly pear, but by far the greater number were built in holes in the rocky wall of the sea. A pair built their nest in the interstices between the sticks of an eagle's nest. There were at the time of my visit no eggs in the finch's nest, though the eagle's nest was tenanted. The question naturally arises, does this species pass back and forth from the mainland to the island?

To a bird having the power of flight, as in *Carpodacus*, this is not at all impossible. On clear days Catalina Island is clearly visible from the mainland, only twenty-five miles away, while the channel between Catalina and San Clemente is but twenty-two miles wide. The House Finch nest built in an eagle's nest, of

which mention was made, was on a rock a mile from the island. These birds when disturbed flew without hesitation direct to the island. At Monterey, Cal., I have seen Robins (*Merula migratoria propinqua*), and Rufous Hummingbirds, in their northward movement leave the land at Point Pinos, flying directly out to sea, crossing the bay. Later while out three miles from shore, I saw Hummingbirds pass at the rate of one every five minutes. The distance from Point Pinos on the south to Point Santa Cruz, the north side of the bay, is thirty miles. While the migration of *Carpodacus* from the mainland to the nearer islands is possible, I think it very improbable. Migration is prompted largely by meteorological changes and food supply. On San Clemente Island food is abundant and the weather conditions are much the same the year round and whatever migratory instinct the House Finches ever possessed has been lost.

The Horned Lark, set apart as *Otocoris alpestris insularis*, a common bird on the island, is the most intensely colored variety of this species I have ever taken. The same is true of the Burrowing Owl (*Speotyto cunicularia hypogæa*) found on the island. Specimens compared with some from San Pedro, shows the island bird to be much darker.

One solitary Mountain Plover (*Podasocys montana*) was seen and taken. My host told me they wintered on the island in incredible numbers. Flocks of Sanderling (*Calidris arenaria*), and a few Hudsonian Curlew (*Numenius hudsonicus*) were seen on the beaches. Black Oyster-catchers (*Hematopus bachmani*) were said to inhabit the island, but I was not favored with a glimpse of these "birds with redlegs," as they are known to the fishermen.

I am at a loss to account for the mortality among the Auklets (*Ptychoramphus aleuticus*) frequenting the water about the island. Along the shores and on the water dead Auklets were seen everywhere. Eagles and Duck Hawks fed on those that were not yet dead, while ravens and gulls fed by day on the dead that were thrown up among the rocks, and the foxes foraged over the same ground at night.

A flock of Meadowlarks (*Sturnella magna neglecta*) was encountered well up toward the top of the island. These were resident and bred on the island. Contrary to the habits of most birds that

are never molested by man, it was absolutely impossible to approach these birds except by stealth. I met the birds each morning, and as many times tried to secure a specimen; one hundred to two hundred yards was the nearest approach permitted before they resorted to flight. One was finally secured by taking advantage of a board fence that crossed the island and some intervening bushes; creeping forward as far as was safe without being seen, a 75-yard shot with No. 5 shot secured the long sought for bird.

Rock Wrens (*Salpinctes obsoletus*) were fairly numerous but differed in no way from the same species on the mainland. A pair of Large-billed Sparrows (*Passerculus rostratus*) were seen in a patch of salt grass and one of the two secured. Black Phœbes (*Sayornis nigricans*) Say's Phœbe (*Sayornis saya*) were both present, probably migrants from the mainland.

Mockingbirds (*Mimus polyglottos leucopterus*) breeds sparingly on the island, perhaps less than a half dozen pairs. Only one was seen and taken. One shrike (*Lanius*) was seen but not taken. A Great Blue Heron (*Ardea herodias*) was seen at different times, but always alone.

A LIST OF LAND BIRDS FROM CENTRAL AND SOUTHEASTERN WASHINGTON.

BY ROBERT E. SNODGRASS.

THE list of birds here given is the ornithological result of a collecting expedition sent into the field during the summer of 1903 by the Washington Agricultural College. The expedition started from Pullman and, going westward through Connell and across the White Bluffs Ferry on the Columbia River as far as the town of North Yakima, traversed the southern part of Whitman County, the southeastern corner of Adams County, Franklin County, the extreme south end of Douglas County, and the north-

eastern part of Yakima County. Returning it crossed the central and southeastern part of Yakima County, Walla Walla, Columbia and Garfield Counties, and the southeastern part of Whitman County, coming by way of Prosser, Wallula Ferry on the Columbia River, Walla Walla, Bolles, Dayton, Pomeroy and Almota Ferry on the Snake River.

The collectors were Mr. C. V. Burke, Mr. E. A. MacKay, Mr. E. Crawford, and the writer. Specimens were obtained of nearly all the birds recorded.

The area covered embraces several very different sorts of country. It is all, geologically, a part of the great Columbia lava sheet, but climatic and altitudinal conditions have formed two very distinct biological zones.

The eastern part of Whitman County is a rich wheat-growing section having a comparatively heavy-rainfall and an altitude of 2000 feet or more. It is treeless, except in the cañons, and its original predominant vegetation was bunch-grass (several species of *Agropyron*) which grew luxuriantly everywhere. A characteristic member of the fauna is the extremely abundant Columbian Ground Squirrel (*Citellus columbianus*), and one of the commonest birds in the summer time is the Catbird. As one goes west the climate becomes dryer and a small stunted sage-brush replaces the bunch-grass. The large Columbian Ground Squirrel abruptly disappears and a smaller, grayer species (*C. townsendi*) takes its place. One is here on the transition area between the narrow fertile strip along the eastern border of the State and the great arid region of the middle part.

Franklin County is excessively arid. The eastern half is partly under cultivation, large tracts being ploughed and planted to wheat. Water, however, is so scarce that the farmers have to haul all that they use from the few wells and springs that occur. Many have to go ten and twelve miles for their water, transporting it in large wagon tanks. The country about the town of Connell presents a scene of utter desolation. During the summer there is no solid ground anywhere — all is dust; there is not a green thing in sight and scarcely a stump of anything that ever was green. The dried-up sage-brush is only a few inches high. Most of the country west of Connell is still an unbroken desert. The sage-

brush here is larger, however, and growing with it is considerable bunch-grass, so that this region does not look quite so desolate as the Connell district. Twelve miles west of Connell on the road to White Bluffs Ferry — a distance of nearly thirty miles — there is a spring located in a deep coulee. This is the only water to be had until one gets to the Columbia River. West of this spring the country is covered with sand that has drifted east from the river, and which has buried and obliterated almost every plant form except what sage-brush has been able to continually push up through it. The sand becomes deeper as one approaches the river, but several miles inland it has drifted up into great dunes. The sand, together with the lack of water, makes a journey across this region an extremely hard one on horses. Bird and insect life is almost absent. Occasionally one meets with a few Horned Larks or Sage Sparrows and now and then a Meadowlark. Rather frequently the Pigmy Horned Toad (*Phrynosoma douglassii*) and a small lizard (*Sceloporus graciosus*) are seen. Near the Columbia also another lizard (*Uta stansburiana*) occurs.

Along the banks of the Columbia at White Bluffs there is no more fertility than farther inland. A few scattered willows grow close to the water. Birds, however, are more abundant. Besides the Sage Sparrows, Horned Larks, and Meadowlarks, there occur here Sage Hens in abundance, Mourning Doves, Sparrow Hawks, a few Burrowing Owls, many Magpies, numerous Nighthawks, a few Kingbirds, Red-winged Blackbirds, Brewer's Blackbirds, many Shrikes, and a few Rock Wrens along the cliffs facing the river.

Yakima County is more diversified. High hills form the divide between the Columbia and Yakima Rivers. These hills contain almost no water and support the ordinary desert fauna and flora. The narrow Yakima valley, however, is very fertile and, in the neighborhood of North Yakima, the country is covered with large groves of trees — principally cottonwoods. This region is also extensively irrigated and, hence, presents a striking contrast to the region east of it. Although there is a rich bird-fauna here, one is surprised at the absence of a number of common birds. For example, during nine days of collecting, from July 4 to 13, we saw no Owls, Horned Larks, Orioles, Vesper Sparrows, Tanagers,

Shrikes, or Bluebirds. On the other hand, one bird, the Ash-throated Flycatcher, occurs here but was observed nowhere else in the State. The Yakima Ground Squirrel (*Citellus mollis yakimensis*) is not numerous but is characteristic of the Yakima River region.

South of the North Yakima country trees are less abundant along the river, and the fertile country forms only a narrow strip through the sage-brush. A small gray chipmunk (*Eutamias pictus*) and the lizard *Uta stansburiana* are common.

At Prosser we left the Yakima Valley and, after ascending the bluffs south of the town, came out upon the high plateau known as the "Horse Heaven" country. This is a most arid region occupying the area east of the Yakima Indian Reservation and south of the Yakima River. Bunch-grass grows amongst the sage-brush (whence probably the name of "Horse Heaven"), but the country is almost devoid of water. From one well, operated by a company, water is sold to the settlers for miles around. Others haul water ten or fifteen miles out of the Yakima Cañon! We traversed "Horse Heaven" from Prosser to Wallula Ferry, and here crossed the Columbia into Walla Walla County. On both sides of the river from White Bluffs Ferry to Wallula Ferry the country presents the same desolateness as it does farther inland. Just below Wallula the Columbia enters a deep, walled cañon of basalt.

The western part of Walla Walla County is the same sort of desert as the region west of the river. The surface is formed mostly of a fine, white, chalky tufa deposit. This same tufa formation occurs all along the Yakima Valley south of North Yakima interbedded between layers of basalt. Narrow, horizontal beds of it also give the white appearance to the cliffs on the Columbia known as White Bluffs. For about fifteen miles up the Walla Walla River from Wallula the sage-brush prevails. Only along the narrow river bottom are there a few trees and bushes. Here also are a few small alfalfa fields and orchards. Birds are extremely scarce—no Sage Sparrows or Sage Thrashers were seen on this part of the desert.

Near the city of Walla Walla, however, one comes again into the wheat-growing region where water can be obtained by means of wells, and where *Citellus columbianus* flourishes. From here

eastward moisture and fertility rapidly increase. Groves of trees fringe both the Walla Walla River and the Touchet Creek and all the hills are covered with flourishing wheat fields. In all of the arid region wheat grows from a few inches to a foot in height. The Walla Walla wheat-growing country is said to have been originally clothed with bunch-grass. From Bolles to Dayton the narrow cañon of the Touchet supports a thick growth of trees and underbrush. Outside of the cañon the country is treeless and covered with wheat-fields.

From Dayton on through Columbia and Garfield Counties the surface is cut by extremely deep cañons through which the Tucannon, Pataha and Deadmans streams flow northwest into the Snake River. This country is also treeless, except in the cañons, and the higher parts are covered with bunch-grass, much of it still unbroken. In the cañons, however, one descends again upon the Upper Sonoran desert forms. The cañon of the Snake River is an enormous gorge about 2000 feet deep. Its climate is much warmer and more arid than that of the surrounding country, so that within two or three miles one can descend from one biological zone into another very distinctly different one.

On crossing the Snake River from the south and coming into the elevated region of the Palouse River one is again within the country of the Catbird. The abrupt contrast between the productivity of this country and of that to the west and south is most striking, and shows the great superiority of the Palouse region as a wheat-growing country. The fauna and flora are also richer and more varied, and a list of the birds would show a greater number of species here than occur anywhere in the arid parts.

The following list does not include the Palouse region species.

1. *Pediœetes phasianellus columbianus*. COLUMBIAN SHARP-TAILED GROUSE.— Not seen in any of the sage-brush region of Franklin or Yakima Counties; abundant along the Touchet Creek in Walla Walla County; a few seen in Garfield County.

2. *Centrocercus urophasianus*. SAGE HEN.— This species occurs throughout the entire sage-brush area of central Washington. It was found especially abundant on the sandy desert region along the White Bluffs of the Columbia River in the southern end of Douglas County.

3. *Zenaidura macroura*. MOURNING DOVE.— Common almost everywhere; observed throughout Whitman, Franklin, Yakima, and Walla Walla counties.

4. *Cathartes aura*. TURKEY VULTURE.—A few seen in Franklin County, about North Yakima in Yakima County, and in Walla Walla County.

5. *Buteo borealis calurus*. WESTERN RED-TAIL.—Common everywhere throughout the eastern central and southeastern parts of the State.

6. *Falco mexicanus*. PRAIRIE FALCON.—Found rather common at Almota along the bluffs of the Snake River Cañon.

7. *Falco sparverius phalœna*. DESERT SPARROW HAWK.—Common everywhere.

8. *Megascops asio macfarlanei*. MACFARLANE'S SCREECH OWL.—Two immature specimens taken on the Touchet Creek near Bolles in the eastern part of Walla Walla County, but the species was not seen elsewhere.

9. *Bubo virginianus lagophonus*. WESTERN HORNED OWL.—Several seen at White Bluffs on the Columbia River, southern Douglas County.

10. *Speotyto cunicularia hypogœa*. BURROWING OWL.—Extremely abundant in the southwestern part of Whitman County; occurs all the way across Franklin County; comparatively scarce in Yakima and Walla Walla Counties.

11. *Ceryle alcyon*. BELTED KINGFISHER.—Occurs along nearly all streams. Observed on the Columbia, Yakima, and Walla Walla Rivers, and on the Touchet Creek.

12. *Dryobates pubescens gairdnerii*. GAIRDNER'S WOODPECKER.—Common in the trees along the Yakima River at North Yakima.

13. *Asyndesmus torquatus*. LEWIS'S WOODPECKER.—Extremely abundant in the groves of trees along the Yakima and Walla Walla Rivers and the Touchet Creek.

14. *Colaptes cafer collaris*. RED-SHAFTED FLICKER.—Found wherever trees occur.

15. *Chordeiles virginianus henryi*. WESTERN NIGHTHAWK.—Common everywhere throughout Whitman, Franklin, Yakima, and Walla Walla Counties. In the more desert places, such as at White Bluffs on the Columbia River and in the dry "Horse Heaven" country in southern Yakima County, it has the habit of flying about a great deal at all times of the day. It was not observed to do this nearly so much in the less arid or tree-covered regions about North Yakima and along the Touchet Creek in Walla Walla County, or in the more humid region of Columbia, Garfield, and Whitman Counties.

16. *Trochilus alexandri*. BLACK-CHINNED HUMMINGBIRD.—Common at North Yakima. No other species of Hummingbird seen anywhere.

17. *Tyrannus tyrannus*. KINGBIRD.—Common almost everywhere throughout Whitman, Franklin, Yakima, Walla Walla, Columbia, and Garfield Counties.

18. *Tyrannus verticalis*. ARKANSAS KINGBIRD.—This species is much more local in its distribution than the last. It is abundant in Whitman, Garfield, and Columbia Counties, but very rare about North Yakima,

and in the "Horse Heaven" country of Yakima County. It was found rather numerous in the Yakima valley south of Toppenish, and a number were observed between Wallula and Walla Walla in Walla Walla County, but about Bolles none were seen.

19. *Myiarchus cinerascens*. ASH-THROATED FLYCATCHER.—This species was found only along the Yakima River; several specimens were secured at North Yakima. It was not common, however, and has not been reported from any other part of the State.

20. *Sayornis saya*. SAY'S PHOEBE.—Common everywhere east of the Columbia, and north of the Snake River. Very rare in Yakima County— one individual seen near the station of Satus in the Yakima River valley. Common also in Garfield County between Pomeroy and Alnota Ferry. It is curious that this bird should be so scarce in the fertile and wooded country along the Yakima River and yet be found all over the desert region east of the Columbia River. Elsewhere it does not shun trees.

21. *Empidonax difficilis*. WESTERN FLYCATCHER.—Common in all suitable country where there are at least a few trees. Observed at North Yakima; along the Walla Walla River; on the Touchet Creek; in Columbia and Garfield Counties, especially in the deep cañons of the Tucannon, Pataha and Deadmans streams; and found very abundant at Alnota in the Snake River Cañon.

22. *Otocoris alpestris merrilli*. DUSKY HORNED LARK.—Abundant everywhere; the prevailing bird in nearly all desert places; no matter how arid and desolate a region may be the larks are sure to be there, even when other birds are almost entirely absent. Found especially numerous on the sand and sage-brush covered region east of White Bluffs, in the excessively arid "Horse Heaven" country of Yakima County, and in Garfield and Columbia counties.

23. *Pica pica hudsonica*. AMERICAN MAGPIE.—Common in all of the lower or wooded parts of the region traversed. Abundant along the Columbia River at White Bluffs; in the trees along the Yakima River at North Yakima; along the Walla Walla and Touchet streams; and in the deep cañons of the Tucannon Creek and Snake River.

24. *Corvus americanus*. AMERICAN CROW.—Not found abundant anywhere. A few small bands and single individuals seen at North Yakima and in Walla Walla County.

25. *Molothrus ater*. COWBIRD.—Common in Whitman County. A few seen in Yakima and Walla Walla Counties.

26. *Agelaius phoeniceus neutralis*. SAN DIEGO RED-WING?—Lacking material from other localities for comparison, the writer cannot state definitely to what variety the Red-wing of the inland Northwest belongs. It is not very abundant anywhere in the central or southeastern parts of the State since marshes and swamps are scarce. A few, however, occur in congenial places.

27. *Sturnella magna neglecta*. WESTERN MEADOWLARK.—Common everywhere in all kinds of country.

28. *Icterus bullocki*. BULLOCK'S ORIOLE.—Scarce over all the region traversed. None were seen anywhere in the open, sage-brush desert areas, nor were any met with in the fertile, tree-covered country about North Yakima. Several individuals were seen farther south in the Yakima valley at Prosser. A few also occur in the strips of trees and brush along the Walla Walla and Touchet streams in Walla Walla County. Common in eastern Whitman County.

29. *Scolecophagus cyanocephalus*. BREWER'S BLACKBIRD.—Abundant almost everywhere, except in sage-brush regions where there is no near access to water.

30. *Astragalinus tristis*. AMERICAN GOLDFINCH.—This species is common in Whitman and Garfield Counties, but it is almost rare in the arid regions to the west. A few were seen at North Yakima and in Walla Walla County.

31. *Poœcetes gramineus confinis*. WESTERN VESPER SPARROW.—The distribution of this bird in the central parts of the State is rather curious. It is abundant throughout all the sage-brush country of Lincoln County and the northern half of Douglas County from the edge of the timber west of Spokane to Waterville. Here it is the predominant bird of the sage-brush and wheat fields. To the south, however, in Franklin, Yakima, and Walla Walla Counties, we did not meet with it, and the Chipping Sparrow was the predominant bird. In Whitman and Garfield Counties both of these species are common field birds.

32. *Chondestes grammacus strigatus*. WESTERN LARK SPARROW.—A common bird in Whitman, Garfield, and Walla Walla Counties, and a few individuals were seen at North Yakima in Yakima County. Generally it avoids the dryer desert regions.

33. *Spizella socialis arizonæ*. WESTERN CHIPPING SPARROW.—Abundant over all the region traversed: in the tree-covered country about North Yakima and along the Walla Walla and Touchet streams of Walla Walla County; on the sage brush deserts of Franklin and Yakima Counties; and on the bunch-grass or wheat regions of Columbia, Garfield, and Whitman Counties. Very rare in the northern half of the desert regions of the central part of the State. None were seen last summer during a trip through Lincoln County and the Grand Coulee region of Douglas County.

34. *Spizella breweri*. BREWER'S SPARROW.—This bird has, very curiously, almost the same distribution over the desert region of the State as has the Vesper Sparrow. In Lincoln and northern Douglas Counties the two invariably associate together. In Franklin and Yakima Counties, where the Vesper Sparrow is apparently absent, Brewer's Sparrow is very rare. We obtained one specimen of the latter at North Yakima and saw one or two small birds at White Bluffs that appeared to be this species. On our way east from Wallula, through the southern tier of counties, we came upon the Vesper Sparrow again in Garfield County and, simultaneously with it, we found Brewer's Sparrow.

35. *Amphispiza belli nevadensis*. SAGE SPARROW.—In going west through Franklin County we first came upon this bird just a little to the east of Connell. One is here, also, well within the arid desert region. West of Connell the Sage Sparrow became the predominant Fringillid of the sage-brush. The Horned Larks outnumber them everywhere, but the latter are numerous everywhere else as well and are, hence, in no way characteristic of the desert. In Yakima County we found the Sage Sparrows abundant all the way from White Bluffs Ferry on the Columbia to the cultivated parts about North Yakima. Here they were absent. To the south again, across the "Horse Heaven" arid country and in the western half of Walla Walla County, they prevailed everywhere. During the previous summer we found this bird between Adrian and Ephrata on the Great Northern Railway and about Loop Lake in the southern end of the Grand Coulee but nowhere to the north of here. Hence, their range northward is not coincident with the extent of the desert.

During the summer the Sage Sparrow is a very quiet bird. None were heard singing and the only sound they uttered was a low *peet*-like note. They generally associate in small flocks composed of both adult and immature birds. The food consists of seeds and insects.

36. *Melospiza cinerea montana*. MOUNTAIN SONG SPARROW.—There appears to be only one form of Song Sparrow occupying the entire eastern, southeastern and central part of the State. Comparisons of a large number of specimens from Whitman, Lincoln, Douglas, Yakima, and Walla Walla Counties show an absolute uniformity of color and proportions in the specimens from all the localities.

Abundant in Whitman County; absent on desert regions; extremely numerous about North Yakima; a few along the Walla Walla and Touchet streams in Walla Walla County.

37. *Pipilo maculatus megalonyx*. SPURRED TOWHEE.—A few Black Towhees occur about North Yakima, and a few were found in the thickets along the Touchet Creek in Walla Walla County. The same form occurs in eastern Whitman County, along the Snake River, and along the Clearwater River in Idaho. Comparison with specimens from other localities shows that the eastern and central Washington form is probably *P. m. megalonyx*.

38. *Zamelodia melanocephala*. BLACK-HEADED GROSBEAK.—Common at North Yakima, less abundant in Walla Walla County, common in eastern Whitman County and in the Snake River cañon at Almota.

39. *Cyanospiza amœna*. LAZULI BUNTING.—Common everywhere except in arid sage-brush regions.

40. *Piranga ludoviciana*. LOUISIANA TANAGER.—Rare on all the region traversed. One specimen obtained at Prosser in Yakima County and another at Bolles in Walla Walla County.

41. *Petrochelidon lunifrons*. CLIFF SWALLOW.—Common wherever swallows occur.

42. *Hirundo erythrogaster*. BARN SWALLOW.—Occurs almost everywhere but is less abundant than the last.

43. *Ampelis cedrorum*. CEDAR WAXWING.— Common at North Yakima but not seen elsewhere.

44. *Lanius ludovicianus excubitorides*. WHITE-RUMPED SHRIKE.— Occurs on all arid sage-brush country. Extremely numerous on the very desolate desert to the east of White Bluff on the Columbia River. Scarce in the fertile and cultivated country about North Yakima.

45. *Vireo olivaceus*. RED-EYED VIREO.— Found along the Touchet Creek in Walla Walla County and in the Snake River cañon at Almota. Neither seen nor heard at North Yakima.

46. *Vireo solitarius cassinii*. CASSIN'S VIREO.— Found only at North Yakima, and not common there.

47. *Dendroica aestiva*. YELLOW WARBLER.— Common in all suitable places — never seen on open desert country.

48. *Geothlypis tolmiei*. MACGILLIVRAY'S WARBLER.— Found at North Yakima, and at Bolles on the Touchet Creek in Walla Walla County. Not common at either locality and always found in dense thickets.

49. *Geothlypis trichas occidentalis*. WESTERN YELLOW-THROAT.— Abundant at North Yakima.

50. *Icteria virens longicauda*. LONG-TAILED CHAT.— Occurs in all suitable localities in the central and southeastern parts of the State. Excessively abundant about North Yakima. Almost everywhere else they are extremely shy and retiring, but here they continually exposed themselves and sat openly in the trees while singing. Their notes were the most numerous of all bird sounds heard.

51. *Oroscoptes montanus*. SAGE THRASHER.— Not observed on the desert of Franklin County, but rather numerous on the west side of the Columbia River between White Bluffs and North Yakima, especially on the Yakima side of the divide. A very few inhabit the tree-covered area along the Yakima River near North Yakima. Numerous in the arid "Horse Heaven" country of southern Yakima County. None observed in the desert western part of Walla Walla County. None heard singing anywhere.

52. *Galeoscoptes carolinensis*. CATBIRD.— Common in the eastern part of Whitman County, but not observed in any of the other counties traversed.

53. *Salpinctes obsoletus*. ROCK WREN.— Common in all deep cañons and in rocky places. Observed at White Bluffs on the Columbia River, in the cañon of the Tucannon Creek in Columbia County, in similar cañons in Garfield County, and in abundance in the Snake River cañon at Almota.

54. *Catherpes mexicanus punctulatus*. DOTTED CAÑON WREN.— One specimen taken at Almota in the Snake River cañon. Only one other individual seen here. It occurs also at Wanana Ferry a few miles farther up the river. Not observed elsewhere.

55. *Troglodytes aëdon aztecus*. WESTERN HOUSE WREN.— Rather common at North Yakima where four specimens were taken. Not

observed elsewhere on the trip, although a House Wren occurs in the eastern part of Whitman County. The three adult specimens are very pale grayish-brown above and, hence, probably belong to the variety *aztecus* rather than to *parkmanii*.

56. *Parus atricapillus occidentalis*. OREGON CHICKADEE.— Common everywhere in trees and bushes along streams. Taken at North Yakima and at Bolles.

The specimens appear to belong to the variety *occidentalis* rather than to *septentrionalis*. The tail is equal to the wing or is slightly shorter. Fall specimens taken at Pullman in Whitman County have the back a brownish olive-gray, the sides and flanks widely and strongly shaded with brownish, the white being reduced to a small median area on the breast and upper part of the belly; tail feathers without whitish terminal margins. Compared with specimens of *P. a. septentrionalis* from Colorado they are decidedly darker above and more fulvous on the sides. The summer specimens are in poor and ragged plumage.

57. *Hylocichla ustulata*. RUSSET-BACKED THRUSH.— Excessively abundant in the groves and thickets along the Yakima River near North Yakima. Their clear, loud, ringing, metallic notes to be heard everywhere and at all times from early in the morning until late in the evening. A common song resembled *rhy'a-cha-veel'-ya, rhy'a-cha-veel'-ya*. The bird itself was much less frequently seen than heard. They were extremely wary and always kept themselves concealed in a thick bush or densely-leaved tree. They seemed always to know just when they were discovered, for invariably when one had just about located a bird after long looking the latter would suddenly but quietly dart out of its concealment to some other bush or tree some distance off. The same form occurs at Pullman in eastern Whitman County, and this is probably the thrush commonly met with in any part of the State.

58. *Merula migratoria propinqua*. WESTERN ROBIN.— Occurs everywhere except in desert regions. Common at North Yakima, especially amongst the trees in town; rather scarce in Walla Walla County.

BIRDS OF ALLEGANY AND GARRETT COUNTIES,
WESTERN MARYLAND.¹

BY G. EIFRIG.

THE topography and physiography of the two westernmost counties of Maryland are very complex and interesting, and accordingly the faunal and floral life-zones and areas are correspondingly complex and interesting. The lowest point that I can find on the beautiful maps lately published by the Maryland Geological Survey is 500 feet above sea level. This is in the extreme southeastern corner of Allegany County, on the Potomac River, and is the only point so low in the section under consideration. From this the elevation rises at many places very rapidly to 2500-3000 feet and attains the greatest height, 3400 feet, on the summit of the Great Backbone Mountain in the southwest corner of Garrett County and of the State. Cumberland is 800 feet, Frostburg, both in Allegany County, 2000 feet, rising rapidly to the top of the Big Savage Mountain, on whose side it lies, to 3000 feet. Oakland, Accident, and Finzel, Garrett County, lie in the broad glades and basin between the high ridges, all being 2400 to 2600 feet in elevation. These higher ridges, such as the Backbone, Big and Little Savage, Negro, Meadow, and Dan's Mountains, the last with Dan's Rock, from which a sublime view is to be had, are 2800 to 3400 feet high.

The lower parts, of which Garrett County has next to none, are in the Upper Austral or Carolinian life-zone, as is plainly to be seen by birds like the Cardinal, Tufted Titmouse, Carolina Wren, and Bluebird being permanent residents, and by trees like the tulip tree (*Liriodendron tulipifera*), sassafras (*S. sassafras*), dogwood (*Cornus florida*), and black gum (*Nyssa sylvatica*). The

¹ Since Maryland is very narrow in its western part, being at Cumberland only five miles, and as many of these observations have been made along the two boundaries of the State — the Potomac River on the one side and the Mason and Dixon line on the other — and have been frequently corroborated on the other side of each, this list holds good also for the adjoining part of West Virginia and for Somerset County, Pennsylvania.

hills and mountains from about 1500 feet upwards, except some southern mountain sides, and about all of Garrett County, are in the Alleghanian division of the Transition zone, characterized by an intermingling and overlapping of northern and southern types of the fauna and flora. The tops of the highest mountains, those in the neighborhood of 3000 feet, contain a strong admixture of high Transition and even Boreal species. This is especially evident in the sphagnum, alder, and cranberry swamps on the tops of some of these mountains and in the small depressions between them, *e. g.*, in the one between the Big and Little Savage Mountains, near Finzel, Garrett County, or the one on top of Negro Mountain near Accident, at both of which places I have frequently been. There are also some dark, virgin tracts of fine tall spruce and hemlock here, soon to be desecrated by the ax, where Boreal conditions of fauna and flora exist. In such places may be found, of birds, the Carolina Snowbird (*Junco hyemalis carolinensis*), Blue-headed Vireo (*Vireo solitarius*), Magnolia Warbler (*Dendroica maculosa*), Canadian Warbler (*Wilsonia canadensis*), Red-breasted Nuthatch (*Sitta canadensis*), and the Hermit Thrush (*Hylocichla guttata pallasii*); of mammals, the Redbacked Mouse (*Evotomys gapperi*), Canadian White-footed Mouse (*Peromyscus canadensis*), and Varying Hare (*Lepus americanus virginianus*); of trees and other plants, the tamarack (*Larix laricina*), black spruce (*Picea mariana*), golden club (*Orontium aquaticum*), cranberry (*Vaccinium macrocarpon*), wild calla (*Calla palustris*), gentian (*Gentiana angustifolia*), etc.¹

Thus, while it may in general be said, that the fauna of Alleghany County is a mixture of Carolinian and Transition, and that of Garrett County Transition, high Transition, and even Boreal, yet these zones and areas overlap, intergrade, and run into each other in a most surprising and very interesting way. Tongues of Carolinian fauna and flora run into the Transition and Boreal belts,

¹For some of these statements, notably for those on mammals, I am partly indebted to an excellent paper in the Maryland Geological Survey Report on Allegany County, entitled: 'The Fauna and Flora,' etc., 'The Summer Birds of Western Maryland,' by C. Hart Merriam and Edward A. Preble.

especially along the creeks and rivers; *e. g.*, the Louisiana Water-Thrush (*Seiurus motacilla*) follows up the water courses into the domain of the Water-Thrush (*Seiurus noveboracensis*), and the Catbird is found side by side with the Alder Flycatcher, Carolina Junco, and Hermit Thrush. On the other hand, tongues of the Transition zone extend far into the Carolinian, as, *e. g.*, the Chestnut-sided and Golden-winged Warblers (*Dendroica pennsylvanica*, *Helminthophila chrysoptera*) bred quite plentifully this year right near Cumberland, and plants like the clammy azalea (*Azalea viscosa*), turk's cap lily (*Lilium superbum*), *Maianthemum canadense*, etc., follow rivers and cool northern mountain sides far down, where they do not seem to belong. I can recommend Oakland, and the glade district of Garrett County in general, as a veritable naturalists' paradise, as it is also a place where coolness reigns in summer and pure, delicious, ozone-laden air is found in abundance. There many beautiful and some rare plants flower in profusion; for instance, the wood lily (*Lilium philadelphicum*), the turk's cap lily (*L. superbum*), and the meadow lily (*L. canadensis*) can be found at the end of July, blooming side by side, and while hearing or seeing the Magnolia, Cerulean, Blackburnian, Black-throated Blue and Green Warblers, Wilson's and Hermit Thrushes, and the Rose-breasted Grosbeak, one may pluck, if he likes, indian-pipe (*Monotropa uniflora*), sweet pine-sap (*Hypopitys hypopitys*), rattle-snake plantain (*Goodyera pubescens*), purple and green habenarias, or three orchids blooming simultaneously (*Cypripedium acaule*, *pubescens*, and *parviflorum*).

As to the following list of birds, I wish to bespeak reliability for it. All of the species mentioned, excepting fifteen, can be seen in my collections of either mounted specimens or skins or in both, and about half of those fifteen species I saw in the flesh in someone else's possession. I have seen a few more species than those mentioned, but since I could not take them and they must be considered rare or accidental visitants here, I did not include them in the list. A few species I mention on the authority of others, but they are such as undoubtedly occur here and every sportsman knows, but there being some room for doubt, I have marked them as uncertain.

Of literature on the birds of this region, I know of two sources

only, one being: 'A List of the Birds of Maryland,' etc., by F. C. Kirkwood, Baltimore, Md., 1895, which, however, contains but little available material for this section, since Mr. Kirkwood spent only a few days here, June 5-14, 1895, and had no correspondent here. Then there is the excellent treatise by C. Hart Merriam and Edward A. Preble of the Biological Survey, U. S. Department of Agriculture, of whom the latter was detailed to work over this section for the Maryland Geological Survey. He spent some weeks here in May, June, and July, 1899, and that he worked very thoroughly is attested by his fine list of 100 species, which, however, he had to call 'Summer Birds,' on account of the season of the year, in which his stay here fell.

The dates I have given under the several species are not the only ones I have for them, but merely characteristic or somewhat unusual ones.

PERMANENT RESIDENTS.

1. *Colinus virginianus*. BOB-WHITE.—Some years ago, I am told, this species was nearly or quite exterminated by severe and adverse winter conditions, whereupon local sportsmen imported and liberated about 100 pairs, and now they are plentiful again at most points.

2. *Bonasa umbellus*. RUFFED GROUSE.—Still common in spite of the persistent hunting. I encountered many families this spring (1903) on the wooded ridges and hillsides, whereas in Pennsylvania I rarely flush one. The farmers there ascribe this to the fact, that no bounty is paid any longer for foxes, etc., which is done this side of the Mason and Dixon line.

3. *Meleagris gallopavo silvestris*. WILD TURKEY.—Well able to keep his own on the long, densely-wooded and sometimes almost inaccessible ridges. Many are sold in the local market in winter.

4. *Buteo platypterus*. BROAD-WINGED HAWK.—Not common.

5. *Syrnium varium*. BARRED OWL.—Seems to be about as common as the next species. Occasionally one is shot in the city.

6. *Megascops asio*. SCREECH OWL.—Not as common as in other States, since there is a bounty paid here for all hawks and owls, still it is not scarce. Both color phases occur.

7. *Bubo virginianus*. GREAT HORNED OWL.—Common over the whole territory. They are often caught in traps by farmers and brought alive to the city.

8. *Dryobates villosus*. HAIRY WOODPECKER.—Abundant in migration, rather rare otherwise.

9. *Dryobates pubescens medianus*. DOWNY WOODPECKER.—Very abundant some days during migration (Oct. 24, 1900), otherwise about as rare or common as the preceding species.

10. *Ceophlœus pileatus*. PILEATED WOODPECKER.—Rare, except in some of the higher parts. Locally called Indian Hen and sold as a game bird in Cumberland. April 19, 1903, I watched a pair for a long while at Accident. They were feeding on the ground and often hopped or flew against a stump or decayed tree as though hiding there what they found. Took one August 1, 1901, at the same place.

11. *Otocoris alpestris praticola*. PRAIRIE HORNED LARK.—Many flocks on hills and roads about Cumberland in winter, often together with Tree Sparrows, Juncos, etc. Breeds in the higher parts.

12. *Cyanocitta cristata*. BLUE JAY.—Common in the higher parts all the year, scarce during summer in lower parts.

13. *Corvus corax principalis*. RAVEN.—A colony of about twenty-five pairs nest in the cliffs at Rocky Gap, six miles east of Cumberland. Mr. Preble notes a pair nesting in a large hemlock near Finzel, Garrett County, May 15, 1903; saw a pair chasing each other on Will's Mountain, giving vent to notes like the loud howling, whining and barking of a large dog, sounds I would not have expected from any bird. Saw the same pair often.

14. *Corvus americanus*. CROW.—Very abundant; form large colonies in winter, which roost at certain places for weeks, on the wooded hillsides near the city.

15. *Astragalinus tristis*. GOLDFINCH.—In large flocks all the year except July and August, when they are in pairs.

16. *Junco hyemalis carolinensis*. CAROLINA SNOWBIRD.—Breeds in numbers in the highest parts of Garrett County; in winter seen in lower parts also.

17. *Melospiza cinerea melodia*. SONG SPARROW.—Very abundant at all times. Seem to winter also in higher parts.

18. *Cardinalis cardinalis*. CARDINAL.—Very abundant in lower parts, a few also in higher. In winter they are in flocks about Cumberland, and in places are as plentiful as Juncos.

19. *Thryothorus ludovicianus*. CAROLINA WREN.—This cheerful whistler can be heard along large and small water courses any day of the year, cold or warm, rain or shine. Common in lower parts only.

20. *Sitta carolinensis*. WHITE-BREASTED NUTHATCH.—Abundant in winter in lower parts, scarcer in the higher; in summer the opposite is true.

21. *Sitta canadensis*. RED-BREASTED NUTHATCH.—Not common during winter in lower parts. "A small flock of these birds, evidently a family, was seen on the branches of a tall dead tree, in the deep woods near Bittinger. It was also seen near Finzel about the middle of May, where it was doubtless breeding." (Preble.) On account of this record I give it as permanent resident.

22. *Bæolophus bicolor*. TUFTED TITMOUSE.— Common at all times and over the whole territory.

23. *Parus atricapillus*. CHICKADEE.— Equally abundant in both counties, summer and winter. Many seem to approach *P. carolinensis*, but all my skins were pronounced *P. atricapillus* by Mr. Ridgway.

24. *Parus carolinensis*. CAROLINA CHICKADEE.— Mr. Kirkwood says: "On Dan's Mountain, June 6, '95, young were in the nest of the only pair seen."

25. *Sialia sialis*. BLUEBIRD.— An abundant summer resident over the whole area, and in the lower parts, at least around Cumberland, many brave the inclemencies of the generally not very harsh winter. They may be seen any bright day in January or February, even if rather cold, in most of the small sheltered valleys about the city. Oct. 24, 1900, hundreds were in the clearing adjoining Allegany Grove.

IRREGULARLY OR NEARLY PERMANENT RESIDENTS, OR OF UNCERTAIN STATUS.

26. *Gallinago delicata*. WILSON'S SNIPE.— Abundant during migration and apparently must sometimes breed. I have dates from April 10 (1901) to May 21 (1903), and Mr. Kirkwood gives them for Cumberland from Feb. 28 to June.

27. *Zenaidura macroura*. MOURNING DOVE.— Common in both counties. March 15 to Dec. 6, on which latter date a flock of about 30 was seen in a field.

28. *Accipiter velox*. SHARP-SHINNED HAWK.— The most common of the hawks, probably because it is able to escape the hawk-hunters, that shoot hawks and owls to secure the 50 cents bounty foolishly paid in Allegany County for each hawk and owl. Breeds in the hills of Cumberland; took two full-grown young Aug. 3, 1900.

29. *Buteo borealis*. RED-TAILED HAWK.— In spite of the bounty act, it may be heard or seen now and then. Many are caught in traps put up by farmers on poles, of both this and the next species.

30. *Buteo lineatus*. RED-SHOULDERED HAWK.— Rarer than preceding species, but may be met with over the whole territory. Dates: Jan. 27, Feb. 17, 1900; July 1, 1901; May 8, 1902. Mr. Preble noted a noisy pair near Finzel, and others near Grantsville and Bittinger, all in Garrett County.

31. *Falco sparverius*. SPARROW HAWK.— Not common in lower parts, common in higher; I observed several families near Accident each summer. Abundant during migration at Cumberland. I have two winter dates: Dec. 23, 1899, and a male taken at Lonaconing Feb. 15, 1902.

I suppose the preceding four species should be classed as permanent residents, but since I have no winter dates for them, excepting the last two, I thought it safer to place them here.

32. *Nyctala acadica*. SAW-WHET OWL.—The only record I have for this is July 6, 1903, when a full-grown young one in good condition and plumage was brought to me alive. It had been caught in a tree in the city.

33. *Carpodacus purpureus*. PURPLE FINCH.—I do not know whether to class this as a migrant, a permanent resident, or a winter resident, as witness the following dates: Nov. 11, 1899; Feb. 10, 1900 (big flock); Feb. 24, 1900; Mar. 11, 1900; April 24, 1900; Nov. 23, 1901; Dec. 6, 1901; Jan. 15, 1902; Feb. 15, 1902; May 6, 1902; April 6 and 11, 1903; and on July 27, 1903, while in an alder swamp along Bear Creek, near Accident, a fine male flew into the top of an alder bush before me, and looked and acted as though he was fully at home there and thought I had no business intruding. To make the identification sure I took him.

34. *Certhia familiaris americana*. BROWN CREEPER.—I would class this as a winter resident, having dates from Oct. 19 (1902) to April 28 (1900), were it not for the fact that Mr. Preble took a female in heavy hemlock woods near Bittinger, Garrett County, on June 28, 1899. This renders its status doubtful.

35. *Regulus satrapa*. GOLDEN-CROWNED KINGLET.—The dates I have for this species also makes its status doubtful. Some of these dates are: Jan. 15 and 27 (1902, 1900); Feb. 15 (1902); April 7 and 12 (1900, 1902); May 1 (1901); May 23 (1903). This last specimen was seen and taken at Cumberland, in full song. Aug. 7 (1901); Oct. 5, 19, 27 (1900, 1901); Nov. 16 (1901); Dec. 6 (1902), etc.

36. *Merula migratoria*. ROBIN.—Large flocks of this bird stay late into November and return end of February. A few stay all winter in favored localities.

SUMMER RESIDENTS.

37. *Aix sponsa*. WOOD DUCK.—A scarce breeder but a common migrant. March 18 to April 8, 1901; Sept. 5, 1901, etc.

38. *Botaurus lentiginosus*. AMERICAN BITTERN.—Not common. March 30 (1901) to Sep. 16 (1899). June 30, 1902, a full-grown one was brought to me.

39. *Ardetta exilis*. LEAST BITTERN.—Rare; two dates only—May 30, and Aug. 26, 1901.

40. *Ardea herodias*. BLUE HERON.—A somewhat familiar figure along the creeks; scarce in the higher parts.

41. *Butorides virescens*. GREEN HERON.—Not rare, at least in lower parts.

42. *Philohela minor*. WOODCOCK.—Common resident over both counties. It stays so late and comes so early, that it may almost be counted a permanent resident.

43. *Bartramia longicauda*. BARTRAMIAN SANDPIPER.—Common in

migration, not so common as a breeder, perhaps on account of the lack of large meadows. Found a pair at Vale Summit (alt. 2000 ft.) on May 30, 1902; May 21, 1903, I found nine or ten pairs at the so called Swamp Ponds, on the other side of the Potomac River, and the same number July 13, the young having undoubtedly been drowned or killed by the heavy rains of this season.

44. *Actitis macularia*. SPOTTED SANDPIPER. — Abundant over the whole region, at all large and small watercourses, ponds and waterholes.

45. *Oxyechus vociferus*. KILLDEER. — Common in both high and low parts. Stays late and comes early, like the Woodcock. About October 1 they come to town in numbers and stay along Will's Creek until Nov. 22 (1902).

46. *Cathartes aura*. TURKEY BUZZARD. — Cannot be called common, nor rare. A pair evidently nests each year on Will's Mountain, near Cumberland, and several pairs at Rocky Gap, with the Ravens.

47. *Accipiter cooperi*. COOPER'S HAWK. — Rather scarce. A young one, full grown, was brought to me at Accident July 22, 1903, and Mr. Preble notes one near Swanton.

48. *Coccyzus americanus*. YELLOW-BILLED CUCKOO. — Not rare in both counties.

49. *Coccyzus erythrophthalmus*. BLACK-BILLED CUCKOO. — In lower parts during migration only, and then not common. Breeds in higher parts.

50. *Ceryle alcyon*. KINGFISHER. — Common in all parts. Dates: Mar. 25 (1902) to Sept. 28 (1901). On Aug. 26, 1901, one was killed by flying against a telegraph wire in the city.

51. *Sphyrapicus varius*. YELLOW-BELLIED SAPSUCKER. — Not uncommon, notably in higher parts. Dates: April 6 (1903) to Oct. 24 (1900). On April 20, 1903, the woods were full of them at Accident.

52. *Melanerpes erythrocephalus*. RED-HEADED WOODPECKER. — Has become rather rare in the lower parts, although a pair breeds here and there, but very abundant in the higher parts, where there are many 'dead-ends.' Dates: April 17 (1903, Accident) to Sept. 15 (1899).

53. *Colaptes auratus*. FLICKER. — Common over the whole area; especially abundant in higher parts and during migration, when the black gum and other trees entice him to stay long and in large numbers. Dates: Mar. 1 (1902) to Nov. 15 (1902). Its numbers are increasing around Cumberland.

54. *Antrostomus vociferus*. WHIP-POOR-WILL. — Evenly distributed over the whole territory; plentiful in some parts. Dates: April 21 (1902) to Sept. 14 (1899).

55. *Chordeiles virginianus*. NIGHTHAWK. — Not as common as last species, except during the last week in August, when they appear in large numbers, flying over the house-tops after insect food. Dates: May 3 (1902) to Sept. 2 (1903).

56. *Chætura pelagica*. CHIMNEY SWIFT. — Common breeder over

the whole region. They can be seen in vast numbers over Centre Street Public School, darting out of and into the capacious chimney. Dates: April 16 (1901) to Aug. 27 (1903).

57. *Trochilus colubris*. RUBY-THROATED HUMMINGBIRD.—Common over the whole area.

58. *Tyrannus tyrannus*. KINGBIRD.—Not common at Cumberland, plentiful in the higher parts.

59. *Myiarchus crinitus*. GREAT CRESTED FLYCATCHER.—Not common, except locally.

60. *Sayornis phœbe*. PHŒBE.—Common in all parts, from Mar. 11 (1902) to Oct. 19 (1902).

61. *Contopus virens*. WOOD PEWEE.—Common. May 3 (1902) to Oct. 19 (1901).

62. *Empidonax alorum*. ALDER FLYCATCHER.—Although I have looked high and low for this species in the alder-swamps, for hours at a time, I have not had the good fortune to see it, at least well enough to positively identify it. But Mr. Preble saw it and took it in the same and similar localities, June 3 and 4, 1899.

63. *Empidonax minimus*. LEAST FLYCATCHER.—Common as a migrant, but much rarer as a breeder, in both the low and high parts. Dates: April 30 (1903) to Sept. 14 (1899).

64. *Corvus ossifragus*. FISH CROW.—I saw what I took to be a pair of this species March 21 and May 21, 1903. Am familiar with their appearance and note from several visits to Washington, where they are plentiful in the parks.

65. *Dolichonyx oryzivorus*. BOBOLINK.—More of a migrant than breeder. Saw five or six on May 21, 1903, and Mr. Preble found them at Grantsville, June 23, 1899; am also told that they breed, some years, in the large meadows near Frostburg, which is very probable.

66. *Molothrus ater*. COWBIRD.—Not very common, except in migration; Nov. 3, 1901, thousands of this species, together with Redwings and Grackles, covered the fields along Eavitts Creek. March 22 (1901) is the earliest date I have.

67. *Agelaius phœniceus*. RED-WINGED BLACKBIRD.—Abundant in suitable places over whole area. March 14 is my earliest date.

68. *Sturnella magna*. MEADOWLARK.—Of uniform abundance over the whole area from Mar. 1 (1902) to Oct. 23 (1901). May 21, 1903, two nests with five eggs in each.

69. *Icterus spurius*. ORCHARD ORIOLE.—Not common except some days in spring migration. Nearly absent from the higher parts in summer.

70. *Icterus galbula*. BALTIMORE ORIOLE.—Common over the whole area. Earliest date, April 27, 1902.

71. *Quiscalus quiscula*. PURPLE GRACKLE.—Plentiful everywhere from March 14 (1903) to Nov. 3 (1901). All that I have taken seem to belong to this eastern species, none to the western.

72. *Poœcetes gramineus*. VESPER SPARROW.—Very common breeder in higher parts, from 2000 ft. up. In Cumberland they can be seen only in migration and now and then a stray one in summer.

73. *Coturniculus savannarum passerinus*. GRASSHOPPER SPARROW.—Very common, especially in the higher parts, from May 1 (1902) to Sept. 5 (1901), but most disappear before the end of August.

74. *Chondestes grammacus*. LARK SPARROW.—Know of only one colony, which I found July 23, 1901, four miles from Accident, Garrett County. This year (1903) I visited the same place, and after much searching found only one bird; there may have been more near by.

75. *Spizella socialis*. CHIPPING SPARROW.—Very abundant everywhere. Appears to be becoming also a bird of the woods, for I find nests in the middle of second growth woods. March 21 (1903) to Nov. 1 (1901).

76. *Spizella pusilla*. FIELD SPARROW.—Same as *S. socialis*. March 21 (1903) to Nov. 4 (1899). May 10, 1901, nest with five eggs on ground; May 21, 1902, nest, one foot high in laurel bush, with three young and one egg.

77. *Melospiza georgiana*. SWAMP SPARROW.—Not rare where conditions are favorable; Mar. 30 (1901) to Oct. 3 (1901).

78. *Pipilo erythrophthalmus*. TOWHEE; CHEWINK.—One of the most abundant birds here, especially in the thickets of scrub-oak, etc., with which large parts of the hills and mountains are covered. In September and October hundreds, if not thousands, are to be seen. Dates: April 22 (1900) to Oct. 28 (1899).

79. *Zamelodia ludoviciana*. RED-BREADED GROSBEAK.—Rare in lower parts, even in migration; rather common breeder on higher ground, from 2000 feet up.

80. *Cyanospiza cyanea*. INDIGO BUNTING.—Common, more so in lower than higher parts, from beginning of May till Oct. 15 (1902). In fall they associate in flocks with the Song Sparrows in the bushes along rivers and creeks.

81. *Piranga erythromelas*. SCARLET TANAGER.—Common, especially on wooded tops of mountains. May 1 (1903) to Sept. 27 (1902).

82. *Piranga rubra*. SUMMER TANAGER.—Saw and heard this fine whistler only once, July 1, 1901.

83. *Progne subis*. PURPLE MARTIN.—Common over the whole area, often in middle of cities, where martin-houses are put up. April 2 to Aug. 27, 1903. Usually, however, they come a few days later and depart several days earlier than this year.

84. *Petrochelidon lunifrons*. CLIFF SWALLOW.—Common wherever it can build its nest.

85. *Hirundo erythrogaster*. BARN SWALLOW.—Like the last species, abundant, especially in farming districts. April 12 (1901) to Aug. 14 (1903), at which latter date hundreds of this and the preceding and following species were assembled in the bushes on a small island in the lake at Mt. Lake Park, Garrett County, evidently preparatory to going south.

86. *Riparia riparia*. BANK SWALLOW.—Not as common as the preceding species.

87. *Stelgidopteryx serripennis*. ROUGH-WINGED SWALLOW.—More common than the Bank Swallow, but not as common as the Barn Swallow.

88. *Ampelis cedrorum*. CEDARBIRD.—Very abundant over the whole area. Mar. 24 (1900) to Oct. 19 (1901-'02), at which latter dates the woods were full of old and young. Its numbers seem to be increasing from year to year.

89. *Vireo olivaceus*. RED-EYED VIREO.—One of the commonest summer birds. May 2 (1902) to Sept. 4 (1901).

90. *Vireo gilvus*. WARBLING VIREO.—Not common. Earliest date, April 26, 1902.

91. *Vireo flavifrons*. YELLOW-THROATED VIREO.—Not common, except in migration. May 30, 1902, nest, fifteen feet up in a small oak, female sitting.

92. *Vireo solitarius*. BLUE-HEADED VIREO.—While I have found this species only as a migrant (May 8, 1902, many; May 15, 1902; Oct. 12, 1901; Oct. 19, 1902), Mr. Preble has found it a rather common resident at Finzel, Grantsville, Bittinger, Kearney, Swanton, and Dan's Mountain. This was, in June, 1899; so there can be no doubt that it is a breeder in the higher parts.

93. *Mniotilta varia*. BLACK AND WHITE WARBLER.—Common at all points. May 1 to Sept. 22 (1900).

94. *Helminthus vermivorus*. WORM-EATING WARBLER.—To be found in proper locations in both counties. May 8 (1902) to Sept. 20 (1900).

95. *Helminthophila chrysoptera*. GOLDEN-WINGED WARBLER.—An abundant migrant and becoming a common breeder, also in lower parts. During migration (from May 2 on) they prefer to sit on dead saplings to utter their monotonous *tsee, tsee, tsee*. Quite a number bred this year on Will's Mountain, Cumberland, where I saw old and young out of nest on June 19; also at Frostburg, July 17. It frequents the same places as the Towhee.

96. *Compsothlypis americana*. PARULA WARBLER.—Rare as a breeder and migrant.

97. *Dendroica aestiva*. YELLOW WARBLER.—Abundant as a migrant, not so abundant as a breeder in low parts and still less in high parts. Still it cannot be called rare anywhere. In Cumberland they seem to disappear about the end of July. April 23 (1902) to July 31 (1902).

98. *Dendroica caerulescens*. BLACK-THROATED BLUE WARBLER.—Abundant migrant, notably in fall. In spring it, together with its companion, *D. virens*, seems to skip the lower parts and fly directly to high ground. There it is a very abundant breeder and its note, *dill, dill, dill, tree*, rapid and ascending, is heard into August. Other notes are: a shrill *tssee, tssee*; and *dēē dērēē' dī*. Dates: May 16 (1903) to Sept. 28 (1901).

99. *Dendroica maculosa*. MAGNOLIA WARBLER. — Fairly numerous migrant and breeder; the latter in high parts only. May 18 (1901) to Oct. 19 (1902). Song: *ĩrrēē dērrēē! dī*, not so loud as that of *D. cærulescens*.

100. *Dendroica rara*. CERULEAN WARBLER. — Of about the same frequency as the preceding species, only they are much more in evidence during the spring migration and breed as low as Cumberland. This species seems to be extending its breeding area. I found them numerous near here June 19, 1903, when their song — *rēē, rēē, rēēr* (last note high) — could be heard frequently. They seem to disappear, however, as soon as their young can fly away. Dates: May 2 (1902) to July 19 (1901, Accident).

101. *Dendroica pensylvanica*. CHESTNUT-SIDED WARBLER. — Seems to frequent the same places as the Golden-winged Warbler, but is much more common over the whole region, breeding from 2000 feet up. It stays in low thickets of oak, laurel, locust, etc. Dates: May 2 (1902) to Sept. 21 (1901).

102. *Dendroica blackburniæ*. BLACKBURNIAN WARBLER. — Common migrant and breeder in higher parts; fall migration seems to be chiefly of birds of the year. May 3 (1902) to Sept. 24 (1900).

103. *Dendroica virens*. BLACK-THROATED GREEN WARBLER. — This apparently inseparable companion of *D. cærulescens* is generally to be seen in the same places and numbers and at the same time as that species, only it frequents the trees rather than underbrush. April 20, 1903, I saw and heard it on Negro Mountain, near Accident, where there was yet no sign of opening vegetation, whereas here at Cumberland, I saw none till May. My latest date for it is Oct. 19.

104. *Dendroica vigorsii*. PINE WARBLER. — Very common in migration, especially the young in fall. It nests very sparingly. Dates: March 20 (1903) to Oct. 19 (1900).

105. *Dendroica discolor*. PRAIRIE WARBLER. — Common breeder in low land, not in high. Its queer note can be heard from May 2; after the end of June it is no longer in evidence.

106. *Seiurus aurocapillus*. OVENBIRD. — One of the most common birds in low parts; not nearly so common in higher parts. May 1 (1900) to Sept. 29 (1899).

107. *Seiurus noveboracensis*. WATER-THRUSH. — I have so far found only one in migration (May 16, 1903) and one in its breeding places in high ground (July 17, 1903), but Mr. Preble reports it fairly common about Finzel, June, 1899, when every stream had a pair or two.

108. *Seiurus motacilla*. LOUISIANA WATER-THRUSH. — Rather common throughout the range; more so in the Carolinian parts of it. April 7 (1900) to July 30 (1902). After the end of July they are not to be seen.

109. *Geothlypis trichas*. MARYLAND YELLOW-THROAT. — Perhaps the most abundant warbler here, even in the high alder and sphagnum swamps. April 26 to Sept 12 (1902).

110. *Icteria virens*. YELLOW-BREASTED CHAT. — Common in scrubby

underbrush over the whole area, but more common in lower than higher parts. The earliest date I have is May 2 (1902).

111. *Wilsonia mitrata*. HOODED WARBLER.—Rather common over the whole area, but more so in the lower parts. Its penetrating song—*pea'ry, pea'ry pie'ah*, or sharp call-note, *tsink*—can be heard on most hill-sides about Cumberland. Dates: May 2 (1902) to Aug. 14 (1901), at which latter date I saw a full family.

112. *Wilsonia canadensis*. CANADIAN WARBLER.—Common migrant, and more common breeder in high parts. It seems to be fond of rhododendron thickets. They arrive at Cumberland about May 8.

113. *Setophaga ruticilla*. REDSTART.—Common throughout the region, locally abundant. May 1 (1900) to Sept. 20 (1902).

114. *Galeoscoptes carolinensis*. CATBIRD.—Abundant throughout, even in high alder-swamps. April 28 (1900) to Sept. 29 (1900).

115. *Toxostoma rufum*. BROWN THRASHER.—Almost as common as the preceding. April 19 (1902) to Oct. 12 (1901). April 18, 1903, there were some at Accident, although there were none at Cumberland till several days later.

116. *Thryomanes bewickii*.—BEWICK'S WREN.—Common in the whole section. Mar. 12 (1901) to Oct. 19 (1902).

117. *Troglodytes aëdon*. HOUSE WREN.—Common throughout the section. Arrives beginning of May; latest date I have is Oct. 19 (1902).

118. *Polioptila cærulea*. BLUE-GRAY GNAT-CATCHER.—Strange to say, this species is very rare here; I have two dates only: May 27, 1900, and May 18, 1901.

119. *Hylocichla mustelina*. WOOD THRUSH.—Very common over the whole section. May 1 (1900) to Sept. 3 (1901).

120. *Hylocichla fuscescens*. WILSON'S THRUSH.—While this species breeds plentifully at Frostburg, 11 miles from here, I have never yet been able to see or take it here in migration. May 23, and June 16, 1903, there were many in full song on Savage Mt., near Finzel.

121. *Hylocichla guttata pallasii*. HERMIT THRUSH.—Have been able to see this only once in migration here at Cumberland, whereas they are common in high ground. April 20, 1903, I saw about a hundred on Negro Mountain but not one here, before or after that date. The latest date is Oct. 19, 1902.

MIGRANTS.

122. *Podilymbus podiceps*. PIED-BILLED GREBE.—Common in migration even in the city, on Will's Creek, where two were caught alive, Oct. 8, 1901. Dates: Mar. 18 (1901) to April 20 (1903, Accident) and Sept. 18 (1900) to Oct. 8 (1901).

123. *Merganser serrator*. RED-BREADED MERGANSER.—Have only one date for this, Dec. 23, 1901.

124. *Lophodytes cucullatus*. HOODED MERGANSER.—Rare. A female specimen was shot on the Potomac, March 16, 1901.

125. *Anas boschas*. MALLARD.—This can be seen now and then all winter, so that it may perhaps be classed as a winter resident. Nov. 11 (1902) to May 23 (1901). May 13, 1901, a big flock was on the Potomac.

126. *Anas obscura*. BLACK DUCK.—This is seen mostly with the Mallard, same places and times. April 24, 1903, there was a big flock on the Potomac. Jan. 17, 1903, I watched five at a distance of ten feet feeding in a hole in the ice near the bank.

127. *Mareca americana*. BALDPATE.—Scarce; only one date, April 8, 1901.

128. *Querquedula discors*. BLUE-WINGED TEAL.—Plentiful in April; have no dates for fall migration.

129. *Dafila acuta*. PINTAIL.—One is shot now and then. Got a male March 21, 1902.

130. *Aythya marila*. AMERICAN SCAUP DUCK.—Plentiful in spring migration, April 8 to May 24 (1901). May 13, 1901, about thirty were swimming on the Potomac, and May 22 a fine one was seen all day within the city limits.

131. *Aythya affinis*. LESSER SCAUP DUCK.—Rare. April 8, 1901.

132. ? *Clangula clangula americana*. GOLDEN-EYE.—Hunters tell me that they take this species now and then, which is very probable. I think all species of ducks that frequent Chesapeake Bay come here occasionally, if not regularly.

133. *Charitonetta albeola*. BUFFLEHEAD.—Rather common migrant. Dec. 19, 1901, one killed itself by flying against a telegraph pole in the city. April 8, 1901 and 1902; March 21, 1902.

134. *Harelda hyemalis*. OLD-SQUAW. Rare. Dec. 19, 1900, one was brought to me that had been killed with a stone on Eavitt's Creek.

135. *Branta canadensis*. CANADA GOOSE.—Common in spring migration.

136. *Porzana carolina*. SORA.—May 23 and 30, 1901, I found very many at the "Swamp Ponds," but they were not there in summer. Are here again Sept. 5 (1901) to Oct. 3 (1901).

137. *Totanus flavipes*. YELLOW-LEGS.—Not rare during migration.

138. *Helodromas solitarius*. SOLITARY SANDPIPER.—This species, locally called Black Snipe, is shot much during migration. I am almost certain, however, that it breeds in the high parts, since I saw a pair of what I took to be this species July 25, 1903, at Friendsville, Garrett Co. At Cumberland I have taken it as late as May 23 (1901), and again Aug. 31 (1901).

139. *Empidonax acadicus*. ACADIAN FLYCATCHER.—Seems to be a rare migrant in lower parts. I have only one date, Sept. 3, 1901. It may also be a rare breeder, since Mr. Preble saw one at Oldtown in June.

140. *Scolecophagus carolinus*. RUSTY BLACKBIRD.—A migrant that I have never found common. Spring dates: April 11, (1903) to April 26 (1901); fall: Nov. 22 and 23, (1901); snow on last date.

141. *Zonotrichia leucophrys*. WHITE-CROWNED SPARROW.— A rather rare migrant. These are all the dates I have for Cumberland: April 26, 1901, two pairs; May 2 and 7, 1902; May 4 and 13, 1903; and Oct. 12, 1901. No records for the higher sections.

142. *Zonotrichia albicollis*.— WHITE-THROATED SPARROW.— Common Mar. 21 (1903) to May 2 (1900), and Sept. 25 (1900) to Oct. 25 (1902).

143. *Melospiza lincolni*. LINCOLN'S SPARROW.— Rare migrant; I took one Oct. 19, 1900.

144. *Passerella iliaca*. FOX SPARROW.— Not as common as *Z. albicollis*, yet by no means rare. March 14 (1901) to April 6 (1903), and Oct. 27 (1900) to Nov. 4 (1900).

145. *Vireo philadelphicus*. PHILADELPHIA VIREO.— Very rare; took one May 8, 1901, when there was a big bird wave on Will's Mountain, Cumberland.

146. *Helminthophila ruficapilla*. NASHVILLE WARBLER.— I saw none of this species until May 3, 1902, when Will's Mountain was full of them.

147. *Helminthophila peregrina*. TENNESSEE WARBLER.— The only date I have for this rare species is May 6, 1901, when Mr. V. Laney took one for me.

148. *Dendroica tigrina*. CAPE MAY WARBLER.— Numerous in fall migration. Sept. 21 (1900) to Oct. 27 (1900), mostly young. May 21, 1902, is the only spring date I have.

149. *Dendroica coronata*. MYRTLE WARBLER.— Scarce; have two dates only: May 5, 1900, and Oct. 25, 1900.

150. *Dendroica castanea*. BAY-BREASTED WARBLER.— Rare; saw one May 8, 1902, and another May 17, 1902.

151. *Dendroica striata*. BLACK-POLL WARBLER.— Plentiful on certain days during migration. It is a late comer in spring; May 16, 1903, and May 18, 1901, the woods were full of them. In fall, Oct. 2, to Oct. 19; only young ones seem to come through here. This year (1903) some lingered at Cumberland till May 21.

152. *Dendroica palmarum*. PALM WARBLER.— Very rare; saw and took one only, May 3, 1902.

153. *Geothlypis formosa*. KENTUCKY WARBLER.— Very rare here, while it was a common breeder at my former home near Pittsburg, Pa. Have two dates only, Sept. 22 and 29, 1899.

154. *Wilsonia pusilla*. WILSON'S WARBLER.— Rather scarce. Sept. 4 (1901) to Sept. 21 (1900). No spring dates.

155. *Regulus calendula*. RUBY-CROWNED KINGLET.— I believe this comes near to being a winter resident, if it not actually is one. Kinglets may be seen all winter, mostly *R. satrapa* to be sure, but undoubtedly there are some of this species with them. Oct. 19 (1900) to May 3 (1902).

156. *Hylocichla aliciae*.— GRAY-CHECKED THRUSH.— Rare. Sept. 15 (1902) to Oct. 6 (1900). No spring dates.

157. *Hylocichla ustulatus swainsonii*. OLIVE-BACKED THRUSH.— Common only in fall migration. Sept. 9 (1901) to Oct. 6 (1900). It is then colored red inside and outside with the juice of the pokeberry.

WINTER RESIDENTS.

158. *Gavia imber*. LOON.—A few stay around here all winter, if the river is not frozen over, which is not often. April 10, 1901, an extraordinarily large one was taken; it measured 39 in. from tip of bill to end of toe, 34 in. from bill to end of tail. April 9, 1902, one was swimming on the Potomac within the city limits, above the dam for the Chesapeake and Ohio canal, enjoying himself dodging bullets and stones of foolish people.

159. *Merganser americanus*. AMERICAN MERGANSER.—Can be seen throughout the winter, if the river is not frozen over. Dates I have extend from Feb. 7 (1903) to April 8 (1902).

160. *Spizella monticola*. TREE SPARROW.—Common from Nov. 16 (1901) to April 12 (1902).

161. *Junco hyemalis*. SNOWBIRD; JUNCO.—Very abundant, Oct. 12 (1901) to April 21 (1903). Dec. 14, 1900 and April 17, 1903, also common at Accident.

162. *Troglodytes hiemalis*.—WINTER WREN.—Not common. Sept. 21 (1901) to April 8 (1901).

This looks like a small list of winter residents, but when the permanent and occasionally permanent residents are added to it, it becomes plain that bird life is not at all rare here in winter, at least around Cumberland.

ACCIDENTAL AND ERRATIC VISITANTS.

163. *Gavia lumme*. RED-THROATED LOON.—On Dec. 19, 1900, one was brought to town and kept in a box in front of a store for some days, that had landed on the ground and been unable to take wing again.

164. *Larus argentatus*. HERRING GULL.—One or more are seen now and then after hard storms. On April 21, 1901, *e. gr.*, about six were flying over the river with about fifty of the next species.

165. *Larus philadelphia*. BONAPARTE'S GULL.—Seen now and then after storms, as, *e. gr.*, April 21-24, 1901; at the same time a pair were taken at Accident on a little fish pond. April 8, 1902, 25-30 were over the Swamp Ponds.

166. *Hydrochelidon nigra surinamensis*. BLACK TERN.—Observed only one so far, May 30, 1901.

167. ? *Nettion carolinense*. GREEN-WINGED TEAL.—Mr. McKee of Cumberland tells me that he took one some years ago.

168. *Olor columbianus*. WHISTLING SWAN.—Saw the feet of several nailed against a building, that Mr. Goss had taken a year or two before. On Dec. 16, 1902, the papers reported that a swan measuring 6 ft. 10 in. from tip to tip, had been shot near Oakland, Garrett Co.

169. *Nycticorax nycticorax nævius*. BLACK-CROWNED NIGHT HERON.

— On May 5, 1901, Mr. Baker shot a young one of this species. This points to it being at least a rare summer resident.

170. *Fulica americana*. COOT.— April 25, 1903, a female was shot on Will's Creek, in the middle of the city (Cumberland).

171. *Phalaropus lobatus*. NORTHERN PHALAROPE.— May 23, 1901, Mr. V. Laney took one for me at the Swamp Ponds, and said he saw another one like it in its company.

172. ? *Ectopistes migratorius*. PASSENGER PIGEON.— This region was formerly one of its favorite haunts, there being an immense roost near Oakland, Garrett Co. Farmers and others that know them well from former times, tell me that they now see small flocks of from 2-12 occasionally. I think I saw five on Keyser's Ridge July 19, 1901, and a pair on Savage Mountain, July 17, 1903.

173. *Haliaeetus leucocephalus*. BALD EAGLE.— This is a not uncommon resident in the mountain fastnesses of West Virginia and occasionally one is seen and taken at or near Cumberland. On Sept. 17, 1902, a young one was captured alive while fighting with a Wild Turkey, on Knobley Mountain across the river.

174. *Pandion haliaëtus carolinensis*. OSPREY.— Now and then seen over the river and fish ponds, *c. g.*, April 22, 1901 and April 19, 1903.

175. *Nyctea nyctea*. SNOWY OWL.— One is seen or taken now and then by hunters. Mr. McKee shot one Nov. 25, 1901.

176. *Centurus carolinus*. RED-BELLIED WOODPECKER.— I have never seen this species here, but one was brought to me Dec. 29, 1900, that had been shot on Iron Mountain, this county. There were then said to be several more there.

177. *Loxia curvirostra minor*. AMERICAN CROSSBILL.— Saw five or six Feb. 5, 1902; took a pair out of about 25 Feb. 28, 1902; saw one in company of Snowbirds Jan. 17, 1903.

178. *Acanthis linaria*. REDPOLL. Observed a flock of eight at a distance of twenty feet through a glass Dec. 6, 1901 (Auk, XIX, p. 212).

179. *Passerina nivalis*. SNOWFLAKE.— Saw this species only on two days: Nov. 16, 1901, and Feb. 8, 1902 (Auk, XIX, p. 212).

180. *Lanius ludovicianus*. LOGGERHEAD SHRIKE.— Despite diligent searching for this species, in the kind of places I know it frequents in other localities, I have found it only once, March 30, 1901, at the Swamp Ponds.

THE OBLIGATIONS OF THE STUDENT OF ANIMAL
BEHAVIOR.

BY WILLIAM MORTON WHEELER.

IT IS well known that every common or conspicuous animal, like every eminent human personage, is destined sooner or later to become the nucleus of a myth-nimbus. An innate love of the marvellous stirs our fancy to invest all creatures with extraordinary powers, till we learn, with Lessing, that "it is the greatest of miracles that the real miracles can and must become such every day occurrences." This nimbus of myth is not entirely the work of the ignorant and child-like observer. The savant himself, from the days of Aristotle and Pliny down to the present era of abounding 'nature-books,' has contributed not a little to the hero-worship of animals.

In view of these conditions, the student of any science of animal behavior or comparative psychology worthy of the name, has a two-fold duty to perform. This is both destructive and constructive; destructive, in so far as he is compelled to submit traditions concerning animals to searching and deparative criticism; constructive, in so far as he is obliged to rebuild our knowledge of animal behavior on the securer foundations of careful observation and experiment. Destructive criticism, especially of the thorough-going kind which seems to be provoked by the now fashionable methods of studying animal behavior, is not a very agreeable undertaking. The scientific critic, if he is noticed at all, will be described as 'technical,' 'dry-as-dust,' and 'colorless' by those who are incapable of appreciating the beauty and interest attaching to the simplest of Nature's activities, but feel compelled to create wonders, like the child who lies for the sake of producing an impression on the too stolid adults of his environment. A moment's reflection, however, will show that until all that has been claimed for the behavior of animals has been tried as by fire, till it has been passed through the hot alembic of scientific criticism and the metal of truth has been separated from the slag of fiction, it shall form no part of enduring knowledge.

Not less laborious than the destructive are the constructive

efforts of the comparative psychologist, involving as they necessarily must, the endless drudgery of observation and experiment to establish the simplest facts. The kind of training required in such work is not necessarily given by any term of years spent in camping in the American forests, nor in the arrogant conviction of surpassing one's fellow men in keenness of insight into the animal mind. No such conviction necessarily carries with it a grain of authority. There is no short-cut to a knowledge of animal behavior in the sense of a trajectory which o'er-leaps a humble and diligent apprenticeship in the methods of correct observation and reflection. In no science is it more true than in comparative psychology that "every man shall not go to Corinth."

There are a few simple considerations which the objective student of animal behavior must constantly bear in mind. A moment's reflection shows that all we can really perceive of animal behavior is certain movements of the creatures in time and space. As soon as we attempt to assign causes to these movements we at once pass into the province of pure inference. This, of course, holds good also of human actions, but in this case we are at least dealing with organisms essentially like ourselves in structure and development. All animals, however, differ more or less widely from man. They have neither the power of concealing nor of revealing their mental processes by means of speech, and, although their actions are, in a sense, frank and undisguised, and often resemble human actions which we have learned to associate with certain feelings, volitions and thoughts, we can never do more than infer a similar association in animals, since we are forever debarred from knowing what is actually taking place in the animal mind. It follows, therefore, that we can have no such thing as an animal psychology or science of animal behavior, unless we accept these inferences from analogy as a valid scientific method. Thus the science resolves itself into a critical treatment and testing of these inferences. And it is just here that the tendencies of the true and the false students of animal behavior diverge. The latter, consciously or unconsciously, construe the predicament of our inability to know what is going on in the animal mind, into a license for all kinds of fancies and a safeguard for unremitting malobservation.

The conscientious student, however, is not without a means of circumventing, so to speak, all these tactics of the pseudopsychologist. He can apply another principle within easy reach, namely "Occam's razor": "Complicated explanations are inadmissible when simpler ones will suffice." We are not, for example, to accept human reasoning as an explanation of any animal behavior, till simpler processes, like instinct and associative memory, have been tried and found wanting. At the present time all cool-headed students are unanimous in the opinion that animals show no evidences of being able to form abstract concepts, much less to construct judgments and draw conclusions from them after the manner of reasoning human beings. In so far as they are not instinctive those animal actions which are commonly attributed to reason may be completely or almost completely explained as the result of associative memory (association of ideas), or at most as an exercise of what has been called the "practical judgment." All of these processes, however, are much simpler than human ratiocination.¹

The fact that in man the reasoning powers are the latest to develop and, in cases of mental disease, the first to disintegrate, leaving nearly intact the emotional and volitional processes, indicates that the reason has been a late acquisition during the history of animal life. It may well be peculiarly human. And while it is

¹ Interesting treatment of this and many other subjects relating to animal behavior will be found in the following important works: C. Lloyd Morgan's 'Habit and Instinct' and 'Comparative Psychology'; W. Wundt's 'Lectures on the Human and Animal Mind'; L. T. Hobhouse's 'Mind in Evolution'; A. Forel's 'Psychic Powers of Ants, etc.' (translated in 'The Monist', 1903-1904); J. Loeb's 'Physiology of the Brain'; H. Driesch's 'Die Seele als elementarer Naturfaktor' (not yet translated); E. Wasmann's 'Instinct and Intelligence.' The works of Morgan, Wundt, Hobhouse and Forel deserve the first rank on account of their sanity and philosophical breadth of view. Loeb's work is remarkable on account of its original and destructive criticism. Driesch's work is noteworthy for its highly, not to say ultra-, objective method. Wasmann's work abounds in keen and instructive criticism of the humanizing school of animal psychologists. He is an advocate of the mediæval psychology of the church. Although his persistent efforts to crush the facts of modern psychology into the Procrustean bed of scholastic definition and terminology will certainly not meet with general approval, his above mentioned work as well as his numerous papers on the behavior of ants, etc., contain many valuable observations.

assuredly a matter of importance to determine whether rudiments of reason exist among animals, and to study this wonderful power in its incipient stages, it is equally true that the comparative psychologist may lay too much stress on the intellectualistic aspects of the animal mind. Of far greater importance is the study of those processes which lie at the very foundation of our own, as they do of the animal's mental constitution, namely, the feelings and the will, and their manifestations in instinct. Nor should it be forgotten that to reason is itself, in a sense, instinctive. It is probable, therefore, that the science of animal behavior will, in the future, lay less stress on the rationalistic side and more on the more profound and no less wonderful phenomena. To this great value of the study of instinct the philosopher Schelling bears witness when he says: "The phenomena of animal instinct are of the greatest importance to every thinking man — they are the true touch-stone of a genuine philosophy."

In view of the preceding statements, it is not surprising that the study of animal behavior has passed out of the anecdotal stage. This fact seems not to be realized by many of the authors of "nature-books" in this country. At the present time the animal anecdote is admissible only in works of art, like the fable, the animal epic or the animal idyll, or for the purposes of destructive criticism. In other words, its chief scientific use is negatively didactic, or for the purpose of illustrating how not to study and describe animal behavior.¹

The constructive work of the student of animal behavior is not completed with the accumulation of knowledge in conformity with true criteria. He may be expected to present the truths thus acquired in clear and attractive form for the purpose of encouraging others to continue the great work in this limitless field of observation and experiment. Few authors have been able to do

¹ Those who cannot repress a feeling of disappointment on learning that there is no evidence to show that animals can reason like themselves, may find consolation in the fact that the very naïveté of animals — their limitations and stupidity, humanly speaking — is a fact of great interest and beauty. Who will deny that the very absence of the reasoning and reflective powers enters very largely into our æsthetic appreciation of the actions of our domestic animals and of our own children?

this and avoid the pitfalls of malobservation on the one hand and those of poetic distortion on the other. Among the few may be mentioned Maurice Maeterlinck in his 'Life of the Bee' and Jules Fabre in the eight incomparable volumes of his 'Souvenirs Entomologiques.' Unfortunately only a single volume of the latter's work has been translated into English, and even the original is far too little known and appreciated. Those who are feeding the American public with false animal psychology done up in tinselled English interspersed with seductive half-tones, would do well to study the methods whereby the young Belgian mystic and the aged French observer contrive to satisfy the reader's æsthetic sense without departing from the truths of rigid observation and experiment. While it is not given to all to succeed like these, it is certainly possible for any one to repress a striving for æsthetic effect at the expense of truth.



UNPUBLISHED LETTERS OF JOHN JAMES AUDUBON
AND SPENCER F. BAIRD.

BY RUTHVEN DEANE.

THE following correspondence between John James Audubon, at the age of sixty-two years, and Spencer F. Baird, a young man of nineteen years, cannot fail to be of interest to the readers of 'The Auk.' The letters are of peculiar interest, as they touch upon Audubon's proposed trip to the Missouri River and of Baird's great desire to accompany him, and show the deep interest and affection each held for the other, though there was a difference of forty-three years in their ages.

The original letter from Baird has come into my possession through the generosity of Miss M. R. Audubon, and I am under great obligation to Miss Lucy H. Baird for a copy of the original Audubon letter and recommendation, which she found among her father's correspondence.

BAIRD TO AUDUBON.

Washington, July 27, 1842.

My Dear Mr. Audubon.

After making several unsuccessful efforts to get a second sight of you day before yesterday, I was obliged to give up the attempt in despair. I went to the Capitol at half past twelve and wandered over the whole building, Library, Senate Chamber and House, without being able to see or hear anything of your excellency. In the evening as in the morning I was again at Fuller's¹ without avail, went up the street, listened a while to the Circus music, came back, you were in bed.

One thing I wanted to ask you about, was respecting your proposed trip next spring. In the first place the expense. The Pennsylvanians have been all so much affected by the derangements in the Currency of our state, stocks, banks, etc., that when in former years dollars were thrown away, cents are now carefully looked to. Nothing would delight me more than to go, if I can afford it. Next what preparation would I have to make to fit myself to accompany you. The journey ought to be a sort of "Humboldt & Bonpland" one, for the purpose of increasing the general sum of knowledge in every department of science, physical as well as natural. Will you please write and tell me all about the matter, route &c. If there is anything I can do for you here, do not hesitate to command me. It would require a good many drafts on me to wipe off the heavy load of obligation I am under to you for your kindness to me in New York, by sympathy and assistance in more ways than one. I have influential friends and relations here who, if occasion demands, may forward some of your views. By the by, a gentleman asked me yesterday several particulars about your proposed work, as to time of commencement, finishing and probable cost, intimating at the same time an intention of becoming a subscriber. Will you enable me to give him some information on the subject.

¹ The old City Hotel kept by A. Fuller and known as "Fuller's," situated at the northwest corner of Pennsylvania Avenue and Fourteenth St., where the Willard Hotel now stands.

I have spent my time since I have been here principally between the Treasury Building and the Patent Office. I have a strong desire to spend a few months among the collections of the Exploring Expedition,¹ with the privilege of overhauling the articles. This my uncle Mr. Penrose,² solicitor of the Treasury, says I will be enabled to do by being connected in some way with the corps to be employed under act of Congress the ensuing winter. He says that if I could get a note from *Mr. Audubon* intimating in general terms, that from his knowledge of my qualifications, I would make a competent assistant to those gentlemen already engaged, that there would not be much trouble about the matter. Will you do me the favor to write something or other to this effect which he may use for this purpose. A few lines from you will be of more avail with the Secretary of Navy, or State, than a whole folio would be from anybody else. Will you ask Major Le Conte to send me a few of those very fine steel pins, tightly packed up, directed to me in an enclosure to Chas. B. Penrose, Solicitor of the Treasury, Washington, D. C. With my best respects to Mrs. Audubon and all your family, I remain,

Yours sincerely,

Spencer F. Baird.

P. S. Please address anything to me under cover to Chas. B. Penrose.

AUDUBON TO BAIRD.

New York, July 30, 1842.

My Dear Young Friend, —

Your letter of the 27th Inst. reached me yesterday. I am truly vexed that I should have missed you at the Library or the Congress Chambers, where I went (perhaps too late) between 3

¹ United States Exploring Expedition, during the years 1838-42. Under command of Charles Wilkes, U. S. N.

² Charles B. Penrose of Pennsylvania, Solicitor of the Treasury from 1841 to 1845, appointed to office by President William H. Harrison.

and 4 o'clock of the afternoon, having been detained at the different Departments of State where it was my duty to call, preparatory to next coming Great Western Journey.

Now it proves by your letter that you feel favorably disposed to accompany me on this long-thought-of and contemplated Tour, and wish me to give you some idea of the expenses, attached to such an undertaking; but to this question I am quite unable to reply at present, although I may do so in a few weeks, and which I shall do, provided you write to me again on the subject.

I have no very particular desire to embark as deep in the Cause of Science as the great Humboldt has done, and that, simply because I am too poor in pecuniary means and too incompetent; but I wish nevertheless *to attempt* to open the Eyes of naturalists to *Riches untold*, and facts hitherto untold. The portions of the country through which it is my intention to pass, never having been trodden by white Man previously.

I have some very strong doubts whether the results of the Antarctic Expedition will be published for some time yet; for, alas, our Government has not the means, at present, of paying some *half a Million of Dollars* to produce publications such as they should publish, and connected with the vast stores of Information, collected by so many Scientific Men in no less than Four Years of Constant Toil and privation, and which ought to come to the World of Science at least as brightly as the brightest rays of the Orb of Day during the Midsummer Solstice. O, my dear young friend, that I did possess the wealth of the Emperor of Russia, or of the King of the French; then, indeed, I would address the Congress of our Country, ask of them to throw open these stores of Natural Curiosities, and to *Give away* Copies of the invaluable Works thus produced to every Scientific Institution throughout our Country and throughout the World.

As you however appear desirous to present my thoughts of your capabilities as one of the assistants in that Stupendous undertaking, I send you enclosed what I hope most sincerely may prove beneficial for such purposes.

Now as you have been kind enough to offer me your services at Washington, I ask you to call upon Mr. Cushing, M. P., of Massachusetts, and to ask him to have the goodness to forward

me the Letter promised me by the president of the U. S., for, as I have not yet had it, I somewhat fear that it has been missent.

Write to me at once, and believe me,

Your friend, John J. Audubon.

AUDUBON'S RECOMMENDATION OF BAIRD.

New York, July 30, 1842.

Knowing, as I do, Spencer F. Baird, Esq., as a Young Gentleman well qualified to assist in the arrangement, description, etc. of the specimens of Natural History brought home by the Exploring Expedition, and deposited in the National Institute at Washington City for the purpose of being published and thereby rendered useful to the world of Science; I take great pleasure in recommending him as a most worthy, intelligent, and industrious student of Nature, both in the field and in the museum, and I would feel great satisfaction in hearing that our Government had employed him in this national and important undertaking.

John J. Audubon.

NESTING HABITS OF THE HERODIONES IN FLORIDA.

BY A. C. BENT.

Plates XIX-XXI.

(*Concluded from p. 29.*)

Botaurus lentiginosus. AMERICAN BITTERN.

This species seems to be sparingly but generally distributed throughout the fresh water marshes of Florida, where it undoubtedly breeds. We did not find any of its nests but, as we spent very little time in suitable localities, this is not strange. We flushed a few American Bitterns from the saw-grass marshes on

the St. Johns River and from similar locations on Merritts Island. It probably nests in the saw-grass with its small relative, the Least Bittern, where its nest must be securely hidden.

In Monroe County, where there are practically no fresh water marshes south of the everglades, we failed to see an individual of either species of Bittern.

Ardetta exilis. LEAST BITTERN.

We found this little Bittern a common resident in all suitable localities — fresh water marshes — in Florida that we visited. It is so shy and retiring in its habits and so hard to flush that we undoubtedly overlooked it many times; if we had spent more time in exploring the saw-grass sloughs we should probably have found it very abundant. None of the birds that we saw seemed to be referable to Cory's Bittern.

We found nests containing fresh eggs in the St. Johns marshes on April 18 and 22 and on Merritts Island on April 26, 1902, four nests in all. The nests were all built in tall, thick tussocks of fine grass, higher than a man's head, growing in saw-grass sloughs. The nests were merely crude platforms of straws, measuring about 7 by 4 or 7 by 5 inches, well concealed in the centers of the tussocks and from 24 to 30 inches above the ground or water; they were exceedingly frail structures, barely able to hold the four bluish white eggs. Boat-tailed Grackles generally frequent the same localities as the Least Bitterns. In a small slough, about 30 yards square, on Merritts Island we found two nests of the Bitterns and five nests of the Grackles.

Ardea occidentalis. GREAT WHITE HERON.

Since the days of the illustrious Audubon very little has been written about this magnificent Heron, the grandest, the handsomest, and the shyest of its tribe. Its range within the United States is confined to the extreme southern coast of Florida and the mangrove keys, where it is really abundant and forms a striking feature in the landscape. It is no uncommon sight to see ten or twelve of these great birds standing in the shallow water

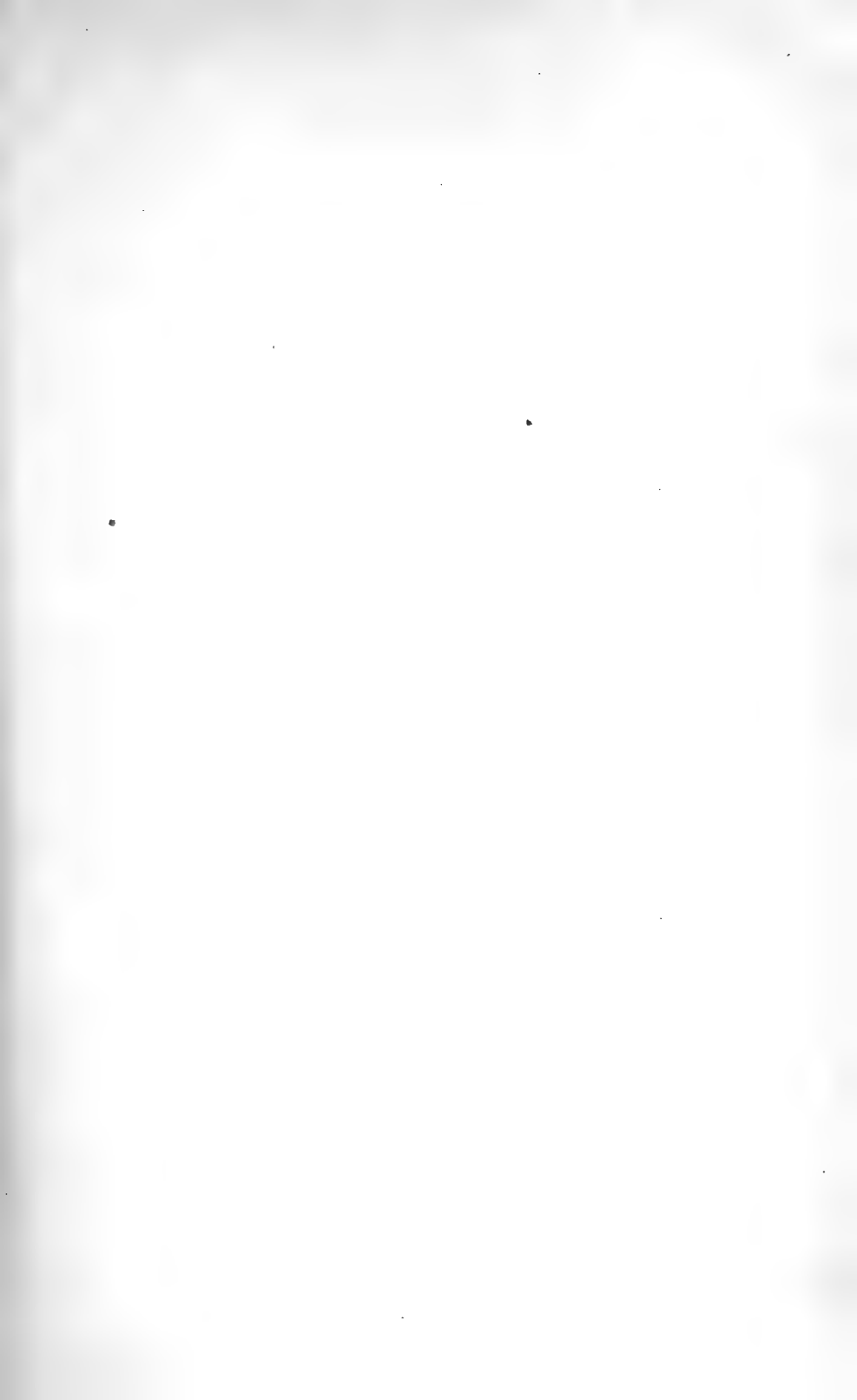




FIG. 1. GREAT WHITE HERON, HALF-GROWN YOUNG.



FIG. 2. GREAT WHITE HERON, FULL-GROWN YOUNG.

around the shores of some small estuary, patiently awaiting the approach of their prey, as motionless as white marble statues. When not fishing they may be seen perched on the outer branches of the mangroves, their pure white plumage standing out in marked contrast against the dark foliage, making them very conspicuous even at a great distance.

It is utterly useless to attempt to approach them at such times, for their eyesight, as well as their hearing, is very acute; they are extremely shy and will fly at the sight of an approaching boat half a mile away. It is almost as difficult to approach them on land, even under the cover of the mangroves, where the slightest noise will send them flying away croaking hoarsely. Only once was I able to outwit them, on one of their favorite roosting keys, where, after stalking them fruitlessly for several hours, I finally concealed myself among some thick underbrush and awaited their return; I was rewarded by securing two fine specimens as they flew over on their way to their evening roost. In all their movements they are deliberate and dignified; in flight they are slow, direct and powerful, with steady strokes of their great wings, the head drawn in upon the shoulders and the long legs stretched out straight behind.

On several of the Keys we found empty nests of large Herons, some of which were probably referable to this species, but we found only one of their breeding colonies. This was on one of the Oyster Keys where on April 29 we discovered a small rookery of half a dozen pairs of Great White Herons and one or two pairs of Ward's Herons. The key was very small, less than an acre in extent, of the mud key type with a little dry land in the centre, overgrown with a thick tangle of underbrush; the usual strip of red mangroves occupied the whole of one end of the island where we nearly overlooked the little colony of nests which were all grouped about a small inlet or bay. The Herons had all left the island, silently and unobserved, long before we landed, and an occasional glimpse of a great white bird in the distance was all we saw of the parents of the helpless young, whose identity fortunately was beyond question. A Ward's Heron flew over us within gunshot, but the Great White Herons never came anywhere near it.

There were four nests of the Great White Heron, all on the outer ends of the horizontal branches of the mangroves, over the water and from 10 to 20 feet above it. The nests, much resembling those of the Great Blue Heron, were large flat platforms of large sticks, smoothly lined with coarse twigs and dry mangrove leaves. The only one that I measured was about 35 by 28 inches outside, and the inner cavity about 15 inches in diameter. This nest contained two eggs and one young bird, just hatched, covered with white hair-like down. A nest near by held two young, about one quarter grown, and one addled egg. Another nest contained three young birds, about half grown, pure white and very pugnacious; they bristled up their plumage, squawked and snapped their bills vigorously, while their throats were vibrating rapidly as if panting from fear or excitement; sometimes they would lie on their sides as if completely exhausted, panting rapidly all the time. They objected decidedly to having their picture taken and refused to pose at all gracefully.

The most interesting nest of all was about twenty feet up on the outer end of a leaning red mangrove and the two large white birds in it could be plainly seen from the ground; they were nearly fully grown, fully feathered and pure white all over, almost indistinguishable from adults. When I climbed the tree one of them stood up in the nest and posed gracefully in dignified silence, while I took as many photographs as I cared to of the beautiful picture.

The eggs of the Great White Heron are not distinguishable from those of the Ward's Heron in size, shape or color, though they are somewhat larger than those of the Great Blue Heron; the only two I collected measured 2.67 by 1.84 and 2.60 by 1.81 inches; they are of the usual heron's egg color, pale greenish blue. But the young are always distinguishable by their pure white color from the day they are hatched.

The Great White Herons are well able to take care of themselves, as they are very difficult to shoot and not in demand for millinery purposes. Their rookeries are small and too much scattered to offer much temptation to nest robbing negroes.

Ardea herodias wardi. WARD'S HERON.

The southern representative of the Great Blue Heron is one of the characteristic birds of Florida and for so large a bird is decidedly abundant; especially so along the Indian River where it is usually the first of the Herons to be seen; as the train runs along close to the river, just above Titusville, the shore seems to be lined with Ward's Herons, standing like sentinels at frequent intervals or flapping lazily away for a short distance; sometimes one will scale along on motionless wings close to the water until it can drop its long legs down and alight on some favorite bar. While fishing it stands quite motionless for a long time, waiting for its prey with dignified patience, well becoming the largest member of its group. In general habits it closely resembles its northern relative, but it is not so shy as the Great Blue and not nearly as difficult to stalk as the Great White Heron.

I believe the Ward's Heron is evenly distributed all over the State of Florida and is everywhere common. We found them breeding in small willow hammocks on the prairies of the interior and in the larger willows along the St. Johns River, where nests with newly hatched young were found on April 21. The nests were bulky affairs, made of large sticks about like those of the Great Blue Heron, and were placed in the largest willows, about 10 or 12 feet from the ground. They do not nest in colonies here, or elsewhere that I have observed them, but the nests are scattered about singly or in disconnected groups. The young are grotesque and homely, being but scantily covered with filamentous down of a dirty grayish color.

In Monroe County we found them breeding with the Great White Herons in small numbers and we saw them or their empty nests on many of the keys. Here their nests were built in the red mangroves or on the tops of bushes, never more than half a dozen or so in a group. We found only one occupied nest in this region, which on April 29 contained two small young; the nest was about 25 feet up in a red mangrove in the Great White Heron colony. Both of these large Herons are early breeders and, as we generally saw both species together, it was impossible to identify the many nests from which the young had flown.

Probably the young learn to fly soon after leaving the nest, for we found no young birds in the trees about any of the nests, as we did with all of the smaller Herons.

Herodias egretta. AMERICAN EGRET.

This beautiful plume bird is, I am sorry to say, fast becoming a rare bird in Florida, though it still occurs in small numbers all through the interior of the State. It is by no means wary, is so strongly attached to its home and is so courageous in the defence of its young that it has been an easy matter for the plume hunters to annihilate rookery after rookery. In Brevard County we visited two localities, small cypress swamps, where the year before large breeding rookeries of Egrets existed, but not an occupied nest was to be seen and only two or three scattering birds flying off in the distance. On the upper St. Johns we saw a few American Egrets but found no nests. It is known here as the "big white heron" and can be distinguished at a distance from the Snowy or Little Blue Herons by its slower and heavier flight. Undoubtedly a few Egrets still breed in this region in the rookeries with other species.

In Monroe County we found the American Egrets breeding sparingly in the large rookeries with the White Ibises and the smaller Herons. Among the 4000 birds at the Cuthbert rookery we counted 18 American Egrets and found seven nests. The birds were very tame, constantly alighting in the trees near us, and we could easily have killed as many as we wanted, but the A. O. U. warden, Mr. G. M. Bradley, who acted as our guide, was so solicitous for their welfare that we refrained from shooting a single bird; one wounded bird, unable to fly, was the only specimen we obtained. Most of the nests were in the low red mangroves over the water, but one was near the top of a black mangrove on a horizontal branch 15 feet from the ground.

The nests were about as large as Night Heron's, loosely and poorly made of coarse sticks and not as smoothly lined as most Heron's nests. Three of the nests held eggs, one set of two and two sets of three, of the typical color, light greenish blue varying in intensity. The other nests had young of various ages, from

one quarter to two thirds grown, covered with pure white down until the white plumage appears.

The young were very precocious, even when half grown, leaving the nest at the slightest provocation and climbing nimbly over the surrounding branches; it was surprising to see how fast and how far they could travel without falling; they were so lively that it was a difficult matter to photograph them successfully.

I cannot too strongly urge the necessity of protecting this species and its smaller relative, the Snowy Heron, if they are to be saved from utter extinction. These two are the principal sufferers from the destructive persecution of the plume hunters; but, fortunately for them, they are now so rare everywhere, except in the most inaccessible localities, that it hardly pays to hunt them; though an increased demand for aigrettes at higher prices might prove disastrous. Under adequate protection, with a thorough posting of the rookeries and with strict enforcement of the very good laws now in force, there are probably enough Egrets left to partially restock their former haunts.

Egretta candidissima. SNOWY HERON.

What I have already said about the disappearance of the Egrets is also true of this species. Although once very abundant all through Florida it has now been nearly exterminated, comparatively speaking, but I am hopeful enough to think that the work of destruction has been checked in time to save this beautiful species from extinction. There are still a few Snowy Herons left in the big rookeries of the upper St. Johns, and a number of them still breed in the more inaccessible rookeries of the Cape Sable region. In the former locality we spent all of one day and part of another in the largest of the rookeries at Braddock Lake, where hundreds of Louisiana Herons and many Little Blue Herons were breeding, trying to identify the nests of the various species among which were a few Snowy Herons. We were unable to determine how many of this species were nesting there and I succeeded in positively identifying only two nests of the Snowy Heron. This rookery was on a small muddy island, in

the middle of the great marsh, covered with a thick growth of small willows from 12 to 15 feet high.

Although all three species of Herons were very tame, alighting on the trees all about us, they were very careful not to settle down on to any of the nests within sight of us; it was only by lying for hours carefully hidden under some thick clumps of large ferns that I was able to satisfactorily identify a few nests. The first nest of Snowy Herons, containing four eggs, was placed 8 feet up in a slender willow and was merely a flimsy platform of small sticks. The second nest held five eggs and was located only 5 feet up in a leaning willow; it was made of larger sticks and lined with fine twigs. Neither the nests nor the eggs of the Snowy Heron are in any way distinguishable, so far as I could determine, from those of either the Louisiana or the Little Blue Herons. It is necessary to see the bird actually sitting on the nest to make identification sure; even then young Little Blue Herons in the white phase are liable to lead to confusion and it is necessary to see the black legs and yellow feet or the graceful plumes of the Snowy Heron. We did not see any Snowy Herons anywhere except in the breeding rookeries and even there they were very shy.

Hydranassa tricolor ruficollis. LOUISIANA HERON.

This beautiful and graceful little Heron is by far the most abundant of its family in all sections of Florida that I have visited. Fortunately its beauty is not expressed in plumes, hence it has escaped the merciless persecution of the plume hunters; but it is not without plumes, such as they are, which may lead to its destruction when the white aigrette supply is exhausted. Like all the small Herons its flight is light, rapid and graceful, the head drawn in upon the shoulders and the legs stretched out behind. While fishing it stands erect and motionless until some small fish swims within reach, when it crouches down close to the water, takes a few rapid steps forward and darts out its sharp bill like a flash, usually catching the fish near the surface.

We found the Louisiana Heron breeding very abundantly on the upper St. Johns; sometimes they were in rookeries by them-



FIG. 1. NEST OF LOUISIANA HERON.



FIG. 2. NEST OF LOUISIANA HERON.

selves and sometimes in company with Little Blue and Snowy Herons, where all the nests held eggs during the latter part of April. In the big rookery at Braddock Lake, referred to above, the Louisiana Herons occupied all the central portions of the rookery, forcing the other species into the outskirts. Their nests were built in the willows in every available spot and at every height from 2 to 12 feet above the ground, often several nests in the same tree; they were neatly and well made of small sticks and smoothly lined with fine twigs. Most of the nests contained four or five eggs and one held six. The eggs were practically indistinguishable in size, shape or color from those of the Little Blue or Snowy Herons.

As evidence that they do not always live in perfect harmony with their neighbors, I saw, while lying concealed in the rookery, a Louisiana Heron alight on a Little Blue Heron's nest and deliberately poke the eggs out on to the ground, with her bill, one after another; the owner of the nest did not appear during the process. All of the smaller Herons suffer from the depredations of the Fish Crows which are constantly sneaking about in all the rookeries ready to pounce upon and devour, or fly away with the eggs as soon as the owners give them a chance.

In Monroe County we found the Louisiana Herons everywhere abundant, breeding in all the inland rookeries as well as on many of the mangrove keys. At the Cuthbert rookery they formed at least half of the colony, where we estimated that there were about 2000 of them. Here they occupied the centre of the rookery filling all the trees with nests, most of them from 6 to 12 feet from the ground in the black and red mangroves, a few being in the 'buttonwoods.' At the time of our visit, on May 1, fully three quarters of the nests contained young birds of various ages. The young bird is covered at first with dark gray filamentous down; the down on the head soon forms a prominent upright tuft of wood brown hairlike filaments, giving the young bird a very curious expression; later on, as the bird attains its growth, it begins to assume the white breast plumage of the adult, starting as a narrow line down the centre of the breast and neck. When about two thirds grown the young begin climbing out of the nests and along the branches of the trees; they are quite expert at this

and can cling on quite tenaciously with their big awkward feet and bills. But they often pay a severe penalty, for their precocity by falling and becoming entangled. Their parents seem unable to help them in such predicaments, as we saw a number of their dead bodies hanging by one foot from the edges of the nests.

Florida cærulea. LITTLE BLUE HERON.

Next in abundance to the Louisiana Heron comes the Little Blue, with which it is intimately associated and practically identical in distribution. Both species have escaped destruction by the plume hunters, for the same reason, the lack of marketable plumes, and they are very much alike in general habits. They fish in the shallow waters along the shores of the Indian River and in most of the small pond holes in the interior. They are very active while fishing, walking about constantly but standing erect occasionally and darting straight down upon their prey. Birds in the blue phase predominated, but we saw a great many in the white phase even in the breeding rookeries.

On the upper St. Johns we found them breeding commonly on the willow islands with the Louisiana Herons, but never in rookeries by themselves. So far as we could judge, from what few nests we were able to identify and by watching them rise from their nests as we approached the rookeries, the Little Blues always nested in the smaller willows on the outer edges of the islands. The nests were usually placed very low down, mostly from 2 to 4 feet from the ground, in small trees or bushes or on the lower branches. Their nests and eggs were practically indistinguishable from those of the other small Herons and positive identification was difficult, as they were very shy about alighting on their nests, though tame enough in other respects.

In Monroe County we saw Little Blue Herons feeding in all the shallow estuaries and lakes and found them breeding in the big rookeries with other species. Their nests here also were confined to the outskirts of the rookeries where they were bunched together in compact groups. We did not find them breeding on any of the keys.

There is little danger, under the protection now afforded them,



FIG. 1. LITTLE BLUE HERON ROOKERY.



FIG. 2. NEST AND EGGS OF YELLOW-CROWNED NIGHT HERON.

that either this or the preceding species will be exterminated for many years to come, though the young are taken from the nests for food by the natives of southern Florida.

***Butorides virescens.* GREEN HERON.**

The status of this widely distributed species is about the same in Florida as elsewhere throughout its range. It is nowhere abundant but evenly distributed in all suitable localities. We found scattering pairs of Green Herons breeding on Merritts Island and in the interior of Brevard County, nesting in little clumps of willows about the small pond holes. A few were seen on the upper St. Johns and a few in Monroe County, among the keys as well as along the streams in the interior. Among the hosts of other interesting species we paid but little attention to the Green Herons and noticed nothing new about their nesting habits, which are practically the same here as elsewhere.

***Nycticorax nycticorax nævius.* BLACK-CROWNED
NIGHT HERON.**

I shall not prolong this paper with an account of this well known species. It is enough to say that we found it nearly everywhere that we went. A few Black-crowned Night Herons were breeding in the rookeries with other species on the St. Johns River, one or two pairs in almost every rookery. In Monroe County it was fairly common in the interior. We started a flock of about 75 birds off one of the keys where they probably had a fair sized breeding colony, though we did not have time to explore it.

***Nyctanassa violacea.* YELLOW-CROWNED NIGHT HERON.**

This handsome Heron was nowhere very common in the regions we visited, though, I believe, in certain sections it is quite abundant. In its full breeding plumage it is a striking and con-

spicuous bird. It is by no means shy, especially near its nest, where it will stand in the top of the nearest tree silently watching the intruder.

There were one or two pairs of these birds in nearly every rookery on the St. Johns, but in spite of our efforts, we succeeded in finding only two of their nests, both on April 21.

The first nest was on the outer edge of the rookery on a leaning willow and only four feet above the water. It measured 20 by 16 inches, was made of large sticks and lined with fine twigs; the five eggs in it were on the point of hatching, some of them already pipped, so we contented ourselves with photographing it while the bird was flying about anxiously. The second nest was within a few yards of a Ward's Heron's nest, these two being the only nests in the vicinity; it contained two eggs and two young birds, scantily covered with grayish down; it was placed 8 feet from the ground in a small willow, near the end of a long narrow island.

In Monroe County we saw a few Yellow-crowned Night Herons on the inland streams, both young and adult birds, but found no nests.

Although not much in demand for its plumes, it is so tame and unsuspecting that it should be protected, especially from the natives among whom both of the Night Herons are highly esteemed as food.



THE RHYTHMICAL SONG OF THE WOOD PEWEE.

BY HENRY OLDYS.

THE usual phrases of the Wood Pewee are well known. The bird sings so persistently through the summer, when most birds are silent, that its melancholy rising and falling tones are familiar to all that frequent the woods during the milder season. But that these detached phrases are combined into a rhythmical song, uttered during the twilight hours of morning and evening, is a fact that seems generally to have escaped observation.

I first heard this interesting utterance in 1894, and not again,

although I was carefully listening for its repetition, until 1899, five years later. Every year since 1899 I have heard it with growing frequency, until now it is one of the ordinary bird songs of spring and summer.

The song is remarkable in that it is constructed in the form of the ballad of human music. I have elsewhere shown the significance of this fact,¹ and will not repeat the deductions to which it gives rise; but it may be well here to explain the identity of construction.

The arrangement of the ordinary ballad frequently consists of a musical theme for the first line, an answering theme for the second line that leaves the musical satisfaction suspended, a repetition of the first theme for the third line, and a repetition of the second theme, either exactly or in general character, but ending with the keynote, for the fourth line. An example will make this clear. Let us analyze the first four lines of 'Way Down upon the S'wanee River.'

Note the symmetrical repetition of phrases, giving a pleasing balance to the composition. Observe also that the note marked

The image shows two staves of musical notation in G major (one sharp) and common time. The first staff contains two phrases: '1st theme.' and '2d, or answering theme.' The second staff contains two phrases: '1st theme repeated.' and '2d theme repeated (in character)'. The first staff ends with a note marked 'a' and the second staff ends with a note marked 'b'. Both staves end with a double bar line.

a that ends the second line does not satisfy the musical sense, but leaves the listener in suspense, with the expectation of more to follow; but the note marked *b* at the end of the fourth line is the keynote, and is completely satisfying; there may be more to the song, as in the case of the example quoted, but it is not necessary that there should be. The effect is as though a semicolon, a colon, a semicolon, and a period were placed at the ends of the respective lines.

¹ Harper's Magazine, August, 1902, pp. 477-478.

The Wood Pewee's continuous song is governed by the same principles. As I first heard it, it was rendered as follows :

1st theme. Answering theme. 1st theme repeated. 2d theme repeated (in character).

The notes marked *a* and *b*, the closing notes of the second and fourth lines, have the same character as those in the corresponding positions in the human ballad given.

In the many times I have heard this song there have been numerous variations, such as

in which the third line and the passing note in the first line are omitted ;

in which an extra set of the first and second themes is given ;

in which the last line ends with the second of the scale, instead of with the tonic or keynote (metronome number not taken) ;

almost identical with the preceding example ;



a very melodious song, one of three that were heard simultaneously ;



in which the repetition of the first phrase is omitted — pitch a shade flatter than E; final note very lightly touched, the stress falling on the preceding F#; and



in which the tempo is somewhat more strenuous than in the preceding examples.

In addition to these and other variations that have come under my personal observation, there is a very peculiar one reported to me by Mr. Gerrit S. Miller, Jr. A Wood Pewee near his home in Alexandria County, Va., occasionally rendered the rhythmical song in a much higher key and in what Mr. Miller calls a falsetto voice — very light and high.

The song is usually sung over and over in strict time and without pause between verses. I have known it to continue for fifteen or twenty minutes at a time. It is usually preceded, and often followed, by the ordinary detached phrases. According to my experience it is never sung after dark, though the usual song may frequently be heard through the night, but seems to be confined almost entirely to dawn and dusk. It is not peculiar to any particular season during the Wood Pewee's stay with us, as I have noted it from shortly after the bird's arrival in spring to at least as late as September 7.

In closing this brief account I would call attention to the

remarkable fact — perhaps a joke on us — that a bird which we have classed outside the ranks of the singers proper should deliver a song that judged by our own musical standards takes higher technical rank than any other known example of bird music.

THE STATUS OF *MELOSPIZA LINCOLNI STRIATA* BREWSTER.

BY JOSEPH GRINNELL.

Melospiza lincolni striata Brewster.

Melospiza lincolni striata BREWSTER, Auk VI, April 1889, 89 (original description, based on September birds from Comox, B. C.). — CHAPMAN, Bull. Am. Mus. Nat. Hist. III, 1890, 148 ("standing doubtful"). — RHOADS, Auk X, Jan. 1893, 21 (characters not considered good). — RHOADS, Proc. Ac. Nat. Sci. Phil., 1893, 51 (characters considered "slight and variable"). — MCGREGOR, Condor, II, March 1900, 35 (skins from Redwood City, San Geronimo, St. Helena, and Battle Creek, California). — GRINNELL, Pac. Coast Avif. No. 3, June 1902, 57 (winter visitant in California "south through the coast belt to the San Francisco Bay region"). — BREWSTER, Bull. Mus. Comp. Zoöl., XLI, Sept. 1902, 150 (specimen from Victoria Mountains, L. Cal.; "I see no reason why the existence of intermediate specimens, such as those to which Mr. Chapman calls attention, should be necessarily prejudicial to the recognition of the form as a subspecies, although its standing cannot perhaps be regarded as assured until its breeding-grounds are definitely known, and fully mature birds in summer plumage have been examined.").

Melospiza lincolni GRINNELL, Auk, XV, April 1898, 128 (found breeding at Sitka, Alaska, and a juvenile one-third grown secured; Mr. Brewster comments on an adult bird submitted to him as follows: "Your Lincoln's Sparrow from Sitka, Alaska, agrees closely with my types of *M. c.* [sic] *striata* in respect to the streaking of the upper parts, but it is less olivaceous and the buffy is less rich and deep. Making due allowance for seasonal and individual variation, I should think it not improbable that it may represent the breeding plumage of *striata*, but it would be of course unsafe to assume this positively on the strength of a single specimen." [Mr. Brewster's wise but cautiously-made conjectures have proven correct]). — RIDGWAY, Bds. N. & Mid. Am. I, 1901, 382 (*striata* doubtfully synonymized under *Melospiza lincolni*).

As shown by the above references, the validity of a Northwest Coast race of *Melospiza lincolni* has been as often doubted as affirmed. Ever since I began the systematic study of west-coast birds, this question has particularly interested me, and I have seldom neglected an opportunity to secure relevant specimens or information. As a result there is now at hand material which clearly demonstrates the existence of the form *striata*, as described fifteen years ago by Mr. Brewster.

It seems that heretofore breeding birds have been wanting; but fine specimens, now available, from Sitka and Wrangel show the summer habitat of *striata* to be the Sitkan District, of Nelson, in southeastern Alaska. A sharply defined winter habitat, also, is constituted by the humid coast belt of California (San Francisco Bay Region, Santa Cruz and Northern Humid Coast Districts, as mapped in Pacific Coast Avifauna Number 3). *Melospiza lincolni lincolni* occurs commonly in other parts of California in winter and especially during migration, and a few breed in the Sierras. But *Melospiza lincolni striata* seems to be the only form wintering in the above indicated habitat, and does not regularly move beyond its limits. These statements are drawn from about forty-five skins of both forms examined from California. Mr. McGregor has recorded a specimen of *striata* from Battle Creek, while Mr. Brewster refers a single skin from Lower California to the same form; but these may be considered exceptional. I may here remark that I have so far failed to find a really satisfactory "intermediate," though alleged cases have been recorded. Mr. Brewster's type was a male in fresh fall plumage (Comox, B. C., Sept. 8). His painstaking and detailed description applies precisely to a specimen (♂, No. 5016 Coll. J. G.; Pacific Grove, Monterey County, California; Dec. 26, 1901) which is selected as being representative of my winter series. The summer plumage of *striata* (♂ ad. No. 5341 Coll. J. G.; Wrangel, Alaska; June 25, 1902; collected by M. P. Anderson) differs from the winter plumage in greater conspicuousness of black markings, and in paleness and restriction of buffy suffusion, both evidently due to abrasion and slight fading. Compared with *lincolni* of equally worn plumage the upper parts of summer *striata* are much more broadly black-streaked, the olive edgings worn to such narrowness that the black predominates;

pectoral and lateral streaking also broader; central tail-feathers with much broader shaft-streaks. Briefly, color-differences are pronounced, and as far as present material goes, constant at all seasons.

The small size of *striata* is an especially good character, as shown by the accompanying table of measurements (in inches) made from selected specimens. Decreased wing and tail lengths seem to be an accompaniment of shorter yearly migration, here, as in *Hylocichla guttata verecunda*, *Regulus calendula grinnelli* and *Hesperocichla nevya nevya*, of corresponding summer and winter distribution.

Melospiza lincolni striata.

	No. Coll. J. G.			Wing	Tail
♂	4616	Palo Alto, Cal.	March 29, '01	2.25	2.25
	5016	Pacific Grove, Cal.	Dec. 26, '01	2.37	2.37
	5341	Wrangel, Alaska	June 25, '02	2.35	2.35
	4551	Palo Alto, Cal.	Jan. 19, '01	2.22	2.28
	4552	" " "	" " "	2.23	2.35
	4989	" " "	Dec. 20, '01	2.25	2.28
	3641	San Geronimo, Cal.	Sept. 15, '98	2.26	2.35
	1179	Sitka, Alaska	June 25, '96	2.22	2.22

Melospiza lincolni lincolni.

	Wing	Tail
Average of 7 ♂♂ from So. Cal.	2.50	2.52
Average of 5 ♀♀ from So. Cal.	2.40	2.42

GENERAL NOTES.

Holbøll's Grebe at Niagara Falls.—While on a trip to Niagara Falls this past fall (Sept. 20, 1903) in company with Mr. Frederick C. Hubel, I picked up a fine specimen (ad. ♂) of Holbøll's Grebe (*Colymbus holbøllii*) on the Canadian side just opposite the American Falls. Upon questioning the proprietor of a curio shop, a few feet from the spot, he informed me that he shot the bird early that same morning swimming out in the

rapids. Personal examination proved that the grebe had been dead only a few hours.—ALEXANDER W. BLAIN, JR., *Detroit, Mich.*

Holbæll's Grebe and the White Pelican at St. Mary's Georgia.—On February 18, 1904, I shot a Holbæll's Grebe (*Colymbus holbællii*) in the mouth of Cumberland River, only about one mile from Florida waters. Mr. Chapman in his 'Handbook of Birds of Eastern North America' (the latest authority I have) gives South Carolina as the southern limit of its range.

During the fall migrations (1903), three American White Pelicans (*Pelecanus erythrorhynchos*) were taken within a radius of twenty miles of this place— one in the St. Marys River opposite Kings Ferry, Fla.; one in the Satilla River, about Satilla Bluff, and one at Stafford Plantation on Cumberland Island. All three, I believe, were in such an exhausted condition that they were taken alive.—ISAAC F. ARNOW, *St. Marys, Ga.*

Another Ohio Record for the Knot (*Tringa canutus*).— Authentic records for the occurrence of this bird in Ohio are few and far between. It gives me great pleasure to add at least one more record. While going over a small lot of Sandpipers and Plovers in the museum of Heidelberg University, I came across a specimen of this bird, shot in the spring of 1894 on the banks of the Sandusky River, here at Tiffin.—W. F. HENNIN-GER, *Tiffin, Ohio.*

The Red-backed Sandpiper in Massachusetts in December.— Mr. George C. Shattuck gave me a Red-backed Sandpiper (*Pelidna alpina pacifica*) which he shot on Barnstable Neck, Mass., on December 23, 1903. It was in company with another of its kind.—REGINALD HEBER HOWE, JR., *Concord, Mass.*

Capture of Krider's Hawk at St. Marys, Georgia.—I take pleasure in recording the capture of a male Krider's Hawk (*Buteo borealis kriderii*) in the extreme southeastern corner of Georgia on February 3, 1904. In the winter of 1901-02 Mr. A. H. Helnn, of Miller Place, N. Y., and I were hunting on Point Peter, a Government reservation a few miles down the river from this place, and saw two apparently very light colored Red-tailed Hawks but failed to get a shot at them. He remarked that they looked as light as Krider's Hawk. This winter I found that one at least was there again and I made several trips there trying to get a shot, but while I would see him on every occasion he was too wary for me to get what I considered a sure shot, and I would take no chances at him. On February 3, I decided I would try him again. Just before reaching my landing place, and while just opposite his haunt, I saw a hawk coming across from the Florida side of the river and scarcely had time to throw down my oars and get a suitable shell in my gun when he was abreast of me. I shot and he fell in the river about 100 feet astern. I found him

to be the hawk I was looking for, and a beauty, and I have added him to my modest collection of skins. He was evidently living high on Clapper Rails, as he had one in his stomach and another freshly eaten in his crop. — ISAAC F. ARNOW, *St. Marys, Ga.*

The Great Gray Owl near Boston. — On February 7 of this year I saw a Great Gray Owl (*Scotiaptex nebulosa*) in Dedham, Mass. I was attracted to the spot by a great clamor of Crows and soon found my bird perched on a low limb of a white pine in open mixed woods. It held in its claws a dead and partly eaten crow, which when it was finally dropped by the owl in flight, I found to lack the head and fore part of body and the viscera. The owl seemed perfectly fearless of me, but showed nervousness when the crows cawed near by, and followed with its eyes the flight of the single crows that flew over its tree from time to time. I drove it about from tree to tree with snowballs. It flew low and always took a rather low perch, — from ten to twenty feet from the ground, and usually on a large branch of a pine tree, near the trunk, though twice it alighted on the very top of a red cedar. I could get as near as the height of its perch permitted and was frequently within twenty feet of it during the hour or two that I spent in its company. — FRANCIS H. ALLEN, *Boston, Mass.*

The Pileated Woodpecker in Anne Arundel County, Md. — Upon reading the note of Mr. George W. H. Soelner in 'The Auk' for January, 1904, recording the Pileated Woodpecker (*Ceophlæus pileatus*) in the District of Columbia, it put me in mind of a record I made November 25, 1896.

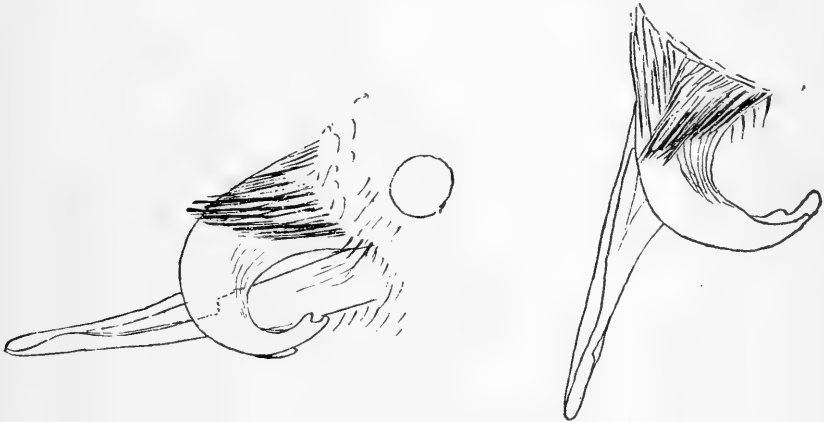
As I was crossing a field bordering some low swampy woodland along Rogue Harbor Creek, I heard the familiar note of this species, and looking up saw one with its broad sweeping flight almost directly over my head, about fifty feet up. This locality was on the line of the Annapolis, Baltimore and Washington R. R., about midway between Odenton and Patuxent.

For the last twenty years, I have found this species to be fairly common while on shooting trips in Somerset County, Maryland, during the months of November, December, and January, always counting upon seeing one or two each day, but on my last trip of ten days' duration, in December, 1903, I neither saw nor heard a single bird. — WILLIAM H. FISHER, *Baltimore, Md.*

Whip-poor-will (*Antrostomus vociferus*), a New Bird for Colorado. — A specimen of this species was found nearly dead in an orchard at Fort Collins, Colorado, about September 14, 1903, by Mrs. R. J. Tenny, who presented it to the Agricultural College. It was given to me for identification and mounting, and after its preparation was sent to Washington for more positive determination, where it was pronounced to be *Antros-*

tomus vociferus, thus adding another species to the list of Colorado birds. At least it is not given in Professor Cooke's list, nor in Mrs. Bailey's 'Birds of the Western United States.' The specimen was in good plumage, but greatly emaciated, although I found no signs of its having been injured.—L. E. BURNETT, *Taxidermist and Collector, State Agricultural College, Fort Collins, Colorado.*

Another Abnormal Bill.—The character of the malformed bill submitted by Mr. B. S. Bowdish in the last number of 'The Auk' seems a common type in abnormalities of that kind. I have in my possession the head of a Crow (*Corvus americanus*) afflicted with the same kind of malformation. In this case, however, the upper mandible is bent completely down and around so as to point over the bird's shoulder. The lower mandible is not so greatly elongated as in Mr. Bowdish's specimen, however, but the notches he speaks of where the mandibles cross



MALFORMED BILL OF CROW (*Corvus americanus*). Nat. size.

are very deep. There is no sign of injury to account for the peculiar growth.

It raises an interesting conjecture in regard to the winter and early spring food supply of these birds. It was killed early in March near Port Huron, Mich., 1901, and was evidently starving to death when the shot gun put it out of misery. Its plumage, however, was in good shape, not quite as glossy perhaps as some, but it was quite evident that the bird did not suffer from lack of food at the time of its last moult. What food it could have lived upon during the winter is a subject for speculation. It was an impossibility to pick up anything from the ground with such a bill, and whatever its diet was during the winter, it could not be found in the more northern ranges in early spring.—P. A. TAVERNER, *Chicago, Ill.*

The Western Meadowlark (*Sturnella magna neglecta*) in Southern Georgia.— In a small series of Meadowlarks from Southeastern Georgia, I find three or four that appear to approach the western form *neglecta*. One specimen, a female, taken March 16, 1903, at 'Mush Bluff' (about four miles from St. Marys), is a typical *neglecta*, and is apparently indistinguishable from specimens of this bird taken in North Dakota.— A. H. HELME, *Miller Place, N. Y.*

The Evening Grosbeak near Quebec, Canada.— On the 24th of November, 1903, four specimens of the Evening Grosbeak (*Hesperiphona vespertina*) were brought to me— three males and a female. They were killed in the woods in the vicinity of Quebec. Later, about the end of January, 1904, five others, of which one was a female, were shot in the same neighborhood. To my knowledge these are, with the exception of one killed in 1890, the only specimens ever met with here.— C. E. DIONNE, *Quebec, Can.*

The Pine Grosbeak on Long Island, N. Y.— It is so rarely that Long Island is favored with the presence of the Pine Grosbeak (*Pinicola enucleator canadensis*) that their occurrence here in considerable numbers during the past winter is worthy of record. During the last twenty five years there have been few winters that I have not spent considerable time in the field at this place, but I have never been able to meet with this bird, to be certain of its identity, until the past winter. I have heard of a few instances of its occurrence on Long Island in former years, as at Miller Place, Cold Spring, Middle Island, and Terryville. At Miller Place, on November 26, 1903, three Grosbeaks were noted in an orchard near my house, and later a red male was seen flying westward. I was told of a "flock of Butcher Birds" that were seen here about a week prior to this date. From the description given me I have little doubt that they were Pine Grosbeaks. While perched on the top of a tree, and in their undulating flight, they bear a strong resemblance to shrikes, and if seen singly by one unfamiliar with them might readily be mistaken for these birds. From November 13 to 25, I was away from home and cannot tell at what time they began to arrive. I am inclined to think that some birds I heard early in the month were Grosbeaks, but I was not then familiar with their notes and did not recognize them. November 27, I left Miller Place and did not have another opportunity to look for them until December 4, when I met with a small flock in a cedar grove not far from my house. In this grove, from this time on until about the middle of February, Grosbeaks could be found in varying numbers. The last one was seen on February 28. On February 1 and 6 they were more plentiful than at any other time, and appeared to be migrating. Not more than two per cent were in the red plumage. Their food consisted almost entirely of the seeds of the red cedar. The seeds were nearly always crushed before they were swallowed, only the inner portions of the seeds being eaten.

Occasionally a few would come into the orchard and pick among the frozen apples left on the trees. While feeding they were very gentle and I had no difficulty in catching several in a small scoop-net, made of fine wire, attached to a pole. Four that I have in a large cage are very fond of sunflower and hemp seeds. They will eat canary and rape seed but prefer that of the sunflower. Millet seed they will not eat if they can get any other food. They appear to have four distinct sets of notes,—a low querulous note uttered while feeding; another, somewhat resembling that of the Goldfinch, uttered both on the wing and while sitting in the trees; and a longer drawn whistle that reminds one of a Cedar-bird. This appears to be their usual call-note when restless and alarmed. Several times I heard an attempt at a song, consisting of three or four finch-like notes. During the winter I met with a few Grosbeaks at Rocky Point, and heard of their presence at several other places on Long Island.—A. H. HELME, *Miller Place, N. Y.*

The Pine Grosbeak on Long Island, N. Y.—After years of waiting I am at last able to positively record this species on Long Island. Three specimens were seen at Southold, February 2, 1904, by Mrs. A. F. Lowerre who is an unusually careful observer. Her report is as follows: "Tuesday morning I saw three birds in a neighbor's honeysuckle. Took my opera glass and went close to study them. Found they were Pine Grosbeaks, either all females or young male birds. There were no carmine-red adult males to be seen. I never saw or heard of them here before."

February 12 Mrs. Lowerre wrote: "I saw the three grosbeaks again yesterday; the only places they seem to visit are the honeysuckle vines." Subsequently Mrs. Lowerre reports that she did not see the grosbeaks after February 11.

All Giraud says of them is: "In the autumn of 1827, large flocks of pine grosbeaks visited Long Island. . . . Since that period until the present year (1844), I have not seen or heard of its occurring on Long Island."—WILLIAM DUTCHER, *New York City.*

White-winged Crossbill — A Correction.—Mr. Spicer of Goodrich, Genesee Co., Mich., has requested me to correct a misleading record attributed to him by Professor Cook in his 'Birds of Michigan,' p. 108. Cook quotes him as finding the White-winged Crossbill breeding at Goodrich, Mich., but the note in question (O. & O., 1889, p. 43) refers to the American Goldfinch. Unfortunately this record is quoted in my recent 'List of the Birds of Southeastern Michigan' (Bull. Mich. Ornith. Club, IV, 38) and is very misleading as to the southern breeding range of *Loxia leucoptera*.—BRADSHAW A. SWALES, *Detroit, Mich.*

The Lark Sparrow in Oneida County, N. Y.—June 13, 1903, in the extreme northeastern corner of this county, I saw, and positively identified, a Lark Sparrow (*Chondestes grammacus*). A week later I visited

the same locality, but failed to get a glimpse of the bird again. This, I believe, is the first record of the occurrence of the species in this State, outside of Long Island.—W. S. JOHNSON, *Boonville, Oneida County, N. Y.*

A Chewink in Winter at Ashland, Mass.—On December 29, 1903, at Ashland, Middlesex, Co., Massachusetts, I had the good fortune to run across a male Chewink (*Pipilo erythrophthalmus*). He was trying to find food in the snow-covered road, and was so tame that I approached within a few feet before he flew off to some nearby shrubbery. I watched him closely for some time to see whether he was injured, and so unable to migrate,—but he seemed, on the contrary, very active. He uttered the usual call-note once or twice.—ROGER N. BALDWIN, *Cambridge, Mass.*

Another Nest of the Philadelphia Vireo.—I was very much interested in William Brewster's paper relative to *Vireo philadelphicus*, owing to the fact of having personally found an occupied nest of the species. With a view to helping along the good cause by one more step toward establishing the average nesting site I take the liberty of submitting my experience. The exact date is not known, but it was during a sojourn in Leelanau County, Michigan, extending from the 12th to the 21st of August, 1890. At that particular point the rocks arose from the water edge of Traverse Bay, on an angle of 45 degrees, until a height of 30 feet was attained; then came a level stretch of three to four hundred yards densely covered with blackberry bushes, and terminating at the base of a perpendicular bluff about fifteen feet high. The top of this bluff was covered with a second growth of poplar that in turn margined a forest of large white pine trees. We ran a survey line through this poplar belt and it was here I discovered the nest, and quite accidentally, as I was not looking for nests so late in the season. The nest was suspended from the horizontal crotch of a poplar branch which overhung the bluff, but was not more than five feet higher than the bluff top, and I could easily reach into it. In shape, size and construction it resembled the establishment of *Vireo olivaceus* but the exterior was thickly covered with curly pieces of silvery white poplar bark, suggesting, at a short distance, the structure of *V. flavifrons*. The male was not seen, but the female was in evidence and fearless, often approaching to within four or five feet of me. The species was recognized at first glance, indeed, it cannot be mistaken by anyone who has handled the skins. The nest contained two young, but as I reached for them they fluttered out and flew about fifty yards before striking the level of the berry bushes below. This find cannot, of course, be considered strictly authentic, as the birds were not secured, but personally I am as positive of the identity as of that of the *Passer domesticus* that perched upon the window sill a few moments ago.—J. CLAIRE WOOD, *Detroit, Michigan.*

The Philadelphia Vireo.—Mr. William Brewster's article on this vireo in 'The Auk,' 1903, pp. 369-376, is very full and interesting, but at the same time throws discredit and lack of accuracy on other observers. For example, I am absolutely certain that the nest I took at Lansdowne, Ont., in 1895, was not a Red-eyed Vireo's; at the same time I am as positive as it is possible to be without having the bird in hand that it belonged to the Philadelphia Vireo.

Mr. Brewster assumes that I do not know the Red-eyed Vireo. I probably know it as well as he does; as it is a very common bird in Ontario, and not a year passes but that I see its nest. This year, for example, I found a nest in a small maple. I watched the birds closely to be sure of the species, and noted the habits of the pair. This pair was very shy and retiring, whereas the pair of vireos I noted at Lansdowne, in 1895, were demonstrative and noisy. The location was very different as was the finish of the nest, the latter being smaller and not so well finished off and adjusted as the first. I knew from the location my birds were not Warbling Vireos, for which the location was not adapted,—a rough pasture field with swampy places grown up with willow, spruce, etc., and in the drier places, poplar, and no large woods near.

A characteristic of my nest was the presence of shreds of birch bark, which as there were no birch trees near, must have been brought from some distance. I am quite satisfied, in spite of Mr. Brewster's strictures, with my nest and its identification, which was a careful one, just as he no doubt feels satisfied that he has the first authentic nest and eggs of that species on record.

With regard to the yellow shading of the breast, Mr. Brewster must know that the intensity of coloring in both vireos and warblers is a very uncertain element.—C. J. YOUNG, *Sharbot Lake, Ontario, Can.*

A Winter Record for the Hermit Thrush (*Hylocichla guttata pallasii*) in Eastern Massachusetts.—This species is sufficiently rare in winter in Massachusetts to make it of interest to record one seen by the writers in Longwood, Brookline, Mass., January 1, 1904. The bird was not at all shy, and was observed for several minutes within a distance of a few feet, so that its identification was easily determined. It was hopping about in a clump of trees and bushes at the edge of a small pond, now and then uttering its characteristic *chuck*.

Another Hermit Thrush, or possibly the same one, was observed at Chesnut Hill, Mass., on January 8, 1904. It was watched for several minutes while it was picking at a small crust of bread which lay on the snow. As the two localities mentioned are at least three miles apart, it is impossible to tell whether this was the same bird as the one seen on January 1 or not. Messrs. Howe and Allen in their 'Birds of Massachusetts,' p. 95, give only three winter records for the Hermit Thrush for this State.—FRANCIS G. AND MAURICE C. BLAKE, *Brookline, Mass.*

Two Additions to the Bird Fauna of Kansas.—I wish to record the addition of two species to the bird fauna of Kansas. They are as follows:

1. PARASITIC JERGER (*Stercorarius parasiticus*).—A young male was captured along the Kansas River near Lawrence on October 10, 1898, by Banks Brown. The specimen was mounted by Leverett A. Adams and is now in the museum of the University of Kansas. This species not having been previously reported as "seen" or "likely to occur in Kansas" is an absolute addition to our avifauna.

2. WHITE-WINGED CROSSBILL (*Loxia leucoptera*). This species was inserted in my first editions of 'The Birds of Kansas,' in 1872, on the authority of Dr. T. M. Brewer, and was omitted from my fifth edition (May, 1903) because its occurrence in Kansas had not been verified by actual captures. I am glad to report two recent captures. The first was that of an adult male in fall plumage, shot by Leverett A. Adams near Lawrence, in Douglas County, November 4, 1899. This specimen, mounted by E. D. Bunker, is now in the museum of the University of Kansas. The second capture was that of a young male, taken at Hays City in western Kansas, September 15, 1902, by C. W. Miller, who has the specimen in his own collection.

These two additions, together with the three recorded in the January number of 'The Auk,' increase to 347 the number of species and varieties of birds personally known to me as occurring in Kansas.—F. H. SNOW, Lawrence, Kan.

Mortality Among Young Birds, Due to Excessive Rains.—During the summer of 1903, prolonged dry and warm weather, lasting through the greater part of May and the first week of June, was followed by an excessive rainfall. From June 6 to 14, inclusive, I was at Demarest, N. J., and from the evidence that there came under my notice, I became convinced that the mortality among young birds in the nest was far beyond normal, owing to the heavy rains which so closely succeeded each other.

Wishing to see how extensive this abnormal mortality might be, I wrote to some thirty ornithologists in various sections of New York, Pennsylvania, and New Jersey, inquiring regarding this subject. To a number who furnished interesting information, I am greatly indebted, as well as to others who courteously replied to my queries, stating that they were unable to furnish any information on the subject.

The deductions which may be gathered from the data thus collected are, first, that there was, at least in some sections, an unusually heavy mortality among young birds as a result of exposure, cold, and in some cases drowning, due to heavy rains, as well as an unusually large number of nests with eggs which were deserted because of the eggs becoming wet and chilled; second, it would appear that in other sections such mortality was not evident. This may be due to the difference in the predominating species of the different localities, or to difference in environment of nests, in the sections covered by the observers so reporting.

A few examples of cases coming under my notice at Demarest, are as follows: on June 7 a Field Sparrow's nest was found in a weed clump in a meadow, containing three young. On the 13th three lifeless, water-soaked bodies lay in the nest, which the birds would have left in a few days. On June 11 a Kingbird's nest was found just completed, and this nest was subsequently deserted by the birds before any eggs had been laid, apparently as a result of its continued soaked condition. On the same date, and in the same orchard I examined a Bluebird's nest, in a knot-hole in an apple limb, their second nest for the season, and containing at this time four eggs. On July 4 I visited this nest again, and the wet, decaying, and deserted eggs were still in the nest, which had evidently been partly filled with water.

On June 13 I photographed a nest of four young Chipping Sparrows, in a grapevine, close to a house. The situation of this nest seemed ideal for withstanding the weather, a number of large leaves sheltering it very well. The young were then almost ready to leave the nest. On the morning of the 15th, following a day and night of hard rain, these birds were found dead.

Mr. S. H. Chubb, of this city, reported to me a case on Staten Island, of the drowning out of a family of young of the Tufted Titmouse.

Mr. S. N. Rhoads wrote me that though he could not doubt that there had been an unusual mortality among young birds owing to the heavy rains, he had not, in his limited field work, seen any evidence of it. Mr. William B. Burke, writing from Rochester, N. Y., said that this subject had been brought up at a meeting of the Ornithological Club, and that the consensus of opinion was "that there had been no perceptible loss among young birds as a result of excessive rains in this region." He added that living adjacent to a ninety acre beech wood, he had seen no evidence of unusual mortality among young birds, and that friends from Canada reported that there was no apparent loss there.

Mr. Josiah H. Clark, of Paterson, N. J., reported that at Crystal Lake the prolonged rains flooded a Bluebird's nest in a hole in a stump, causing the birds to desert the four eggs that the nest contained. He also cited the case of a House Wren's nest which had been flooded and deserted in the same manner.

Mr. T. H. Jackson, of West Chester, Pa., writes: "Although I kept no record, I noticed that a great many nests were broken up by the cold rains during the early summer of 1903. Approximately I should say at least fifty percent among the smaller species failed to mature in the nests. Am sorry I can not give you more accurate information."

Mr. John Lewis Childs, of Floral Park, N. Y., writes that on Long Island he had been unable to find any evidence of unusual mortality among young birds. He further adds, however: "At a recent visit with John Burroughs up the Hudson Valley, I learned that he had examined a great many nests this fall, and in a large number of them found the remains of young birds, and he is of the opinion that large numbers of nestlings died, perhaps as high as twenty-five percent."

I have in the past fifteen years examined a very considerable number of nests, and it has been my experience that normally it is an unusual thing to find dead young in the nest. I should say that each such find the past season was so much evidence indicating an unusual mortality, and I am of the opinion that could such data all be gathered, it would be found that the effect of the unusual season of 1903 on bird life was very marked.—B. S. BOWDISH, *New York City*.

The Rapidity of the Wing-Beats of Birds.—Attention may well be directed to a neglected phase of the problem of flight, for while foreign observers have devised graphical methods for measuring wing movements too swift for discernment by the human eye, little or nothing is known about our birds of slow flight, in which it is possible to count the wing-beats. On several occasions, I have had opportunity for watching Herring Gulls (*Larus argentatus*) following in the wake of a steamboat running at the rate of ten or twelve miles an hour, and on calm days I find the wing-beats in this species average about one hundred and eighty to the minute. Varying conditions make difficult even such simple observations as these; but the coöperation of many observers in this almost untouched field may some day furnish valuable data. Laboratory experiments abroad, with harnessed birds, show that the wing-beats of a Sparrow are 780 a minute, of a Duck, 540, of a Pigeon, 480, and so on, while at home we only know that wings are too swift for most cameras. The subject is a large one and I merely wish to stimulate interest in it, by thus lightly touching upon it.—JONATHAN DWIGHT, JR., M. D., *New York City*.

A Correction.—In 'The Auk,' Vol. XIX, No. 3, July, 1902, p. 331, in the first line, "Faxon and Allen" should read Faxon and Hoffmann.—REGINALD HEBER HOWE, *Concord, Mass.*

Audubon's 'Ornithological Biography.'—I have just purchased a copy of the above work, the first volume of which bears the imprint,

Philadelphia: | Judah Dobson, Agent, 108 Chestnut Street; | and | H. H. Porter, Literary Rooms, 121 Chestnut Street. | MDCCCXXXI.

Coues's Bibliography makes no mention of this imprint, nor can I find another set the first volume of which bears such a one.—REGINALD HEBER HOWE, JR., *Concord, Mass.*

Delaware Bird Notes.—A hasty visit to Lewes, Del.—Cape Henlopen—on February 5, 1904, admitting of but an hour's walk across the frozen marsh and barely into the cedars and pines bordering the ocean sufficed to note the following, amongst the species:—Myrtle Warblers, numerous; Robins and Bluebirds, abundant; several Savannah Sparrows, a flock of 18 Snow Buntings, one Catbird, a single Brown-headed Nuthatch, and two Red-breasted Nuthatches.—C. J. PENNOCK, *Kennett Square, Pa.*

Bird Notes from Shelter Island, Long Island, N. Y.—LESSER SCAUP DUCK (*Aythya affinis*).—This duck has been noted in this vicinity several times in midsummer. A specimen was shot by a friend of mine on Aug. 18 of last year (1903). A pair were seen by Dr. Braislin and myself at Napeague Harbor on June 20, 1902. None of these were crippled birds, and all possessed normal powers of flight, so that their failure to migrate with their fellows was surely owing to no physical disability.

WILSON'S WARBLER (*Wilsonia pusilla*).—A specimen was taken on August 22, 1903,—the earliest I have ever observed it in the autumnal migration.

WATER THRUSHES (*Seiurus noveboracensis*) arrived on the same date as the last.

WILLET (*Symphemia semipalmata*).—A single specimen was taken Aug. 22. This bird has become very rare in this vicinity of late years.

MARYLAND YELLOWTHROAT (*Geothlypis trichas*).—A fine male of this species was noted and watched for some time on November 13, 1903. His late stay was owing, no doubt, to the congenial surroundings, formed by a thick growth of a species of wild honeysuckle, covering the ground and low bushes in a sheltered spot, remaining green late in the winter, and containing many warm and sunny sheltered nooks.

PINE GROSBEEK (*Pinicola enucleator*).—A few of these rare visitors from the north have been about this winter. A single one was seen November 28, 1903. I received a pair to mount, shot on Dec. 22; the male in the full red-washed plumage, the female gray. They were found feeding around a garbage heap near the back door of a dwelling house, and were very tame. Two more were seen near the same place, but not taken, on January 3, 1904.

HERMIT THRUSH (*Hylocichla guttata pallasii*).—Very scarce during their usual migration dates. For some unaccountable reason their movements to the south seem to have been postponed so long that, by the advent of severe weather, many of them came to grief. A single specimen was noted on Nov. 13, 1903; next seen on Dec. 26, and again on Dec. 31. The weather was then very cold, the ground covered with snow, and the specimens were in an emaciated condition. The last chapter in the tragedy was revealed by a specimen found under the edge of a sheltering embankment, frozen to death, on January 5, 1904. The ground was then covered with snow, about a foot deep on the level, and traveling was very hard, so that I covered only a small section of country during my observations, but, judging by the several instances in which I noted the birds, many hundreds must have perished, in the aggregate.—WILLIS W. WORTHINGTON, *Shelter Island Heights, N. Y.*

Notes Concerning Certain Birds of Long Island, N. Y.—Puffinus borealis. Mr. Andrew Chichester shot two birds (♂ and ♀) of this species on the ocean some distance off Fire Island Inlet, on Oct. 4, 1902, and sent them to me in the flesh.

Cathartes aura. Mr. Robt. Peavey, who killed the two specimens of

this species before recorded by me, shot two additional specimens, one of which he has presented to the Museum of the Brooklyn Institute of Arts and Sciences.

Anas obscura rubripes. Soon after the publication of Mr. William Brewster's description of this newly defined subspecies I made inquiries regarding the presence of a Black Duck on Long Island answering the description of *rubripes*. I found that the difference in external characteristics was sufficient to have attracted the notice of certain sportsmen and baymen. Mr. Brewster found that the red-legged form is well known to baymen in Massachusetts and that it is regarded by them as a distinct variety of the Black Duck. I find substantially the same facts to apply on Long Island. In answer to my request, from one of whom I had made inquiries, that specimens of this variety of Black Duck be furnished me, I received a few days later two fine specimens answering in every respect to Mr. Brewster's description. This subspecies is, therefore, herewith definitely recorded for Long Island.

Anas penelope. A specimen of the European Widgeon was killed on Gardiner's Island, Feb. 5, 1902, by Hiram Miller, of Springs. The capture of this bird was reported to me by Mr. Ivan C. Byram, a taxidermist of Sag Harbor, who mounted the bird and who identified it. To meet the question of possible error in identification I requested and received from Mr. Miller the following description: "Wing patch green; longer wing feathers and tail dark brown; head and neck chestnut shading to buff on forehead; breast gray shading to white belly; under tail-coverts black; legs and feet dusky lead." He adds: "There was another killed the autumn before I killed mine here, and another this autumn here." He states that the specimen in question was killed from a large flock of Baldpates.

Aythya vallisneria. The Canvas-back is sufficiently rare on Long Island to be worthy of record. It is perhaps unnecessary to say that the not infrequent reports of large flocks of Canvas-backs on Long Island sent from gunning resorts to the daily press, with the evident desire of attracting the city sportsmen thither, may safely be set down to the presence of its near relative, the Red-head. I have never interrogated a reliable Long Island gunner, bayman or guide, who had ever observed a flock of any considerable number of Canvas-backs on Long Island. Abundant as this bird is on the Chesapeake, its rarity on Long Island is very firmly established. Mr. Andrew Chichester, a veteran gunner of Amityville, sent me a pair (♂ and ♀) of fine, fresh birds shot by his son Arthur at that place, March, 1903.

Chen hyperborea nivalis. A Goose (♀ im.) sent in the flesh, by Mr. Ivan C. Byram of Sag Harbor, was shot Nov. 18, 1903, at Noyac, a hamlet three miles west of Sag Harbor, by Cornelius Bennett. I refer the bird to *C. hyperborea nivalis*, since it more nearly approaches the description of the immature of this species than that of *C. caerulescens* in the same stage of plumage.

As the bird represents an interesting phase of plumage the following details are given: Top of head and back of neck slaty black shading to lighter on sides and in front except some of the feathers of the fore neck which are dark like the former. The tips of some of the (new) dark feathers of this region are whitish. Back, grayish blue, the tips of these broad feathers edged with gray. Lower back and rump and upper tail-coverts white. Wing-coverts grayish blue to fuscous and edged with white. Tail fuscous gray, edged broadly with white. Chin, sides of head, neck, breast and belly washed with bright ochraceous buff, most deeply so on the head. Length, 29.50; wing, 16.25; tail, 5.50; bill, 2.50; tarsus, 3.12.

Crymophilus fulvicaeus. Three Red Phalaropes (females) which struck the Montauk Point Light were picked up at the foot of the tower, Nov. 27, 1902, by Capt. James J. Scott, the Keeper of the Lighthouse, and kindly forwarded to me.

Numenius borealis. A bird of this species (♂) was shot at Rockaway Beach Sept. 14, 1902, by Mr. Robt. L. Peavey of Brooklyn and is now in his collection of mounted birds, and has been examined by the writer. Mr. W. F. Hendrickson in a recent communication to Mr. William Dutcher referred to a strange bird which was shot from a flock of about fifteen as they were passing along the beach, near Zach's Inlet Life Saving Station on August 29, 1903. From the description furnished Mr. Dutcher was inclined to believe the bird one of this species and referred the matter to me for investigation. The captain of the life saving crew, Philip K. Chichester, who saw the bird, is certain the bird was an "English Fute," that is, an Eskimo Curlew. The life-saver is an old-time gunner who in former times saw the bird in much greater numbers than it is now known to occur anywhere. There seems to me no reasonable doubt that this bird, which unfortunately was promptly plucked and eaten, was also a specimen of the Eskimo Curlew.

Sturnus vulgaris. As a fulfillment of predictions that the Starling would gradually widen its range on Long Island, it is perhaps worth while to note that a specimen has been taken as far east as Hicksville. Mr. Lott, a taxidermist of Freeport, informed me that a bird strange to him had been sent for mounting, with a report that it had been shot at Hicksville. On examining the specimen I found it to be a Starling.—
WILLIAM C. BRAISLIN, M. D., *Brooklyn, N. Y.*

British Columbia Notes.—The following records were made at Comox, Vancouver Island, B. C., during the latter part of 1903 and early part of 1904.

Larus barrovianus. POINT BARROW GULL.—I shot an immature specimen of this gull in Comox bay, on the 15th December, the first record for the Province.

Sterna hirundo. COMMON TERN. Two adults taken on the 24th September by Lieutenant E. N. Carver, R. N.

Branta bernicla. BRANT.—On the 13th December I noticed a bunch of

six Brant that kept separate from the large numbers of Black Brant in Comox harbor; after a hard bit of work I managed to kill one of them, which proved to be an adult female of the Atlantic species. The others were undoubtedly an old male and three young of the same species as they all looked very light colored. The specimen secured is in every way typical *bernicla*, with interrupted collar, and sharply defined black breast, against the pale grayish lower surface. It was very fat.

I have since found that the Eastern Brant is a fairly common migrant on the Pacific Coast. Since shooting the first specimen, I have killed seven others, and have seen a number of small bands that, as a rule, keep separate from the Black Brant.

I should say about eight percent of the Brant in Comox bay are the Eastern species. Only once have I killed both species out of the same flock. There seems to be no tendency to intergradation, unless the uniting of the neck patches in one *bernicla* might be so considered. This was an adult male, in all other respects typical *bernicla*, and the collar was barely united by the slightest white tipping.

Actodromas acuminata. SHARP-TAILED SANDPIPER.—On the 4th October I saw a Sharp-tailed Sandpiper with three Pectoral Sandpipers near the mouth of Campbell River. I had no gun, so was unable to secure it, but as I was within four yards, was able to identify it with certainty. It was a young of the year with white supercilium and throat, and warm buffy, slightly streaked jugulum.

Pelidna alpina. DUNLIN.—A typical Dunlin taken the 5th December out of a small troop of *pacifica*. This is a bird of the year with a few feathers of first plumage left in upper parts. The crown and foreneck are much more conspicuously streaked than in *pacifica*, the pectoral band being nearly as heavily streaked as in *maculata*. Measurements taken in the flesh:—♂, Length, 7.75; wing, 4.60; culmen, 1.35.

Charadrius dominicus fulvus.—PACIFIC GOLDEN PLOVER.—Whether typical *dominicus* occurs on the Pacific coast is doubtful, but I have never before taken such absolutely typical *fulvus* as some that I collected here on and after the 3rd November. These are bright enough for the European species and I almost expected to find the axillars white. Two taken the 4th November had already acquired some of the feathers of the summer plumage on the mantle; these are broadly margined, not spotted, with bright yellow.

Falco islandus. WHITE GYRFALCON.—A fine adult female White Gyrfalcon was brought to me on the 4th December. It had been killed by a boy with a 22 rifle.

Falco peregrinus anatum. DUCK HAWK.—So far this is the only species of Peregrine I have been able to secure here. I expected *pealei* to be the common form on Vancouver Island.

Nucifraga columbiana. CLARK'S CROW.—I shot an adult female here on the 18th February. This is a very rare straggler to Vancouver.

Vireo huttoni obscurus. ANTHONY'S VIREO.—This vireo evidently

winters here, as I took a specimen the 4th December. In life it is impossible to distinguish it from a Rubycrest, and like that bird associates with flocks of Chestnut-backed Tits.—ALLAN BROOKS, *Comox, Vancouver Island, B. C.*

The Ipswich Sparrow, Kirtland's Warbler, and Sprague's Pipit in Georgia.—Along the eastern shore of Cumberland Island, Georgia, are long stretches of sand flats and dunes covered with a scattering growth of beach-grass. On April 14, 1903, in one of these spots, about two miles south of the inlet separating Cumberland Island from Little Cumberland Island, I flushed and shot an Ipswich Sparrow (*Passerculus princeps*). It proved to be a female, very fat, and had not quite completed its spring moult. This I believe is the most southern point from which this species has been reported, and the date (April 14) is rather late to find this bird so far from its summer home.

On April 12, 1902, I shot a female Kirtland's Warbler (*Dendroica kirtlandii*) from a small water oak standing near the border of an old field at the north end of Cumberland Island. Its large size at once attracted my attention, as it leisurely and silently hopped about among the branches.

On January 16, 1903, near the north end of Cumberland Island, I flushed a small light colored bird that I suspected to be Sprague's Pipit (*Anthus spragueii*). It flew but a short distance, but upon my attempting to approach it at once took flight, and joining a Common Pipit that chanced to be passing at the time was soon lost to view. Its mate somewhat resembled that of the Common Pipit, yet was readily distinguishable from it. Jan. 19, I again found it in the same locality and shot it, thus confirming my conclusions as to its identity. My next opportunity to look for these birds was March 27, when I found three and secured two of them. From this time until April 3, several more were noted and six specimens secured. They were all found singly among the short grass on the dry sandy flats between the marsh and the ocean, and did not appear to mingle with the Common Pipits, which were common in the vicinity. I did not see any perform the towering flight which is said to be so characteristic of this species. Nine specimens in all were taken on the following dates: January 19, one; March 27, two; March 28, three; March 30, two; April 3, one. All were females, and with the exception of the one taken January 19, were in the prenuptial moult.—A. H. HELME, *Miller Place, N. Y.*

RECENT LITERATURE.

Coues's 'Key to North American Birds,' Fifth Edition.¹—"The present work constitutes the completion of Dr. Coues' life-long labors on behalf of the science of ornithology. . . . In preparing it for publication the publishers have suffered extraordinary expense, difficulty, and delay by the loss of Dr. Coues' assistance in the proof-reading and illustrating of the book. The manuscript was finished but shortly before his death, and though fortunately complete in this form, was left in such shape as to present almost insuperable difficulties to the compositor or proof-reader, who lacked the author's direction and supervision" (Publisher's Preface, p. iii).

About four years elapsed between the death of Dr. Coues and the appearance of the Fifth Edition of the 'Key.' Doubtless if Dr. Coues had lived to see the work through the press, and it could thus have received his final touches in the proof, it would not have been materially different from what it is at present, but it must have undergone many slight modifications, and have been left fully abreast of the subject, instead of four years behind, as now. The publishers, under the circumstances, were most fortunate in securing the services of Mr. J. A. Farley, to superintend the carrying of the work through the press, and their acknowledgment of their own and the reader's indebtedness to the "painstaking care, . . . scholarly zeal and conscientious spirit of fidelity and accuracy" with which he performed the task, is most certainly a deserved tribute to his editorial skill and care.

¹ Key | to | North American Birds. | Containing a concise account of every species of Living and Fossil | Bird at present | known from the Continent north of the Mexican and United States Boundary, inclusive of Greenland and Lower California. | With which are incorporated | General Ornithology: | an outline of the Structure and Classification of Birds; | and | Field Ornithology, | a Manual of collecting, preparing, and preserving Birds. | The Fifth Edition, | (entirely revised) | exhibiting the Nomenclature of the American Ornithologists' Union, and including | descriptions of additional species. | In Two Volumes. | Volume I. | By Elliott Coues, A. M., M. D., Ph. D., | Late Captain and Assistant Surgeon U. S. Army and Secretary U. S. Geological Survey; Vice-President of the American | Ornithologists' Union, and Chairman of the Committee on the Classification and Nomenclature of North American Birds; | Foreign Member of the British Ornithologists' Union; Corresponding Member of the Zoölogical Society | of London; Member of the National Academy of Sciences, of the Faculty of the National | Medical College, of the Philosophical and Biological Societies of Washington. | Profusely illustrated. | [Vignette.] Boston: | Dana Estes and Company. | 1903.—Roy. 8vo, Vol. I, pp. i-xli + 1-535, col. frontispiece, portrait of author, and text figs. 1-353; Vol. II, pp. i-vi + 537-1152, col. frontispiece, and text figs. 354-747.

The 'Key' was first brought out in 1872 (1st ed.); a revised and greatly enlarged edition (2d. ed.) appeared in 1884, so different from the first as to be essentially a new work. There was a reissue of this, printed from the same plates (3d. ed.), in 1887, with the addition of an Appendix; and another reprint from the same plates (4th ed.) in 1890, with the addition of a second Appendix. The present (5th) edition (Dec. 1903), with the systematic portion rewritten and greatly augmented, is thus in reality only the second revised edition of the original 'Key' first issued in 1872. The last edition is so radically different from the second and subsequent reprints that it is practically a new work. While the plan and general make-up are the same, and while Part I, 'Field Ornithology,' and the greater part of Part II, 'General Ornithology,' are textually the same, Part III, the 'Systematic Synopsis,' constituting the main body of the work, is wholly rewritten and greatly enlarged; the classification and arrangement are somewhat altered, and the nomenclature is revolutionized, to conform with that of the A. O. U. Check-List, the author, when necessary, often waiving his own opinions and preferences for the sake of conformity with the Check-List. The change in the number and character of the illustrations is also conspicuous, many of those used in the earlier editions having been discarded and hundreds of new ones added, most of them drawn expressly for the work by Mr. Fuertes, the general excellence of which is thus sufficiently assured. In consequence of the addition of about 250 pages of new matter, the 'Key' now appears in two volumes (continuously paged) instead of one, which, from the point of convenience for the user, is greatly to be regretted. If the same weight of paper had been used as in the 2d-4th editions the increase in bulk, in a book already so large, would not have been a material disadvantage, and would have been more than offset by the convenience of having the index always at hand instead of at the end of a second volume.

Volume I opens with a new frontispiece, a beautifully colored plate of the Starling, by Fuertes, in place of the former colored illustration of the 'Anatomy of the Pigeon.' The 'Publisher's Preface' is followed by the prefaces to the fourth and third editions, and the 'Historical Preface' (pp. xi-xxx, which includes the preface to the second—1884—edition), all naturally without change. Next stands the contents, followed by a portrait of the author, and Mr. D. G. Elliot's memorial address, both from 'The Auk' for January, 1901. Part I, 'Field Ornithology' (pp. 1-58), is reprinted without change. In Part II, 'General Ornithology' (pp. 59-241), the first forty-four pages have been reset, to admit of various minor changes, partly for literary improvement, partly for needed changes in technical names, and partly for the insertion of some six pages of wholly new matter, including a characteristic paragraph (p. 80) on the A. O. U. Code of Nomenclature. Pages 82-89, the section on 'The Feathers or Plumage,' have been rewritten and much new matter added, while pp. 92-94 are also mostly new, and include about two pages of new text on 'Aptosochromatism,' much of which is positively erroneous and had bet-

ter have been omitted. Dr. Coues invented the term 'aptosochromatism,' and was peculiarly sensitive to criticism of its significance and use, as from time to time defined and applied by him, he finally looking upon such criticism almost as a personal grievance. This new exploitation of the subject abounds in positive misstatements and erroneous inferences.

Pages 113-235 are apparently from the original plates, without change. The 'Artificial Keys' and 'Tabular View' (pp. 236-241) have been recast and considerably modified, through changes in the names of groups and the admission of one new order, 6 new suborders, 7 new families, and the reduction of the subfamilies from 77 to 71, through the raising of 6 subfamilies to the grade of families. This of course implies considerable change in the classification followed in Part III, in comparison with previous editions.

Part III, 'Systematic Synopsis of North American Birds,' has been rewritten and greatly altered, not only through the admission in their proper sequence of the many species and subspecies added to the North American list of birds during the sixteen years between 1884 and 1900, but through many changes in classification and nomenclature involving the status of subgeneric and generic groups, as well as the status and relationships of the higher groups. As an illustration of the general character of these changes, we may take the family Turdidæ. In the 1884, and later editions down to the present, it included six subfamilies, as follows: Turdinæ, Miminæ, Cinclinæ, Saxicolinæ, Regulinæ, and Polioptilinæ. In the present edition the Turdidæ include the two subfamilies Turdinæ (= Turdinæ, 1884), and Myiadestinæ, formerly placed under Ampelidæ; while, of the other subfamilies, Miminæ is transferred to the Troglodytidæ; Cinclinæ is raised to the rank of a family; Saxicolinæ is merged in Turdinæ; Regulinæ and Polioptilinæ are placed in a separate family Sylviidæ. There are other similar changes in other families of the Passeres, involving new associations of groups. Among changes of names, it may be noted that Sylvicolidæ now becomes Mniotillidæ, — only one among many changes in the names of higher groups, including those of all grades from subfamily to order.

To continue the comparison further, all of the species included in the Turdinæ of the earlier editions were placed under the single genus *Turdus*, divided into the three subgenera *Turdus*, *Merula*, and *Hesperocichla*. In the present edition *Merula*, *Hesperocichla*, *Turdus*, and *Hylocichla* stand as full genera, and *Saxicola*, *Sialia*, and *Cyanocula* are transferred from other associations to the Turdinæ. The species and subspecies formerly placed under *Turdus* are now distributed among four genera, and the number and status of the species and subspecies are in conformity with the A. O. U. Check-List as it stood at the time the revision of the manuscript for the new 'Key' was completed.

When the 1884 'Key' was published there was no A. O. U. 'Check-List of North American Birds,' nor any A. O. U. 'Code of Nomenclature.' It therefore reflected the close of a preceding period in the history of

North American ornithology; and unfortunately continued to do so, as regards both classification and nomenclature, until the publication of the present revised edition. It is therefore gratifying to find how closely this new edition of a work that has done so much for the younger generation of ornithologists accords in both these features with the latest edition of the Check-List and its supplements down to the year 1899. There are discrepancies here and there between the two in the matter of higher groups—as under the ‘Order Picariæ,’ for example—and occasionally in the recognition and designation of species and subspecies, but they are surprisingly few, in view of the author’s declared independence in matters of expert opinion. (See Preface to the third edition, p. ix of the present work.) Apparently very few forms recognized by the A. O. U. Committee prior to 1900 are here omitted, while many the Committee had declined to recognize, or had not yet passed upon, are also admitted. A large number of groups rated by the A. O. U. Committee, down to the year 1900, as subgenera are given full generic rank, including not only those thus raised by the Committee itself in 1903, but others, many of which the Committee will doubtless soon accord the rank of genera. A few subgenera additional to those of the A. O. U. Check-List are also recognized, of which four appear to be new, namely: *Stellerocitta* (p. 495), a subgenus of *Cyanocitta* for the Steller’s Jay group; *Sieberocitta* (p. 499) as a subgenus of *Aphelocoma* for the Arizona Jay group; *Dilopholieu* (p. 963) and *Viguacarbo* (p. 965) as subgenera of *Phalacrocorax* for, respectively, the Double-crested Cormorant and the Mexican Cormorant.

In respect to matters of nomenclature, and recent additions to the list of North American birds, the new ‘Key’ has been brought down to date through Mr. Farley’s carefully prepared ‘Appendix’ (pp. 1145–1152), in which he has given all the additions made in the Tenth, Eleventh, and Twelfth Supplements to the Check-List (July, 1901–July, 1903), and arranged, in parallel columns, all changes from the nomenclature of the ‘Key’ made by the A. O. U. Committee since Dr. Coues finished his work on the manuscript.

The additions in the text of Part III, aside from those above noted, consist in the amplification of many of the diagnoses; many essential modifications in the statement of ranges, in conformity with our increased knowledge of such matters; the addition of bibliographical references, and much critical and historical comment on questions of nomenclature—matters almost wholly excluded from former editions; the addition of many—perhaps too many—vernacular synonyms; and the more elaborate and often greatly extended characterizations of the higher groups. These are considered from the point of view of the birds of the world, and the relationships of their different components are stated with masterly clearness and comprehensiveness. In illustration of this the ‘Order Picariæ’ may be especially cited, where (pp. 537–543) the group as a whole and its subdivisions are considered at length. Although he retains the group, he says: “I have no faith whatever in the integrity of

any such grouping as 'Picariæ' implies; but if I should break up this conventional assemblage, I should not know what to do with the fragments; . . . The A. O. U. ignores the major group, and presents instead three orders—Coccyges, Pici, and Macrochires. With this procedure I have no quarrel, as the three are precisely coincident with my three suborders, Cuculiformes, Piciformes, and Cypseliformes."

Part IV, 'Systematic Synopsis of the Fossil Birds of North America' (pp. 1087-1097), brings this important feature of the work also down to the close of the year 1899. An index of 48 pages, three columns to the page, completes this masterpiece of mature ornithological work, which alone would long keep green the memory of its gifted author.

In the way of criticism, we note with some surprise the fact that the matter relating to the general anatomy of birds is left as published in 1884, notwithstanding the many important contributions to the subject since that date. We cannot help feeling that if Dr. Coues had lived to carry the new 'Key' through the press this part of the work would also have received due revision at his hands. In regard to the publishers' share in the work, they have certainly been liberal in their expenditure for illustrations, but unfortunately the paper selected for the work is poorly adapted for the reproduction of half-tones in the text, and many of Mr. Fuyertes's beautiful drawings have suffered sadly in the printing. Also, as already said, it is a decided inconvenience to have the 'Key' issued as a two-volume work, and it is to be hoped that when the next edition is called for it will be found practicable to use both a lighter-weight and a smoother-finished paper, so as to give greater sharpness to the half-tones and at the same time render it practicable to issue the work in a single volume. If the two volume form should seem necessary, it would be a great convenience to have the index inserted in both volumes.

In regard to the 'Key' itself, it is a well-known and an old favorite, whose thirty years of practical usefulness have won for it unstinted and well-merited praise, and in its new form will prove for many years to come a boon alike to the amateur and the professional student of North American birds. The 'Key' of 1872 was an innovation and an experiment in ornithological literature; its practicability was evident from the outset, and it proved to be the forerunner of almost numberless successors of 'key' manuals in various departments of zoölogy. The author's final revision of this greatest of his many contributions to ornithological literature will make a new generation of bird students his debtors and admirers.—J. A. A.

Chapman's 'Color Key to North American Birds.'¹—The sole purpose of the present book, according to the author, is "the identification of

¹Color Key to | North American Birds | By | Frank M. Chapman | Associate Curator of Ornithology and Mammalogy | in the American Museum of

the bird in the bush,"—that is, to assist the many who aspire to a knowledge of the names of the wild birds they see about them, but who are deprived of access to specimens. For this purpose tinted figures, giving in color those markings which most quickly catch the eye, are given on the margin of the pages opposite the descriptions, which latter are brief, giving only the most prominent characteristics of the species and subspecies, and (in smaller type) a concise statement of their ranges, without biographical matter. A short introduction tells 'How to learn a Bird's Name' and 'How Birds are Named,' followed by a 'Synopsis of Orders and Families of North American Birds' (pp. 9-40), illustrated with figures of bills, feet, heads, etc., mostly life-size. Then follows the 'Color Key' to the species (pp. 41-255), with full length colored figures in the text. The orders are arranged in the sequence of the A. O. U. Check-List, but the species within the orders have been grouped according to their color markings, for convenience of illustration. Each species, however, is designated by the A. O. U. number, and at the close of the 'Key' is a 'Systematic Table' (pp. 257-289), giving the classification and nomenclature of the A. O. U. Check-List, including both the common and the scientific names. The drawings are in every way creditable, but the coloring is not put forth as giving "perfect reproductions of every shade and tint of the plumage of the species, but aims to present a bird's characteristic colors as they appear when seen at a distance." The author and the artist are both to be congratulated on the very satisfactory manner in which they have performed their respective tasks, whereby the student of 'birds in the bush' has been presented with seemingly as efficient an aid as can readily be conceived. The paper and presswork, however, are not satisfactory, and it is hoped will be materially improved in the later editions, for which there will most surely be demand.—J. A. A.

Dawson's 'The Birds of Ohio.'—The title-page¹ of this excellent work

Natural History | Author of "Handbook of Birds of Eastern North America," | "Bird-Life," Etc. | With Upward of 800 Drawings | by | Chester A. Reed, B. S. | New York | Doubleday, Page & Company | 1903. — 8vo, pp. vi+312, colored frontispiece, and about 800 text cuts, the greater part colored.

¹ The Birds of Ohio | a complete, scientific and | popular Description of the 320 Species of Birds | found in the State | By | William Leon Dawson, A. M., B. D. | With Introduction and Analytical Keys | by | Lynds Jones, M. Sc. | Instructor in Zoology in Oberlin College. | Illustrated by 80 plates in color-photography, and more than 200 | original half-tones, showing the favorite haunts of the | birds, flocking, feeding, nesting, etc., from photo- | graphs taken by the author and others. | Sold only by subscription | Columbus | The Wheaton Publishing Co. | 1903 | All rights reserved.— 4to, pp. i-xlvi+1-671, 80 three-color process plates and 200 + half-tone text cuts. Author's edition, 1000 numbered autograph copies, full morocco, full gilt.

very fully and correctly indicates its general character — a copiously illustrated, scientifically trustworthy popular manual of the birds of Ohio, with analytical keys, and colored figures of eighty species. The scope of the work "is strictly Ohioan," and the birds are described "as any one in Ohio might see them," although something is generally said of their habits and range as found outside of Ohio. The nomenclature is that of the A. O. U. Check-List and its supplements, down to the last of the series, but the order of sequence is reversed, the Passeres, and of these the Raven, being placed at the head of the list and the Loons at the end. The number of species authentically recorded for the State, and hence here formally treated, is 320; descriptions are given of 13 others, "believed to occur or to have occurred in Ohio," forming a 'hypothetical list'; which is followed by a "conjectural list" of 13 more, reported from adjacent States and supposed, with good reason, to occur "at least casually." Many of these will doubtless be added, sooner or later, to the birds of the State on the evidence of actual capture within its borders.

Following the author's preface and the introduction are the analytical keys, prepared by Professor Lynds Jones, of the orders, families and species, occupying pp. xxiii to xlv. The main text gives a short description, in small type, of each species, including its nest and eggs, and its range, both within and outside of the State, and, in larger type, a short, well prepared biographical account, having special reference to the species as a bird of Ohio. The volume closes with three appendices, the first two of which consist respectively of the 'hypothetical' and 'conjectural' lists already mentioned, while the third, 'Appendix C' (pp. 647-660), gives migration tables "for the approximate latitudes of Cincinnati, Columbus and Cleveland." These are arranged in the order of the A. O. U. Check-List, and are based partly on the author's own observations and partly on those of other well known observers, as Henninger, Jones, Wheaton, and Mosely, as duly explained. There is also a good index.

As regards plan, literary execution, typography and general make-up, Dawson's 'The Birds of Ohio' is an exceptionally attractive volume and is entitled to high praise as a trustworthy popular manual of the birds of the region to which it relates. There is, however, one disappointing feature, and that is the character of the colored plates, for which the three-color process is not wholly to blame. When we state that they are a selection of eighty of the best of a series of some two hundred or more that were available, and that this series was originally published in a Chicago bird magazine, variously known at different times as 'Birds,' 'Birds and Nature,' etc., and also already used elsewhere as book illustrations, most bird students will be sufficiently aware of their character without further comment. While the greater part, and perhaps all, of those used in the present volume are sufficiently approximate to nature to be serviceable as an aid in identifying the species represented, very few of them are pleasing, owing mainly to the bad mounting of the specimens selected for photographing. Such illustrations may be accepted as perhaps much

better than none; and we fancy that this fact, and their comparatively small cost, accounts for their presence in a book worthy of a far better accompaniment. The half-tones in the text, on the other hand, are for the most part well reproduced, well selected, and appropriate to the text, giving characteristic views of the haunts of many species, as well of many nesting sites, nests and eggs, and of living birds.—J. A. A.

Mrs. Bailey's 'Handbook of Birds of the Western United States,' Second Edition.—The "second edition, revised"¹ differs from the first mainly through a revision of the matter relating to the Horned Larks (genus *Otocoris*, pp. 266-269), which has been rewritten and brought down to date, and the addition of Addenda (pp. 486-488) giving a list of the alterations in the names of western birds made by the Nomenclature Committee of the A. O. U. since the publication of the first edition in 1902, and also correcting the few omissions and errors of the first edition that could not readily be made in the text. The generous commendation given the work in our notice of the first edition need not be here repeated. The early call for a second edition shows that the work is appreciated and meets a real need.—J. A. A.

Mrs. Wheelock's 'Birds of California.'²—In this attempt to provide a non-technical manual of three hundred of the commoner birds of California the author has attained a high degree of success, and has also produced a work of much permanent value on account of the many original field observations, which add to the sum of our knowledge of the life histories of many of the species considered. As to the plan of the work: "Keys have been avoided and a simple classification, according to habitat or color, substituted," following a plan used by a previous author, here adopted and commended. Under the head of 'Contents,' the species are enumerated under the English names of the A. O. U. Check-List, beginning with the 'Water Birds,' which are grouped into sections according to their haunts, followed by 'Land Birds,' grouped as (1) 'Upland Game Birds,' (2) 'Birds of Prey,' and (3) 'Common Land Birds in Color Groups,' which latter are divided, on the basis of color, into eight minor groups. The species are arranged in the same incongruous order in the text, but are designated by the A. O. U. Check-List numbers and names, both tech-

¹ For collation and review of the first edition see *Auk*, XX, 1903, pp. 76-78.

² Birds of California | An Introduction | to more than Three Hundred Common | Birds of the State and Adjacent | Islands | With a Supplementary List of rare migrants, accidental | visitants, and hypothetical subspecies | By Irene Grosvenor Wheelock | author of "Nestlings of Forest and Marsh" | With ten full-page plates and seventy-eight drawings | in the text by Bruce Horsfall | [Vignette] Chicago | A. C. McClurg & Co. | 1904—Sm. 8vo, pp. xxviii + 578, 10 half-tone plates, 78 text figures.

nical and vernacular. The descriptions are in small type and very brief, giving only the most characteristic features, the geographical distribution, breeding range and season, and nest and eggs. Then follows, in larger type, a short, well-written biography of the species. No originality, of course, is claimed for the technical descriptions, and many of the biographies of the water birds, and of some others, are compiled, and often in part quoted, with due credit, from previous authors. But a large proportion of the land birds have come within the personal experience of the writer, whose researches, begun in 1894, have extended throughout a large part of the State, and hence her biographies are based on original observations and contain much new information. The work closes with a briefly annotated 'Supplementary List' of the species and subspecies thus far recorded from California in addition to the three hundred formally treated, the list being compiled from authentic and accredited sources.

In the introduction the author makes some generalizations respecting the feeding habits of young birds that are to a large extent new and somewhat surprising; their confirmation or disproof opens up an interesting field of research. She says: "Long and careful study of the feeding habits of young birds in California and the Eastern United States has led the author to make some statements which may incur the criticism of ornithologists who have not given especial attention to the subject. For instance,—that the young of all macrochires, woodpeckers, perching birds, cuckoos, kingfishers, most birds of prey, and many seabirds *are fed by regurgitation from the time of hatching through a period varying in extent from three days to four weeks, according to the species.* . . . Out of one hundred and eighty cases recorded by the author, in every instance where the young were hatched in a naked or semi-naked condition they were fed in this manner for at least three days. In some instances the food was digested, wholly or in part; in others it was probably swallowed merely for convenience in carrying, and was regurgitated in an undigested condition." A few specific instances are cited here in illustration, and many others are given in the biographies.

Mrs. Wheelock's manual is in several ways noteworthy, and should prove most welcome to would-be bird students of the Pacific coast, and of interest to ornithologists in search of fresh information on the life histories of California birds.—J. A. A.

Torrey's 'The Clerk of the Woods.'¹—The thirty-two short essays here brought together received previous simultaneous publication in the 'Evening Transcript' of Boston and the 'Mail and Express' of New York. Those familiar with the author's previous books do not need to

¹The Clerk | of the Woods | By | Bradford Torrey | . . . | Boston and New York | Houghton, Mifflin and Company | The Riverside Press, Cambridge | 1903—16mo., pp. i-viii, 1-280. \$1.10 net, postage extra.

be told that they will find in 'The Clerk of the Woods' a series of out-of-door sketches of literary merit, and well adapted to furnish entertainment, as well as much information, to lovers of nature who enjoy what might be rather commonplace incidents and observations to the trained field naturalist when given the literary flavor Mr. Torrey is so skilful in imparting. The chapter entitled 'Popular Woodpeckers' tells at length of the nesting of a pair of Red-headed Woodpeckers in Newton, Mass., and incidentally pleasantly emphasizes the great popular interest in birds and their protection that has so happily of late been shown by the general public. It is a good commentary on the faithful work of the Audubon Societies. The chapters run through the year, from May to May, and include a record of trips to the seashore as well as inland, and while recording little that is new as natural history, serve to awaken pleasant reminiscences, or to incite the desire for future excursions to fields and woodlands to commune with Nature through "her visible forms."—J. A. A.

Mrs. Miller's 'With the Birds in Maine.'¹—The studies recorded in the fifteen chapters composing the present book were made, with two exceptions, in Maine, and are based on the experiences of the author during ten summers spent in different parts of the State. The localities include several points along the coast, and others situated far in the interior, so that shore birds, marsh birds, and the characteristic birds of the woodlands come within the purview of the work, the general character of which is suggested by such chapter titles as 'On the Coast of Maine,' 'Upon the Wood Road,' 'Mysteries of the Marsh,' 'In a Log Camp,' 'The Wiles of Warblers,' 'Flycatcher Vagaries,' etc. The table of contents includes the names of birds especially mentioned, and there is a good index. The book is written in the author's well-known agreeable style and its perusal will doubtless give pleasure to the many bird lovers who like detailed accounts of field experiences with birds.—J. A. A.

Kumlien and Hollister's 'The Birds of Wisconsin.'²—Respecting the present list the authors state: "We have made no attempt at descriptions of birds, nor have we gone to any length in discussing their habits. Our whole aim and object has simply been to bring our knowledge of Wiscon-

¹ With the Birds | in Maine | By | Olive Thorne Miller | [Vignette] Boston and New York | Houghton, Mifflin and Company | The Riverside Press, Cambridge | 1904—16mo., pp. ix+300. \$1.10 net.

²The Birds of Wisconsin. By L. Kumlien and N. Hollister. Bulletin of the Wisconsin Natural History Society, Vol. III (N. S.), Nos. 1-3, Jan., April, and July, 1903, pp. i-iv, 1-143, with 8 half tone plates. Published with the coöperation of the Board of Trustees of the Milwaukee Public Museum.

sin ornithology, as regards occurrence and abundance, up to date, and to present a carefully compiled list of all those species and subspecies which have positively been known to occur within the limits of the State at any time, with as exact, simple, reliable and accurate an account of such occurrence as possible." "Starting in 1899, with a list of 365 species and subspecies that had been recorded from, or were supposed to have occurred at some time within the State, the number has fallen away from time to time, until now we recognize but 357 in all, that we believe are really entitled to a place, and are therefore embraced in the list proper of the present paper."

The list proper is followed by a 'Hypothetical List' of 21 species. Several of these have been attributed to the State, but on what the authors consider unsatisfactory evidence. In several cases, if not in most, their occurrence in the State is not improbable, and therefore the rigid conservatism that has led the authors to exclude them, and thus draw a sharp line between the known and the unknown, is to be emphatically commended. Specimens difficult of determination appear to have often been referred to experts for identification. Thus a number of western forms, included on the basis of one or two specimens taken in the State, rest on the authority of Mr. Brewster, as *Empidonax traillii*, *Junco montanus*, *Hylocichla ustulatus almæ*, etc.

Among the half-tone plates is one showing 'Nest and Eggs of Blue-winged X Nashville Warbler,' with a statement in the text of the evidence for the belief in this alleged strange parentage. It is also stated that the Short-eared Owl is destructive "to smaller birds during the breeding season," and a list of some thirty species is given of victims identified from wing and tail feathers taken from a mass of such debris on which a family of young owls was resting.

It is only necessary to add that the list is liberally and judiciously annotated, that the authors appear to have strictly adhered to the plan outlined in the foregoing extracts from their prefatory note, and have thus given to the public a résumé of Wisconsin ornithology entitled to take its place, for accuracy and authoritativeness, in the front rank of local lists. The paper is well printed, and exceptionally free from typographical errors, notwithstanding the lamented death of the senior author, Mr. Kumlien, before the manuscript was completed, and the absence of the junior author, Mr. Hollister, in Alaska while the paper was passing through the press.—J. A. A.

Silloway's 'The Birds of Fergus County, Montana.'¹—Fergus County,

¹The Birds of Fergus County, Montana. By P. M. Silloway, Member of the American Ornithologists' Union, Author of Sketches of Some Common Birds, Summer Birds of Flathead Lake, etc. Bulletin No. 1, Fergus County Free High School, Lewistown, Mont., 1903. 8vo, pp. 77, 17 half-tone plates and map.

in central Montana, is varied in its physical features, its western portion including several outlying spurs of the Rocky Mountains, with also two rather isolated groups of mountains, the Judith and Moccasins, in its central portion, while the eastern half is plains and 'bad lands.' The elevation varies from three thousand to eight thousand feet. The bird fauna is correspondingly varied, consisting of the usual species of the northern plains region, with a mixture of alpine forms that extend eastward from the Rocky Mountains.

The present list numbers 179 species, divided into: "Residents, 30 species; summer residents, 101 species; migrants, 31 species; winter residents or visitors, 13 species; other visitors, 4 species."

The list is based partly on the author's observations made during several years' residence in the county, and partly on the published records of other observers. 'A Partial Bibliography of Montana Birds' occupies three pages preceding the list,¹ and there are two pages descriptive of the topography and boundaries of the county. In addition to the usual annotations, a short description (usually of two to four lines) is given of each species, for the convenience of "teachers and others interested in nature study." In many instances, in the case of the lesser known western species, much original biographical matter is included. The large number of half-tones are from photographs of living birds, by Mr. E. R. Warren of Colorado Springs, and of nests and eggs, by Prof. M. J. Elrod of the University of Montana. An interesting feature of the work is its publication as a special 'Bulletin' by the Board of Trustees of the Fergus County Free High School, of which Mr. Silloway is the Principal, apparently for free distribution to those interested, and as a part of the educational mission of the school. The list, while not presumed to be complete, is believed to be as nearly so as present information will permit, and will serve as an excellent basis for further investigation.—J. A. A.

Oberholser's 'Review of the Wrens of the Genus *Troglodytes*.'²—The strictly American genus *Troglodytes*, as here defined, includes not only the species usually heretofore referred to it, but also many West Indian forms which have been commonly referred to *Thryophilus*. The one exception of exclusion is the *Troglodytes browni* Bangs, from the mountains of Chiriqui, Panama, which is made the type of a new genus *Thryorchilus*. Thirty-seven forms are recognized, of which 18 are given the rank of species, and 19 that of subspecies, three of the latter being described as new. The status and nomenclature of the North

¹ By a curious typographical error Coues is uniformly entered as "Coues, Elliott B.," though the name is elsewhere correctly given. Also, on p. 36, *Melanerpes erythrocephalus* is evidently a lapsus for *erythrocephalus*.

² A Review of the Wrens of the Genus *Troglodytes*. By Harry C. Oberholser, Assistant Ornithologist, Department of Agriculture. Proc. U. S. Nat. Mus., Vol. XXVII, No. 1354, pp. 197-210, with map. Feb., 1904.

American forms remains unchanged. The group ranges from southern Canada to Cape Horn, including the West Indies.—J. A. A.

Oberholser on the American Great Horned Owls.¹—Mr. Oberholser considers the Great Horned Owls of America—North, Central, and South—as all referable to a single species, which he regards as divisible into 16 subspecies, of which 7 are restricted to Mexico, Central America, and South America, the remaining 11 coming within the limits of the A. O. U. Check-List—an increase of 4 over the number hitherto recognized in the Check-List. He follows Mr. Stone (Auk, XX, 1903, pp. 272-276) in adopting *Asio* in place of *Bubo* for the name of the genus, and takes the name *magellanicus* in place of *virginianus* for the species, the former having one page precedence over the latter in Gmelin's 'Systema Naturæ,' where both names were originally given. Both names have heretofore been in current use, but the forms to which they were given have generally been held to be specifically distinct. Now that it is found necessary to unite them, *magellanicus* becomes, unfortunately, the correct name for the group, thus replacing the long familiar designation *virginianus* for the North American forms. Mr. Oberholser's revision is based on an examination of "more than 200 specimens, representing all but one of the American forms." The North American forms recognized are the following:

1. *Asio magellanicus pallescens* (Stone). "Western Texas to southeastern California; south to northern Mexico."
2. *Asio magellanicus pacificus* (Cassin). "California, except the southeastern part and the northern and central coast districts; extending northward to Fort Klamath, Oregon, eastward to San Francisco Mountains, Arizona."
3. *Asio magellanicus elachistus* (Brewster). "Southern Lower California."
4. *Asio magellanicus icelus* Oberholser. "Coast of California, north of about 35° north latitude."
5. *Asio magellanicus lagophonus* Oberholser. "Washington and northern Oregon (excepting the coast region), with Idaho; north through eastern and Central British Columbia to Cook Inlet and the interior of Alaska."
6. *Asio magellanicus saturatus* (Ridgway). "Pacific coast region, from Washington (and probably at least northern Oregon) north to southern Alaska."
7. *Asio magellanicus heterocnemis* Oberholser. "Labrador, including at least the north coast of the Territory of Ungava."

¹ A Revision of the American Great Horned Owls. By Harry C. Oberholser, Assistant Ornithologist, Department of Agriculture. Proc. U. S. Nat. Mus., Vol. XXVII, No. 1352, pp. 177-192. Feb. 1904.

8. *Asio magellanicus virginianus* (Gmelin). "Southern Canada and eastern United States, west to Ontario, Wisconsin, Iowa, and eastern Texas; accidental in Ireland."
9. *Asio magellanicus algistus* Oberholser. "Northwest coast region of Alaska."
10. *Asio magellanicus occidentalis* (Stone). "Western United States, from Minnesota and Kansas to Nevada, southeastern Oregon, Utah, and Montana; south in winter to Iowa."
11. *Asio magellanicus wapacuthu* (Gmelin). "Northern Canada, from Hudson Bay to the Valley of the Mackenzie River; south in winter to the northern United States, from Idaho to Wisconsin."—J. A. A.

Snodgrass and Heller on the 'Birds of the Galapagos Archipelago.'¹

—This new revision of the birds of the Galapagos Archipelago recognizes 80 species and 30 additional subspecies. The synonymy, and the bibliographical references that refer especially to the Galapagos, are given for each, with its range, and especially its distribution and manner of occurrence in the Archipelago, together with biographical observations, often extended, notes on the color of the naked parts, etc., and many tables of measurements of large series of specimens. The authors follow rather closely the nomenclature of Rothschild and Hartert, using trinomials for insular forms when their variations overlap, "regardless of the possibility or impossibility of their interbreeding." The *Geospiza* group, sometimes separated into four or more genera, is treated as a genus with three subgenera. Six different phases of plumage are described, and denominated 'stages,' and numbered I to VI; three of these are found to coincide with the differences in the form of the bill, on which the subgeneric groups have been principally based, while the other three are immature phases characterizing young birds, shared unequally by the members of the several subgenera. The discussion of this group, with the voluminous but important notes on habits, song, etc., occupies 75 pages, or nearly one half of the entire memoir.

Although Snodgrass and Heller have described (in previous papers) a number of new species and subspecies from the Galapagos, the number of forms (110) now recognized exceeds by two only the number given by Rothschild and Hartert in 1899,² quite a number of the 14 added by these authors being here reduced to synonyms.

¹ Papers from the Hopkins-Stanford Galapagos Expedition, 1898-1899. XVI. Birds. By Robert Evans Snodgrass and Edmund Heller. Proc. Washington Acad. Sci., Vol. V, pp. 231-372. Jan. 28, 1904.

² For a notice of Rothschild and Hartert's 'Review of the Ornithology of the Galapagos Islands,' see Auk, XVII, July, 1900, pp. 300-303; for a notice of Ridgway's 'Birds of the Galapagos Archipelago' see *ibid.*, XIV, July, 1897, pp. 329, 330.

This is the third extended memoir on Galapagos Islands birds published within the last seven years, each based on extensive material, and each marking an important advance in our knowledge of this peculiarly interesting ornithology. In the memoir now under review there is no reference to previous work in the same field, beyond the bibliographical citations under the species and in the general text. Some reference to the general history of the subject, and some statement of their opportunities and resources, and of the results reached, would have been a good addition to this important contribution to the literature of Galapagan ornithology.—J. A. A.

Shufeldt on the Osteology of the Halcyones and Limicolæ.—In the 'American Naturalist' for October, 1903, Dr. Shufeldt devotes considerable space to a consideration of the Kingfishers,¹ with reference to their osteology and systematic position. It is in the main an amplification of his paper on the 'Osteology of *Ceryle alcyon*,' published in 1884 (Journ. Anat. and Phys., XVIII, 1884, pp. 279-294, pl. xiv), with the same illustrations, here reproduced in half-tone. The structure of this species is compared with allied forms, but not much new light is thrown upon the relationships of the group, nor is any very positive opinion advanced as to its nearest affinities, though believed by the author to be most nearly related to the Galbulidæ, an opinion shared by previous writers on the subject.

Respecting his paper on the osteology of the Limicolæ,² his own opinion is to the effect that "it is probably the most extensive contribution to the osteology and taxonomy of the Limicolæ that has appeared from the pen of any writer on the subject up to the present time." The 'skeletalogy' of each of the principal types is described in considerable detail, the paper closing with a synopsis of their leading osteological characters, and a review of their affinities. The Limicolæ are regarded as a suborder of the Charadriiformes, and are divided into eight families, which correspond to those adopted in the A. O. U. Check-List, except that the subfamily Arenariinæ of the Check-List is given the rank of a family.—J. A. A.

Evans's 'Turner on Birds.'³—This is a republication, with translation

¹ On the Osteology and Systematic Position of the Kingfishers. (Halcyones.) By R. W. Shufeldt. Amer. Nat., Vol. XXXVII, Oct. 1903, pp. 697-725, figs. 1-3.

² Osteology of the Limicolæ, By Dr. R. W. Shufeldt. Ann. Carnegie Mus., Vol. II, 1903, pp. 15-70, pl. i, and 27 text figures.

³ Turner on Birds: | a short and succinct history | of the | principal birds noticed by Pliny and Aristotle, | first published by | Doctor William Turner, 1544. | Edited, with Introduction, Translation, Notes, and Appendix, | by | A. H. Evans, M. A. | Clare College, Cambridge. | Cambridge: | At the University Press | 1903—8vo, pp. i-xviii, 1 l. (transcript of original title page) + pp. 1-223.

and notes, of one of the most noteworthy early publications on birds, and has thus not only a peculiar interest, but is full of suggestive and interesting information, bearing especially upon the origin and early use of many of the present technical names of birds. Of this work, the translator tells us: "Turner's object in writing the present treatise is fully set forth in his 'Epistola Nuncupatoria' prefixed to it. While attempting to determine the principal kinds of birds named by Aristotle and Pliny, he has added notes from his own experience on some species which had come under his own observation, and in so doing he has produced the first book on Birds which treats them in anything like a modern scientific spirit and not from the medical point of view adopted by nearly all his predecessors; nor is it too much to say that almost every page bears witness to a personal knowledge of the subject, which would be distinctly creditable even to a modern ornithologist."

Turner was one of the most learned men of his time. The date of his birth is not given; he graduated a B. A. from the University of Cambridge, of which he was elected a fellow in 1530. He was a zealous student of botany, and in 1538 published a work on plants, and later others on the same subject. He traveled extensively on the continent, where he met and became a personal friend of Gesner, to whose 'Historia Animalium' he made contributions. He was, first of all, a religious reformer, and, "his scientific work apart, nearly the whole of Turner's life was spent in religious controversy." In the dedication of his book on 'The History of Birds' (mentioned above) to the then Prince of Wales, he says, in it "I have placed for your pleasure the Greek, German, and British names side by side with the Latin"; and he proposed, under certain conditions, to "bring to the light of day a further edition of this little book with figures of the birds, their habits, and curative properties, as well as another book on plants."

It is hard to characterize the peculiar interest this "little book" has for the present day bird student; but not least of course is the antiquarian, from its curious revelations of the beginnings of modern knowledge of birds, the conjectures that prevailed in place of positive information, and the early application of many names now so differently employed in technical nomenclature. The editor and translator, seconded by the Syndics of the University Press, has opened to the general reader a previously inaccessible and practically sealed book of unusual interest, for which service we owe a debt of gratitude.—J. A. A.

Recent Papers on Economic Ornithology.—In 'Birds of a Maryland farm'¹ Dr. Judd has presented us with a study of local conditions as pre-

¹ Birds of a Maryland Farm, A Local Study of Economic Ornithology. By Sylvester D. Judd, Ph. D., Assistant, Biological Survey. U. S. Department of Agriculture. Division of Biological Survey—Bulletin No. 17, Washington, 1902. 8vo, pp. 116, with 17 half-tone plates and 41 text figures.

sented at the Bryan farm, at Marshall, Md., situated about fifteen miles south of Washington. The farm contains about 230 acres, of which 150 are cultivated and 80 are in woodland. A study of the food habits of the birds was continued at frequent intervals from July 30, 1895, to July 24, 1902, including every month of the year except January. The method of investigating the food of birds by examination of the contents of stomachs, says Dr. Judd, in which the material has been collected from all parts of the United States, may give misleading results; "the relation of birds to a certain locality or particular farm cannot always be exactly tested by conclusions drawn from a large range of territory. The exact damage to crops is not revealed by stomach examination. A bird may have punctured several grapes in each of a hundred clusters and yet betray to the microscope no sign of its vicious habits," etc. In the present paper Dr. Judd gives us in detail the methods and results of his work on a Maryland farm, and here attempts "to determine whether a given species is, on the whole, helpful or harmful to the farm in question." The principal species are reported upon in detail, with finally a general statement of his conclusions as to what birds are really injurious, what beneficial or neutral, and the manner in which their food habits affect the question of their utility.

'Two Years with the Birds on a Farm,' by Mr. Edward H. Forbush,¹ recounts observations made by him on a farm in Wareham, Mass., and is a valuable contribution to the subject of economic ornithology. The ways in which certain birds are useful to the farmer are stated with convincing detail, and the reprehensible traits of some others are not concealed, especially the nest-robbing proclivities of crows, jays, and crow blackbirds. While the crows and jays are useful as insect destroyers, they are held to be "very largely responsible for the decrease of the smaller birds."

'Boll Weevils and Birds' is an address delivered by Prof. H. P. Attwater² at the Texas Cotton Growers' Association Convention held at Dallas, Texas, Nov. 6, 1903. It is an earnest appeal for the legal protection of birds in Texas for the aid they render in checking the increase of noxious insects, including the cotton boll weevil. The address is published and given free distribution by the Passenger Department of the Southern Pacific Railroad.

¹ Two Years with the Birds on a Farm. Lecture by Edward Howe Forbush, Ornithologist, Massachusetts State Board of Agriculture, delivered at the public winter meeting of the Massachusetts State Board of Agriculture at North Adams, Dec. 2, 1902. Reprinted from Fiftieth Ann. Rep. Mass. State Board of Agriculture. 8vo, pp. 53, with 8 half-tone plates, and 6 text figures.

² Boll Weevils and Birds. Address by Prof. H. P. Attwater, Industrial Agent Southern Pacific, at the Second Annual Convention of the Texas Cotton Growers' Association, Dallas, Texas, Nov. 6, 1903. 8vo. pp. 11.

'Audubon Societies in their Relation to the Farmer.'—In a paper of about a dozen pages,¹ with the above title, Mr. Oldys has given a clear and succinct account of the Audubon Societies and their work. After referring briefly to the economic value of birds, and to the causes that have operated to effect their decrease, he proceeds to an account of the Audubon Societies, beginning with the first national movement in 1886, and the reawakening of bird protection sentiment in 1896, resulting in the founding of some thirty societies with, in 1902, a joint membership of 65,000. Their purposes and methods of work are detailed and a résumé is given of the results of their efforts, with finally a statement of 'The Farmer's Interest in Bird Protection,' or, rather, of why he should be interested in it.—J. A. A.

Summary of Game Laws for 1903.²—This presents, in a brief form for ready reference, "the provisions of the various State laws which primarily form the basis of the Lacey act and which govern the trade in game, namely, those relating to close seasons, licenses, shipment, and sale." The scope of the summary includes the United States and Canada, and it being necessary to condense as much as possible, the matter is mostly presented in tabular form, and in a series of maps. The tabulated matter shows: (1) the close seasons for game in the United States and Canada (pp. 9-19); (2) export of game prohibited by State laws (pp. 22-26); (3) restrictions on sale of game (pp. 32-35); licenses for hunting game (pp. 37-40); (5) close seasons for game in the United States and Canada, by States and Provinces (pp. 44-48); (6) close seasons for game under County laws (pp. 48-53); summary of the principal restrictions by non-residents (pp. 53-56). Five maps show which States and Provinces (1) require nonresidents to obtain hunting licenses, and the amount of the license fee; (2) which prohibit export of game; (3) which permit export of game for propagation; (4) which prohibit sale of game at all times; (5) which limit the amount of game that may be killed. All the States, except Kentucky and Mississippi, have some kind of a nonexport law, varying in scope in respect to the kinds of game thus protected. All the States and Territories now prohibit the export of quail, except four, in one of which no quail occur, and in two of which there is no nonexport law; in the other, several counties prohibit such export. "Nearly

¹ Audubon Societies in their Relation to the Farmer. By Henry Oldys, Assistant Biologist, Biological Survey. Yearbook of Department of Agriculture for 1902, pp. 205-218, with 2 plates and 2 text figures.

² Game Laws for 1903. A Summary of the Provisions relating to Seasons, Shipment, Sale, and Licenses. By T. S. Palmer, Henry Oldys, and R. W. Williams, Jr., Assistants, Biological Survey. U. S. Department of Agriculture, Farmers' Bulletin No. 180. Washington: Government Printing Office, 1903. 8vo, pp. 56.

every State in which Prairie Chickens occur now has a nonexport law, the effect of which, combined with sale restrictions, is to make the sale of Prairie Chickens illegal outside of their normal range." Only fourteen States and Alaska permit the export of game intended for propagation; only six of these States are east of the Mississippi River. "Thirty-four States and Territories and most of the Provinces of Canada now prohibit the sale of all or certain kinds of game at all seasons." The Ruffed Grouse cannot be legally sold in eleven States and three Provinces. A steady increase in the prohibitions against the sale of game has continued during the last three years, and the general outlook is hopeful for the preservation of most kinds of game animals and birds, many of which were so recently threatened with speedy extermination. This Bulletin gives a most interesting and valuable summary of the present status of game protection in the United States and Canada.—J. A. A.

NOTES AND NEWS.

GURDON TRUMBULL, a Fellow of the American Ornithologists' Union, died at his home in Hartford, Conn., Dec. 28, 1903, in his sixty-third year, being the last of three brothers, each of whom was distinguished in his own way, Dr. J. Hammond Trumbull, the philologist, and Rev. H. Clay Trumbull, a well known editor and writer.

He was born in Stonington, Conn., May 5, 1841, and early in life showed a natural fondness for art. He studied under various teachers in Hartford and also with James M. Hart in New York, progressed rapidly and soon became prominent as a painter of fish, his principal pictures in that line being 'Over the Fall,' 'A Plunge for Life,' and 'A Critical Moment.' These were extensively copied, and many chromos were made that had a large sale. Perhaps the best of his smaller pieces—a perfect gem—was a painting of the common sunfish.

While always a lover of nature, and for many years an ardent sportsman, he later in life became especially interested in ornithology. He wrote 'Names and Portraits of Birds which Interest Gunners, with Descriptions in Language Understood of the People,' published by Harper & Brothers in 1888. He contributed to 'Forest and Stream' for Dec. 11, 1890, a notable paper on the 'American Woodcock,' which contained the first record of a bird's power to curve the upper mandible, and to 'The Auk' in 1892 and 1893 (Vol. IX, pp. 153-160, and Vol. X, pp. 165-176) two articles on 'Our Scoters,' giving careful and detailed descriptions of the species from fresh specimens.

Mr. Trumbull was an enthusiastic collector, and an excellent judge of china, and his cabinet contained some of the choicest specimens extant. About his last art work was the illustrating of the book written by his sister, Mrs. Annie Trumbull Slosson, 'The China Hunter's Club,' published in 1898.

He was deeply interested in the welfare of the lower animals and wrote much on humane subjects. Although seldom seen at the Annual Congress of the Union he always had the best interests of the Society at heart. He was of a quiet, retiring disposition and highly esteemed in the community in which he resided. In his death "the world lost a man who daily made it better."—J. H. S.

JOSIAH HOOPES, an Associate of the American Ornithologists' Union, died at his home, Westchester, Pennsylvania, on January 16, 1904, in the seventy-second year of his age. Although not a contributor to ornithological literature, Mr. Hoopes was from boyhood deeply interested in birds and was ever ready to aid any investigator by drawing upon his store of notes or specimens. In early life he was associated with several of the ornithologists of the Philadelphia Academy, notably Cassin, Turnbull, and Bernard Hoopes; and took much interest in the institution. Later he began the formation of a collection of eggs and skins of North American land birds. Of the latter he accepted only first class specimens, and in particulars of arrangement, labelling, etc., his collection was a model of neatness. A special room was added to his house for the reception of his ornithological treasures and cases were prepared to accommodate a series of every species and subspecies in the A. O. U. list. The great majority of these were secured, and Mr. Hoopes's greatest delight was to show to visitors of kindred tastes his beautiful specimens. Some years ago this collection, numbering nearly 8000 skins, was purchased by the Philadelphia Academy of Natural Sciences, and the specimens have since been used in many investigations.

Mr. Hoopes was born in Westchester, November 9, 1832, the son of Pierce and Sarah A. Hoopes. He was educated in Philadelphia, where his family resided during his boyhood, and in 1850 returned to Westchester. He had always been deeply interested in botany and deciding to make this his business he opened in 1853 a small greenhouse, which to-day has grown into one of the largest nursery establishments in the United States, under the firm name of Hoopes Brothers and Thomas. Mr. Hoopes spent some time in travel, visiting the various botanic gardens of Europe, and contributed numerous articles to horticultural journals, besides writing the 'Book of Evergreens.' He was a member of the Society of Friends and one of the leading citizens of his native town, ever as ready to aid in public work as in furthering the studies in which he was interested.

The influence of such men as Josiah Hoopes in advancing scientific work is hard to estimate, and all Pennsylvania bird students have lost a staunch supporter, while to those who knew him personally he will ever be remembered as a generous host and a true friend.— W. S.

LYMAN S. FOSTER, for a time an Active Member of the American Ornithologists' Union, died of pneumonia at St. Luke's Hospital, New York City, January 6, 1904. Mr. Foster was born at Gloucester, Mass., November 25, 1843, but the greater part of his life was spent in New York City, as a stationer and dealer in natural history books, and from 1886 to 1900 he was the authorized agent of the A. O. U. for the sale of its publications and the distribution of 'The Auk.' He took an active interest in ornithology, and from time to time contributed short papers on North American birds to various natural history publications, including 'The Auk,' and the 'Abstract of Proceedings' of the Linnæan Society of New York, of which society he was for some years treasurer. His principal contribution to ornithological literature is a minutely detailed bibliography of the ornithological writings of the late George N. Lawrence, published in 1892, forming No. IV of the series of 'Bibliographies of American Naturalists,' issued by the U. S. National Museum.

A PROPOSED general work on birds, in large quarto, with plain or colored plates, as may be required, is announced, to be prepared by a "Committee composed of the best Ornithologists of the World." Each family will be published separately, with separate pagination, and will include synoptical tables and descriptions of the genera, species and subspecies, references to the original descriptions, the synonymy, and geographical distribution. The work will be published entirely in English, and the drawings will be by Keulemans. A specimen part, on the *Eurylæmidæ*, by E. Hartert, of the Zoölogical Museum of Tring, has been issued, and will be sent for inspection, post free, on application. This sample part shows that the work will prove of great convenience and value as a technical synopsis of the birds of the world. Subscriptions will be received only for the complete work, on the basis of 4 cts. per page of text, 30 cts. per plain plate, and 60 cts. per colored plate. Subscriptions should be addressed to P. Wytzman, 108, Boulevard du Nord, Bruxelles, Belgium. The New York agents are G. E. Stechert, and Westermann & Co.

MR. FRANK M. CHAPMAN requests the coöperation of ornithologists in the preparation of a proposed work on the Warblers of North America. Information in regard to those phases of the life-history of these birds on which observations are particularly desired will be gladly furnished by Mr. Chapman, who may be addressed at the American Museum of Natural History, New York City.

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THE BIOLOGY OF THE TYRANNIDÆ WITH RESPECT TO THEIR SYSTEMATIC ARRANGEMENT.

BY DR. H. VON IHERING.

THE systematic arrangement of animals is usually based on morphological characters only, but biological observations may often give us precious hints which may help us to settle difficult questions in this respect. Considering that the present systematic arrangement of the genera belonging to the great family of Tyrannidæ is far from being a satisfactory one, I have thought it useful to study in a comparative way the biology of the members of this family.

Of the four subfamilies accepted according to the classification of Mr. Sclater, at least one seems to be unnatural as well as regards morphological as biological characters; that is to say, the *Platyrrhynchinæ*.

In my paper on eggs and nests of Brazilian birds (*Revista do Museu Paulista*, IV, 1899, p. 226) I described the nest and eggs of *Platyrrhynchus mystaceus* and expressed my surprise at their great difference when compared with the nests and eggs of the allied genera. Having obtained this year an authentic nest of this species I am able to state that as regards the first described nest there was a mistake. The nest of the above mentioned species of *Platyrrhynchus*, which will be fully described in Vol. V of the

'Revista do Museu Paulista,' is purse-shaped and suspended at the extremity of a branch. It has a round opening in the middle protected by a shelter above. I have quite similar nests of *Todirostrum cinereum*, *Orchilus auricularis*, *Hemitriccus diops*, and of different species of *Euscarthmus*. The same form of nest is, therefore, common to the genera *Platyrrhynchus*, *Todirostrum*, *Euscarthmus* and *Orchilus*. Moreover, the eggs of the members of all these genera are yellowish white or brownish with very fine points on the larger end.

On the other hand the nests of *Serphophaga* are placed among the diverging boughs of a branch and are cup-shaped, while the eggs are of a uniform yellowish white. Of the same type are the nests and eggs of *Anæretes* and *Hapalocercus*. The nest of *Phylloscartes ventralis*, however, as Mr. Krone assured me, has one wall of the nest elongated above and recurved, forming a somewhat globular, domed structure.

A form of nest like that of *Serphophaga* is found in the genera *Elainea* and *Phyllomyias*, and in other Elaineinæ, among which, however, occurs also a second form of nest. This form is illustrated by the nest of *Ornithion obsoletum* which I have recently examined. It is of a pear-shaped form, similar to that of *Euscarthmus*, but not suspended from the top of a twig but fixed at different points on the branches.

Euler has described the nest of this species differently, but the nest observed by him, which was much hidden between masses of *Tillandsia*, was not probably of a normal form. Besides, *O. obsoletum* does not occur in Rio de Janeiro and Bahia, where the species is represented by *O. cinerascens* (Wied), which, in opposition to Mr. Allen, I do not doubt is identical with *O. imberbe* Scl. A similar nest is built by *Mionectes rufiventris* (Licht.), as has been observed by Mr. Krone.

The nest of *Ornithion* forms the transition between that of *Serphophaga* and that of *Euscarthmus*. We may be justified to assume that such an artificial and wonderful construction as the nest of *Euscarthmus* is not the work of free invention but is to be considered as the result of development from a previous form of nest. We have but to suppose the nest of *Ornithion*, instead of being fixed on various branches successively, to be placed on one

branch only and we have the suspended nest of *Euscarthmus*. A very remarkable form of suspended nest among the Tyrannidæ occurs in the genus *Rhynchocyclus*, but I believe it to be nothing more than an extreme modification of the Euscarthmine nest type. In this respect it is remarkable that the much bristled and flattened bill of *Rhynchocyclus* is very like that of *Platyrhynchus*, and quite different from that of the typical *Elainæ*.

Although the predominant form of nest among the Tyrannidæ is certainly the cup-shaped one, we meet also with very different structures in this family. Covered nests occur in the genera *Phylloscartes*, *Arundinicola*, *Pitangus*, and *Myiozetetes*, leading us on to the nest of *Ornithion* above described, and to the suspended nests of *Euscarthmus* and *Rhynchocyclus*. According to Euler *Myiobius barbatus* has a suspended, purse-shaped nest, while the nest of *Myiobius nævius* is cup-shaped, but is fixed suspended within the fork of two diverging branches in the manner typical of the nests of *Thamnophilus* and other Formicariidæ. On the other hand we find nests of very slight structure made of a small number of slender sticks and roots in the genera *Tyrannus*, *Empidonomus*, *Myiodynastes*, *Megarhynchus*, and others. These nests are extremely flat and apparently not well suited to retain the eggs in safety.

Among the Tæniopterinæ, inhabitants of the open plains, there are species which breed in holes in banks, as is said to be the case in Argentina with *Tænioptera nengeta* by Mr. Hudson, while in Brazil this species builds its nest on trees. The species of *Copurus* and *Machetornis* breed in holes of trees, as also does *Tænioptera irupero*. The last-named species likes to appropriate the large covered mud-nests of *Furnarius*, and *Machetornis* prefers the large thorny nests of *Anumbius*. Thus we see among the Tyrannidæ the most different forms of nest structures represented.

In general the nests of species that inhabit the woods are well built, and covered carefully with dry plant material in order to be well hidden. Some of them, such as that of *Elainæ*, are true masterpieces of art, being generally ornamented externally with pieces of lichen carefully fixed on by spiders' webs. On the other hand, the Tæniopterinæ and Tyrannidæ, inhabitants of the pampas and campos, contrary to what would be expected, take little

care to hide their nests. Everyone would suppose that these birds should prefer to build their nests under cover of the grass and form simple structures of dried grass, as do the species of *Sycalis*, *Anmodromus*, *Embernagra*, *Emberizoides* and other Fringillidæ of the campos. Except, however, in the genus *Alectrurus*, I do not know any other example among the Tyrannidæ of this form of nesting. In general these birds are not very careful to hide their nests. On the contrary the large species of Tyranninæ, and the species of the allied genera *Myiozetetes* and *Pitangus*, seem to prefer to place their nests on isolated trees, as much exposed as possible. This custom corresponds well with the bold characters of these birds.

Taking a general view of the eggs of Tyrannidæ, we find a uniformity in coloration which is in strong contrast to the variety of forms of their nests. The eggs in this family, as a rule, are white or cream-white with reddish brown spots at the larger end. These spots are small and pointed in the Euscarthminæ, while they are obsolete in the buff eggs of the Serphophaginæ. The occurrence of pure white eggs is limited to the genera *Copurus*, *Arundinicola*, and a few others. In the genus *Muscivora* the ground color is somewhat dark brownish. The eggs of the genus *Myiarchus* are remarkable for the elongated form of the numerous red-brown spots.

If we compare the color of the eggs with the mode of construction of the nests no pronounced correlation is to be found. Uniformly white or cream-colored eggs exist in the genera *Copurus* and *Arundinicola*, which are deposited in covered nests, while the similar eggs of the Serphophaginæ are laid in open nests. The eggs of the Euscarthminæ, though deposited in closed nests are adorned with numerous red spots, while those of *Myiozetetes* and *Pitangus*, which are laid in closed and domed-shaped nests, have the same large, reddish brown spots as those of the genera *Tyrannus*, *Milvulus*, and others, the nests of which are wholly open. Similar cases prevail in the eggs of other South American birds. In this respect the example of the American Gallinæ is instructive, for while as regards the careless construction of the nest no difference is noticeable, the eggs of the Brazilian representatives of the Gallinæ are white, while those of the Crypturi are distin-

guished by the most brilliant colors of brown, red, blue, and green. It is true that the Pici, Psittaci, and other birds that lay their eggs in hollow trees, all have white eggs, but eggs of the same color are found also in the open nests of the Trochilidæ and of the Columbæ. Returning to the Tyrannidæ we find the egg of *Machetornis rixosa* wholly different from those of the true Tænipterinæ, and resembling in its numerous, large, somewhat elongated brownish spots the eggs of the genera *Empidonomus* and *Myiarchus*, especially those of the latter. These facts throw doubt on the correctness of the generally accepted systematic position of *Machetornis*. So far as regards the egg of *Tyrannus aurantioatrontotatus* Lafr. & D'Orb., it belongs to the genus *Tyrannus* and not to *Empidonomus*.

These differences, therefore, cannot be explained by the so-called law of 'natural selection,' but bear relations to the genetic affinities and the inner movements which, independently of the supposed 'natural selection,' determined the individual variation as well as the phylogenetic development of the organisms.

After what I have stated it is evident that the systematic arrangement of the Tyrannidæ in its present form can only be considered as provisional, and it may be well altered when a general anatomical study of the whole group has been made. At present the systematic sections are only based on a restricted number of external characters, principally on the form of the tarsi, feet and bills. These characters are in intimate connection with the manner of life. In this way we are exposed to the danger of confounding essential typical characters with adaptive ones. I think that such a mistake took place on the occasion of the formation of the subfamily Tænipterinæ. This section embraces forms with strong feet, strong and elongated tarsi, and slender elongated bills, characters which seem to result from the life on the ground on the pampas and campos, which these birds inhabit.

In general this subfamily may be considered a very natural one. The predominant colors of the species are gray, white, and black. These colors are not common in the family Tyrannidæ as a whole, and they are evidently to be considered as being acquired characters and not of a phylogenetic value. This is proved by

the fact that in the species of *Cnipolegus*, *Lichenops*, and others in which the males are wholly black, the females and young are of a brownish color or have a spotted plumage. Among the more or less similar members usually placed in this subfamily two monotypic genera are completely different in their coloration, namely, *Sisopygis* and *Machetornis*, which in my opinion do not belong to this subfamily, but to the Elaineinæ. *Machetornis* seems to me to be allied to *Pitangus*, and *Sisopygis* to *Mionectes*, *Capsiempis*, and similar genera. While *Machetornis*, at least in its mode of life, resembles the Tæniopterinæ, *Sisopygis* inhabits the woods like the Elaineinæ.

That the Platyrhynchinæ really consist of two different subfamilies, Euscarthminæ and Serphophaginæ, we have shown above. With the biological differences correspond such important morphological ones, principally those of the form of the bill, that the separation here proposed will probably be accepted as being naturally founded.

In order to obtain a natural classification of the Tyrannidæ it is necessary to get an idea of the phylogenetic development of the family. In this respect the Tyranninæ, judging from their large dimensions and their large, somewhat depressed bills, do not represent the original form, but, as I think, an extreme branch of the family. Other specialized branches are found in the Euscarthminæ and Tæniopterinæ. The latter offer not only a coloring somewhat uncommon in this family, but also cases of decided sexual dimorphism, which evidently represents a specialization acquired within the subfamily.

Excluding from the Elaineinæ the Pitanginæ — large birds with strong bills that biologically much approximate to true Tyranninæ — the Elaineinæ evidently represent the group most nearly allied to the ancestors of the Tyrannidæ. These forms are also those which have the nearest relations with the Pipridæ. Strongly developed syndactylism, which is one of the characters distinguishing the latter, is also very remarkable in many genera of the Elaineinæ, as for example in the genus *Tyranniscus*.

Among the Pipridæ the same fact is observable as in the Tyrannidæ, namely, that sexual dimorphism in coloration exists only in the more highly organized forms. In the subfamily of Piprinæ

the very striking and beautiful coloration is found only in the adult males, while the females and young males retain uniform olive colors, and it is also only among the adult males that we meet with such abnormal characters as enlarged stems of the primaries and secondaries, erect frontal feathers, and elongated tail-feathers, while the Ptilochlorinæ resemble the Elaineinæ not only in coloration, but also in the rather small and bristled bill. These facts induce us to conclude that the Pipridæ and Tyrannidæ have descended from a common ancestral form, the nearest relatives of which are the Elaineinæ among the Tyrannidæ with the Ptilochlorinæ among the Pipridæ. The common ancestors must have been birds of small size, with pronounced syndactylism of the outer toes, with rather small, somewhat compressed and bristled bill, and of uniform olive color. The frequent occurrence of a yellow coronal patch among the Pipridæ as well as the Tyrannidæ leads us to suppose that this ornament may have been transferred from the common ancestors, which were inhabitants of the woods. From the Elaineine branch of the Tyrannidæ originated, besides the Euscarthminæ and Serphophaginæ, whose biological conditions are nearly the same, two great sections of inhabitants of the campos, mostly large-sized birds, the Tæniopterinæ and the Pitangine-Tyranninæ.

With these general results the geographical distribution accords. As is generally the case with the wood-inhabiting birds, the distribution of the Elaineinæ of Brazil is a somewhat restricted one. While a number of species are distributed through the forest region of Brasil, only a few range through Guiana and Central America to Mexico. The Euscarthminæ in this respect also do not diverge much from the Elaineinæ, but the Serphophaginae, preferring open plains and river banks, do occur not only in the campos but the majority of them is restricted to the Andine Region. These two groups of campos inhabiting Tyrannidæ are wholly different not only in their way of life but also in their geographical distribution.

The habits of the Tæniopterinæ are terrestrial. They run on the ground and have in relation therewith elongated tarsi and strong ambulatorial feet, seeking their insect food on the ground. They inhabit the pampas and the campos of central Brazil, being

represented in the littoral zone by but few species. On the other hand, many species and genera are adapted to live in the Andes, where they occur from Patagonia to Colombia, but no species of these Andine forms passes into Mexico and Texas. For this reason I think it to be right to separate the genus *Sayornis* from the Tæniopterinae, and to unite it to the Tyranninae, in the society of which it is found in North America and from which it does not differ regarding its biology.

The Pitanginae and Tyranninae, on the contrary, are of very wide geographical distribution. Though preferring the campos, they avoid the treeless plains. They are not ground-walkers, but capture insects as they fly like Flycatchers. They are very active, courageous birds of large size and good flight, and their geographical distribution therefore, as a rule, is very wide, some of them occurring from Argentina to North America. Among the seventy-eight species of Tyrannidæ living in the State of S. Paulo forty-three belong to the Elaineinae and the allied groups of arboreal life, and of these ten, or 23 per cent, have a relatively wide geographical distribution. Among the six Pitanginae only the two species of *Conopias* and *Sirystes* are restricted to Brazil, while the species of *Legatus*, *Myiozetetes*, *Pitangus*, and *Myiodynastes* are represented even in the southern parts of North America by the same species or by little different local races. Among the sixteen Tyranninae of S. Paulo all have a very extensive geographical distribution except *Blacicus cinereus* (Spix) and *Tyrannus albogularis* Burm., so that more than 80 per cent of the Pitanginae and Tyranninae of S. Paulo have very wide geographical distribution.

These facts of geographical distribution show us that the only system of nomenclature well applicable to the discussion of zoö-geographical problems is the trinomial.

The use of binomials as employed in the excellent Hand-list of Dr. Bowdler Sharpe may be more advantageous for collection purposes, but it combines in a very inconvenient manner well-defined species with local races. Such facts as the vast distribution of *Pitangus sulphuratus* (L.) and *Myiozetetes similis* (Spix) are completely hidden by the use of binomial nomenclature.

It is also among these birds that we meet true migratory forms,

so far as such exist among the Tyrannidæ. This fact is in intimate relation with the special biological conditions of the campos. No migratory birds at all exist among the wood-inhabiting Tyrannidæ, nor among the Pipridæ, Formicariidæ and other families of the forests.

True migratory birds are scarcely represented in South America and are essentially restricted to two families of insectivorous birds, the Hirundinidæ and the Tyrannidæ. In South Brazil, from Rio Grande to S. Paulo, I have observed migratory habits in the following species:—

Myiodynastes solitarius (Vieill.). *Tyrannus melancholicus* Vieill.
Pyrocephalus rubineus (Bodd.). *Muscivora tyrannus* (L.).

As I am preparing a paper on this subject to be published in 'Aquila' I will not discuss it in the present paper. It is evident, however, from the preceding deductions, that in biological respects the family of Tyrannidæ is one of the most interesting of the Neotropical Avifauna, strongly contrasting with the uniformity which in this regard prevails in most of the other characteristic families.

Although the object of this essay was only to refer to some general biological features and habits common to certain subfamilies I nevertheless think it useful to give briefly the results of my observations, as they may be of service to a subsequent worker who will undertake the necessary systematic revision of the family Tyrannidæ. They are as follows:

(1) The Tæniopterinæ represent a very natural systematic group but as usually arranged include some strange elements, such as *Sayornis*, *Sisopygis*, and probably *Machetornis*, which should be removed to other subfamilies.

(2) The Platyrhynchinæ of the systematic arrangement of Mr. Sclater contain two quite different sections, the Euscarthminæ and the Serphophaginæ.

(3) The Elaineinæ contain some aberrant forms which should be removed to other subfamilies. For example, the genus *Rhynchocyclus* should go to the Euscarthminæ, and the genera *Legatus*, *Myiozetetes*, *Conopias*, *Pitangus*, *Sirytes* and *Myiodynastes* should form a subfamily, Pitanginæ, a section which biologically is inti-

mately related to the Tyranninæ, while morphologically it is intermediate between the latter and the Elaineinæ.

(4) The Tyranninæ form a natural section with which perhaps the Pitanginæ should be united.

S. Paulo, Brazil, 9 Nov., 1903.

A DISCUSSION OF THE ORIGIN OF MIGRATION.

BY P. A. TAVERNER.

ONE of the first, if not the very first, phenomena of animate nature to be noticed by primeval man, must have been that of migration; and from that day to this it has been, to a greater or less extent, a subject of great interest to students. In the present day it has been approached from many different sides, and though many points have been pretty well cleared up, others are still enveloped in a haze through which the fundamental principles are but barely visible, while others still remain shrouded in a dense, impenetrable cloud of mystery.

The methods by which birds find their way to far distant points, the manner of their migrations, etc., lie without the scope of this paper, and will not be referred to here. Upon these points we all await the publication of the results of the investigations now in progress, when probably many obscure points will be cleared up.

Migration consists of two movements, one in the spring, away from the winter station; and the other in the fall, towards it again. The reason of the latter is self-evident. There is a lack of food. If they did not return in the fall they would perish of hunger, if not of cold. From general observations, it seems as if the former had a larger influence than the latter, and it is the northward movement that needs explanation. Why should a bird leave a warm land of plenty to journey to a country but half recovered from the frozen embraces of an arctic climate? It seems

improbable that the birds themselves realize why they migrate, or what benefits are to be thus gained or enemies escaped. When the proper season comes, "the spirit moves them," and they go or come, as the case may be. However instinctive their habit may now be, there must have been a time when migrations were intelligent movements, intended to escape some danger or secure some advantage; and through generations of repetition they have become fixed into hereditary habits, closely with reproduction and reproductive seasons. In time the two habits became so interdependent that the awakening of the sexual desires sympathetically affected the migratory instincts and caused restlessness and a desire that was only to be satisfied by the accomplishment of the same long journey that their progenitors had taken for generations.

Of the many theories that have been advanced to explain this question, I will mention a few that seem the most important and the most generally received. While advancing nothing absolutely new, I wish to call attention to one factor in the question that has not, in my estimation, been given its due importance, nor has it been recognized, as far as I am aware, that therein lie possibilities probably capable of producing all the phenomena of migrations as we now see them. Of this, more anon.

There is a theory extant, supported by W. K. Brooks in his 'Foundations of Zoölogy' that has received a considerable amount of attention. This ascribes migration to a desire to find nesting sites secure from arboreal Mammalia and Reptilia. This supposes, and perhaps correctly so, that the northern nesting stations are safer from these enemies than the tropical ones; though any one familiar with our northern woods, and acquainted with our ubiquitous red squirrel, may have good grounds for doubting the general statement, as far as it relates to mammals, at least.

There are certain facts of distribution, however, that this theory fails to explain, and which seem, indeed, to be in direct antagonism to it. Typical instances of this can be seen in the distribution and ranges of the families of Cuckoos and Doves. Also the occurrence of such an elaborate and careful nest builder as the Baltimore Oriole, as far north as the Transition fauna. Surely,

such a nest as this bird builds would be as secure from these enemies in the heart of the tropical forests as in the temperate ones. Therefore, safe nesting sites could not be the object of their migrating,—unless the peculiar form of nest was evolved after the migratory habit had been formed. This, however, does not seem to have been the case. Such a likeness is exhibited in the forms of the nests throughout the whole family, that we are forced to conclude that this type of nest was used by the common ancestor of *Icterus*, which must have been before the Baltimore Oriole became migratory.

The cuckoos and doves above mentioned, are notoriously careless nesters, and under this hypothesis, we would expect that migration would have been forced upon the whole of these families, or at least upon a considerable number of the species composing them. Contrary to this, we find that these are peculiarly tropical and subtropical families, and but a very small percentage of them ever get up into northern latitudes.

It may be held that the above cases are exceptions, caused by varying local conditions, but it still remains to be proved that the generality of tropical nesters take any greater nesting precautions than northern ones of the same class, as would assuredly be the case if the above were the correct solution of the problem. Furthermore, there are grave reasons, to which I will refer later, for doubting that inadequate nesting habits could ever be the cause of migrations.

A second theory, advanced under the auspices of Mr. Chas. Dixon, refers the movement to a natural desire of the individuals of a species to disperse during the breeding season, and draws attention to the fact that the bird population is more scattered during the breeding season than at other times. He utterly refutes the idea that adverse circumstances of either food, temperature, or enemies can force a bird to change its range, and cites instances of the Great Auk, Labrador Duck, and other species that have suffered extermination rather than forsake their accustomed habitat. Mr. Dixon evidently regards this dispersal as effecting a reduction in the density of the population. It certainly does result in this among the adult inhabitants, but it is open to question if we assume that the total population is

thus affected. His conclusion is apparently based upon the well known and indisputable fact that birds are harder to find during the breeding season than at other times. It must, however, be remembered that for each pair of breeding birds observed, there is somewhere about a nest full of young that are not seen at all. These young are of as much economic importance in reckoning population as the adults, and as such must be taken into consideration. On the whole, I doubt very much whether the bird population in the breeding season is any less per given unit of territory than at other times.

That migration is caused by a natural dispersal of the adults during the breeding season must be admitted. But this is begging the question. Migration is a dispersal; and conversely, this dispersal, as it manifests itself, is migration. The author fails to explain the cause of the natural dispersal. The object of this scattering may be seclusion, either for privacy or safety. If for privacy, it seems to defeat its own ends when such birds as the herons, swallows, and like gregarious nesters congregate in great communities to perform their marital duties. If safety is sought, it presupposes that all the safe nesting sites are monopolized by other species and the migrants are crowded out.

In our own country, we can readily see that but an infinitesimal fraction of possible sites are thus occupied. How rare it is for a nesting place to be used a second time by different individuals,—except in the case of woodpeckers' holes, where it is obvious that the supply is limited,—any field worker knows. If desirable forked branches, etc., were at such a high premium, this would occur frequently. If, then, the above is true in our own country, how much more must it be true in the tropical stations, where, though the population of both birds and their enemies is greatly increased, the luxuriant vegetation affords an infinitely greater number of desirable sites for nesting. Crowding in this sense seems impossible.

That individual birds cannot be driven from what they regard as their proper stations, may possibly be admitted; but that species cannot (when the adverse changes in surroundings take place gradually enough), is absurd. As far as I am aware, there are three principal ways by which geographical distribution can be

effected. One is the sudden irruption of a species, when it suddenly appears in numbers in a territory where it had been either extremely rare, or entirely absent. Examples of this are to be seen in the sudden occurrence of the Sand Grouse in Europe in 1888; the appearance of great flocks of Brünnich's Murre on Lakes Ontario and Erie, 1894-97, and the great movements occasionally noted in Lemmings. Of the underlying causes of these strange migrations, whether they are due to inner psychological or outer physical phenomena, we are ignorant. These strange overflows seem so erratic and abnormal in the light that invasions of this kind do not succeed in forming permanent settlements on the new grounds, that it would be reckless at present, to use them as a basis for theorizing, until all other means fail.

The second method is by a force exerted from within an established range; and the third, an attractive one acting from without. These two, however antagonistic as they may superficially seem, are, at root, one and the same. They are both caused by differences in the desirability of two stations. One is caused by a decrease in the desirability of a present, and the other by an increase of the same quality in an adjoining territory. They are but ratios of desirability, and can both be expressed by fractions whose values depend upon the relative, not the numerical size of their terms. If, then, attraction is but a phase of driving, and birds cannot be driven from their haunts, we are forced to discard all our present theories of geographical distribution and return to that of special creation, or found our science upon the unknown quantities of general irruption probably caused by psychological disturbances of whose origin and intent we are ignorant.

Ranges can be, have been, and in the course of time, must many times have been, changed by necessity when the changes in conditions occur slowly enough so that, though individuals may not, the whole species might have advanced or retreated. In this same manner, we know that even our forests have migrated back and forth across the continent before the face of the glacial ice, climbed mountains and descended valleys, though each individual tree or plant remained rooted for life to the spot where it originally sprouted. If plants can and have done this, I see no reason why birds could not also, as even in the most extreme case of local

attachment, a bird can never be as firmly fixed to its station as trees and plants are to theirs.

The cases of extermination cited are where the changes had come too suddenly, or where the species had become stereotyped or inflexible in habits and structure by too long and great success under peculiar conditions, and so lacked the elasticity of nature necessary to modify itself and its life to slight changes of environment.

A. R. Wallace has outlined another idea on the subject. He suggests, in 'Island Life,' that the migrants are in search of soft-bodied insects suitable for nestlings; that, as the season advances in the tropics, it becomes dryer and dryer, and such insects soon disappear. According to this view, it seems at first sight to be a seeking after food of a certain quality. Reduced to its lowest terms however, it appears as a very different matter, namely, a question of quantity. It is admitted that, even in the tropics, there is at least a short season when there are insects of a suitable quality for nestlings. That this season is long enough to raise birds, is evident, for many species closely related to our migrants successfully nest and raise their broods there. If all birds bred there at this same period, there would be suitable food there and migrations would be unnecessary. That they do not, is an indication that some other factor enters into the question, and it seems very probable that all birds breeding contemporaneously would exhaust the supply of such food. The question, then, is one of quantity more than quality.

It may be objected that each species requires its own special food at the critical nesting period, which may not be obtainable everywhere. Now, if there is any truth in our present evolutionary theory, great changes in food habits have occurred in all our species. But the new food supply must, in each and every case, have occurred before the habits and structure for utilizing it appeared. Therefore, food habits could never have originated migrations, though migration undoubtedly has had a great influence in modifying food habits.

It must be remembered also, that migration is a dangerous undertaking to a race. A journey covering thousands of miles, to be performed against innumerable enemies, both personal and

elementary, into a country just recovering from the rigors of winter, is a very hazardous solution of any problem. Especially must this have been true in the early days of the habit, when the races were much less adequately provided with hereditary experience and structure necessary for its successful conclusion. In this light, it seems highly improbable that anything short of the sternest necessity would favor the development of a habit so fraught with danger to the individuals of a species; and that, if any less hazardous solution were possible, it would have been taken advantage of.

The great diversity of food and nesting habits exhibited by closely allied species, shows how easily, comparatively speaking, these habits are modified. Therefore, if any peculiar nesting or food requirements menaced the welfare of tropical residents to the extent that must have been necessary to produce migration, it is reasonable to suppose these habits would have been altered to suit surroundings long before such a dangerous habit as migration could have been adopted.

The natural inference is that the problem was something that could be solved in no less hazardous way. For it would be much easier for birds to learn to build woven pensile nests at the end of long slender branches, or to adopt food that closely allied species found acceptable, than to create all the elaborate instincts, powers and structures necessary to enable them to traverse great stretches of country unguided, and in the face of meteorological disturbances, new enemies, strange foods, and all the dangers attendant upon migration. These grounds, then, alone seem sufficient to discredit any such phenomena as the foregoing, as prime causes in the origination of this habit.

The one cause that seems adequate to produce such great results, is that one which ultimately rules the whole animate world—the sufficiency of the food supply. Admitting that in the tropics there is, at any time, or more especially during the migration seasons, a lack of, or a severe struggle for food, and we have a necessity sufficiently imperative to cause the origin of any habit that it is possible to form. Mr. J. A. Allen, and others, have shown that the usual struggle for existence, always and everywhere intensely severe, is sufficient to cause an overflow into an

adjoining area whenever that area assumes conditions favorable for the support of an increased population. The return of spring causes the favorable conditions in the north, and the spring migration is the evidence of the overflow. The approach of winter influences life in the same manner, but the overflow, or migration is in the opposite direction.

Mr. Allen has very aptly applied the saying that "Nature abhors a vacuum," and suggests that migration is the only manner in which a zoölogical vacuum, in a country whose life-supporting capacity is a regularly fluctuating quantity, can be filled by non-hibernating animals.

That this view is correct, I do not think can be doubted, but there is another factor in the case that does not seem to have been generally perceived,—a fact that strengthens the foregoing reasoning manifold. True, Mr. Newton, in his 'Dictionary of Birds' has suggested it, but without apparently perceiving what a powerful factor it must prove in the case. I refer to the effect of the large increase of life in the breeding season, in an already thickly populated country, such as the southern stations must be just previous to the spring migration, coincident with the opening up for settlement of a vast adjoining and practically unoccupied territory, by the seasonal recession of the winter ice cap. Under the "Law of Malthus" we find a country to the south of us, populated to its fullest extent during the winter. Spring comes, and nearly every pair of birds has a nest full of young, requiring great quantities of food. The food demand must be increased to many times what it was before. There would, of course, be an increase in this food supply, due to the influence of spring, but it would not be in proportion to the demand. This inadequacy of the food supply is brought home to us very clearly if we reflect upon the fact that it takes the whole northern hemisphere to support the species in the summer that all through the winter were confined to a very limited territory; and that even then, during the time of greatest dispersal and food supply, the competition is always keen. Considering, then, that this great increase in population happens contemporaneously with an equal growth of the food producing territory due to the return of spring, it does not seem at all wonderful that the birds should migrate to utilize a

plentiful food supply and escape death by the causes attendant upon the evils of insufficient nourishment.

Migration, if the outcome of these phenomena, probably would have originated in the following manner. In the beginning of the breeding season, the competition would originate in the areas containing the earliest breeders, and would be severest in the most productive districts. Here the strongest species would soon drive out the weaker ones and the later breeders, which, having no parental ties to bind them to any one locality, would be more easily forced to leave than those already possessing nests— all other things, of course, being equal. These species, driven away, would encroach on others, forcing them out, in their turn, to trespass upon a wider circle of species. Thus the pressure arising from the congestion originating probably in the center of the winter residential area, would be felt to the farthest points of the populated territory. Any stringency of food supply invariably causes greater exertions on the part of the inhabitants, and hence wider ranging; and the slightest increase in sustaining power of adjoining lands would be immediately found and taken advantage of. As these species moved into the new country, their places would be quickly taken by those behind, and as the congestion was relieved, the impelling force would be constantly reinforced by the nesting of the later breeders as the season progressed.

The increase of population and life-supporting area would proceed regularly and evenly, so that the pressure would never exceed the relief. This nice balance would, of course, have been secured according to the laws of survival of the fittest — undesirable forms that would disturb the equilibrium, being either modified or eliminated.

Thus each species, crowded on by those behind, and enticed by the advance of those in front, would proceed onward until their own particular station had been reached. This point would be determined by one or more of several factors. The most obvious of these would be the failure of their particular food, the arrival of their nesting season, and the absence of superior competitors. When a species had reached this stage in its own particular migration, it would settle down and nest, and from then, to the end of its nidification period, would be fixed, and by its own increase

aid in driving forward those that had not yet found suitable conditions for nesting.

In the incipiency of the migration habit, the individual movements would be small, perhaps originating in a pair of birds, discovering an unexpected store of food on the side of a hill opposite their usual haunts. The birds that were bred here would find their way back the next year with greater ease than their parents did originally, and would be in a position to make further advances to the hill beyond. So each year, as the glacial ice receded, the territory suited for summer occupancy would be slightly enlarged, and the birds would each succeeding year, during the period of greatest stress, find sustenance a little to the northward of the preceding season's uttermost range.

The migratory movements and the differentiations of the breeding season are so closely connected that it is difficult to determine which originated first. Migration would delay breeding in the species that showed the slightest inclination towards the habit; and conversely, a delayed breeding season would actively assist the evolution of migration. The origination of both may have been simultaneous, though it is hard to imagine a time when some slight traces of migration would not have been beneficial to the races. At any rate, their effects would have been cumulative, each increasing and fixing the others. Once started, then, either or both would be rendered more and more pronounced, through natural selection, until the extreme limit profitable for each species was reached.

The gradual extension of the extreme summer range, as the glacial ice cap retreated, would most probably have been by means of the younger individuals, or birds in their first breeding season, of each species, as these would be weaker, and more easily driven than the older ones that would have become more attached to their local habitats. It seems universally true that young birds do not often return to the immediate vicinity of the place where they are raised. There is a dispersing influence of some sort at work here. It is said that the older ones drive their offspring away from their hunting grounds when those offspring are able to take care of themselves. I cannot say from actual experience that they do this, but it seems so advantageous a

habit that its development is not only possible but very probable, and just what the student of evolution would expect.

This scattering of the younger individuals, however it was brought about, would then favor the extension of the migration range by the ones thus driven to wander from their accustomed haunts. As further substantiation of this, it is to be noticed that birds found far from their natural haunts are usually immature specimens.

A young bird on its first spring migration, would naturally return to the familiar place where it was raised. Being driven away from here, it would wander about until it found a suitable location for its own breeding — perhaps a mile, perhaps two, maybe less, away from its original home. The succeeding years, it would return to this new haunt, and the range of the species could be extended by its offspring. Thus, each bird would follow the route taken by its parents, and thus each point on a migration route would indicate the place that was once the ultimate goal of the migrations of its ancestors.

Migrations to true oceanic islands are more difficult to explain along these lines, but I do not think that they invalidate the reasoning in any way. Migrating birds certainly have wonderful, and as yet mysterious, senses of location and direction, and it is not too much to say that a bird, once it has traveled a certain journey, is usually able to find its way over the same path again. A pair of birds have only to be storm-blown to one of these isolated spots, breed there, and return with its progeny, to start a tendency in their offspring to migrate to the same place again. As long as the least tendency to an advantageous migration were started, natural selection would confirm, increase, and fix the habit firmly; and along with this, the new senses, structures and habits necessary to their accomplishment. It is unlikely, however, that this type of migration could be started until after certain powers and senses had been developed by migrations to other localities. They must, therefore, be regarded as secondary movements originally, though in some cases they have become now the prime or only migrations of the species by the extermination of all those individuals that adhered to the original routes.

The return movement in the fall is the same thing, nearly, as

the spring migration, but reversed. The shortage in food, however, is not caused, except indirectly, when the first migrants encroach upon those below them, by the increase of population, but by the direct failure of the food supply. It is perfectly evident that certain species must return south again, or stay and surely starve. The total population, however, of any area, cannot permanently remain greater than the number that can be sustained through the season of least food supply. During the height of the breeding season, there are many more birds than can be carried through the winter in the restricted southern stations, and if they are to return there again, the excess must be got rid of. Many of them are killed off at a very tender age — probably the great majority of them fail to survive the fledgling stage. Many more, young and inexperienced, must perish when first they leave the protecting influence of the parent's care. Others are battered about by the storms and destroyed by the perils incident to the fall migration. The few surplus that remain are subjected to a stricter and stricter process of selection as they reach more congested areas; and, in the end, the total population fits into its place in the winter quarters, to the extreme limit of the supporting powers of the land.

These migrations, in their earliest stages, must then have originated in a conscious seeking for food — not special food, but any food that would support them. Accidental wanderings taught them where to find it, and experience suggested their return there on the first approach of a stringency in the food supplies. In course of time, the movement became habitual, and generations of repetition rendered it instinctive. Instinct, having the same relation to judgment as automatic machinery has to ordinary mechanism, would be favored through natural selection; and as the birds acquired the peculiar powers necessary, migrations assumed all the varied phenomena that they exhibit to-day.

EXTRACTS FROM AN UNPUBLISHED JOURNAL OF
JOHN JAMES AUDUBON.

BY RUTHVEN DEANE.

THE Journal from which these extracts are taken, covers the period from October 12, 1820, to December 30, 1821. This would have been included in 'Audubon and his Journals' but unfortunately it did not fall into the hands of the author until more than a year after this work had been completed and published. I am under many obligations to Miss M. R. Audubon for the privilege of publishing fourteen days of this diary, covering dates between October 12, 1820, and November 25, 1821. As there is now but little unpublished Auduboniana, excepting family letters, this portion of the Journal is of peculiar interest. It shows that period of the great naturalist's life, eleven years before the publication of the first volume of his 'Ornithological Biography,' when, without money and living where his talents were not appreciated, he was making a fight in which few could have conquered under similar conditions. To fully appreciate the 'Birds of America' one must read the early life of the author.

FROM AUDUBON'S JOURNAL.

Oct. 12th, 1820 (*On the Ohio*). Shot an Autumnal Warbler¹ as Mr. A. Wilson is pleased to designate the young of the Yellow rumped Warbler; this was a young male in beautiful plumage for the season, and I drew it, as I feel perfectly convinced Mr. Wilson has made an error in presenting the bird as a new species.

¹ As is well known, Wilson's Autumnal Warbler (*Sylvia autumnalis*) is the Bay-breasted Warbler (*Dendroica castanea*) or the Black-poll Warbler (*Dendroica striata*), according to different authors, in first winter plumage, while Audubon, detecting the fact that it was a young bird of a known species, failed to identify it correctly. This was not at all strange, for at that early date much had to be learned of the immature plumages of our birds. I have good cause to state that some people are too ready to call Audubon careless when it was not carelessness but ignorance, which was perfectly natural and excusable in those days, and which he had neither time nor opportunity to correct until later.

Oct. 14th, 1820. We returned to our boat with a Wild Turkey, a Telltale Godwit and a Hermit Thrush which was too much torn to make a drawing of it; this was the first time I had met with this bird and I felt particularly mortified at its condition.

Nov. 2nd, 1820. Floated down slowly within two miles of Henderson, I can scarcely conceive that I stayed there eight years and passed therein comfortably, for it is undoubtedly on the poorest spot in the country, according to my present opinion.

Nov. 3rd, 1820. We left our harbor at daybreak and passed Henderson about sunrise. I looked on the Mill¹ perhaps for the last time, and with thoughts that made my blood almost run cold, bid it an eternal farewell.

Nov. 23rd, 1820. I saw two large Eagle's Nests, one of them I remembered seeing as I went to New Orleans eighteen months ago. It had been worked upon, and no doubt young were raised in it. It is in a large cypress tree not very high, made of very large dead sticks, and about eight feet in diameter.

New Orleans, Jan. 12th, 1821. Early this morning I met an Italian painter at the theatre. I took him to N. Berthoud's² rooms and showed him the drawing of the White-headed Eagle. He was much pleased took me to his painting apartment at the theatre, then to the Directors, who very roughly offered me \$100 per month to paint with Monsieur l'Italien. I believe really now that my talents must be poor.

Jan. 13th, 1821. I rose up early tormented by many disagreeable thoughts, again nearly without a cent, in a bustling city where no one cares a fig for a man in my situation. I walked to Jarvis³ the portrait painter and showed him some of my drawings. He leaned down, and examined them minutely, but never said they were good or bad; merely that when *he* drew an Eagle he made it resemble a Lion, and covered it with yellow feathers, or rather hair, not feathers, curious speech. Some people entered and

¹ The Grist Mill erected by Audubon and Bakewell was completed in 1817 and still stands as a part of and adjoining the warehouse of Mr. David Clark, and is used for the storage of leaf tobacco.

² Nicholas Augustus-Berthoud, brother-in-law of Audubon.

³ John Wesley Jarvis, a self-taught portrait painter, who lived in New Orleans, Louisiana, in 1820-1821. Born 1780, died 1834.

were so well pleased with my Eagle that they praised it, and Jarvis rudely whistled. I called him aside while Joseph [Mason]¹ rolled up my papers, and told him I had heard he required assistance to finish his portraits, *i.e.*, clothing and ground, and added that I had received good lessons from excellent masters. He asked me to come the next day and he would talk about it.

Jan. 14th, 1821. Called on Jarvis and did some work for him, but was but poorly paid, and found him so discourteous I shall not go again.

March 31st, 1821. I have spent my time these three days more at thinking than anything else, and often indeed have I thought my head very heavy. This morning I waited on Mr. Gordon² with a wish to receive from him an amendment to my letter to the President for all in my head is the Pacific expedition. I called on Mr. Vanderlyn,³ the historical painter with my portfolio, to show him some of my birds, with a view to ask him for a few lines of recommendation. He examined them attentively and called them *handsomely done*, but being far from possessing any knowledge of Ornithology or Natural History, I was quite satisfied he was no judge, but of their being better or worse shaded. Yet he spoke of the beautiful coloring and good positions, and told me he would with pleasure give me a certificate of *his having inspected them*. Are all men of talents fools and rude naturally, or intentionally? I cannot assert, but have often thought they were one or the other.

April 9th, 1821. Saw many birds of which I made a list, there are thirty-three. To see these in their haunts I was since half past two o'clock this morning until five this afternoon, wading often to my middle through the swamps, and then walking through the thickest woods I believe I have ever seen. Here is my list:

¹ Joseph Mason, son of a gentleman in Cincinnati, Ohio, of whom Audubon writes in his Journal: "October 12, 1820. Left Cincinnati today with Capt. Cummings and Joseph Mason, a youth about 18 years of age, he is intended as a companion and friend as well as a pupil." He remained with Audubon until July, 1822.

² Alexander Gordon, a Scotchman, who married Ann Bakewell, youngest sister of Mrs. John James Audubon.

³ John Vanderlyn, an historic painter, born 1776, died 23 September, 1852.

Mocking Birds, Orchard Orioles, Painted Buntings, Maryland Yellow-throats, Marsh Wrens, Water Crake, White-crowned Buntings, Indigo Buntings, Scarlet Tanagers, Turtle Doves, Tell-tale Godwits, Solitary Snipes, Bartram Snipes, Comorants, Sprig-tail Ducks, Purple Grackles, Blue Yellow-backed Warblers, Cardinal Grosbeaks, Yellow-billed Cuckoos, Large-crested Flycatchers, White-eyed Flycatchers, Nighthawks, Turkey Buzzards, Carrion Crows, Common Gulls, Carolina Wrens, Partridges, Cliff Swallow, Barn Swallow, Green-blue Swallow,¹ White-bellied Swallow, Bank Swallow, besides a species of Heron new to me, and to all the hunters here. I killed it near Lake Barataria. I have drawn it in an awkward position.

Aug. 21st, 1821. Watched all night by the dead body of a friend of Mrs. Percy²; he was not known to me and had literally drunk himself to an everlasting sleep. Peace to his soul. I made a good sketch of his head as a present for his poor wife. On such occasions time flies very slow indeed, so much so that it looked as if it stood still, like the Hawk that poises over its prey.

Nov. 2nd, 1821. Finished my drawings of the Crested Hawk,³ which proved a female. How rare the bird is I may not say being the only specimen I have ever seen, though I once before found some tail feathers of another killed by a squatter on the Ohio, which tail feathers having been kept compared exactly with these of the present bird.

Nov. 10th, 1821. Continue my close application to my ornithology, writing every day from morning until night, omitting no observation, correcting, re-arranging from my notes and measurements, and posting up; particularly all my land birds. The great many errors I found in the work of Wilson astonished me. I try to speak of them with care, and as seldom as possible, knowing

¹ In 'Birds of America,' 8vo, Vol. I, 1840, p. 176, we read "Green-blue or White-bellied Swallow, *Hirundo viridis*, Wils. Amer. Orn. Vol. III, p. 44." This shows that Audubon knew that these names referred to the same species and the enumerating of both in this list was evidently unintentional, though written at an earlier date.

² Mrs. Charles Percy of Bayou Sara, Louisiana, in whose home Audubon's wife lived while he was abroad from 1826 to 1830.

³ No previous mention of this Hawk is recorded in this Journal.

the good wish of that man, the hurry he was in, and the vast many heresay accounts he depended on.

Nov. 25th, 1821. Since I left Cincinnati I have finished 62 drawings of birds and plants, 3 quadrupeds, 2 snakes, fifty portraits of all sorts, and the large one of Father Antonio, besides giving many lessons and I have made out to send money to my wife sufficient for her and my Kentucky lads, and to live in humble comfort with only my talents and industry, without *one cent* to begin on.

THE EFFECT OF ALTITUDE ON BIRD MIGRATION.

BY WELLS W. COOKE.

SURROUNDED by mountains, Asheville, North Carolina, is situated in the valley of the French Broad River, at an altitude of two thousand feet. Directly east is Raleigh, at about three hundred feet above ocean level. This difference in altitude causes quite a difference in the climate of the two places; the average temperature at Raleigh is about 60° F., while at Asheville it is five degrees colder. The former is in the Austro-riparian life zone, the latter at the extreme upper limit of the Carolinian. A difference in the avifauna naturally follows these variations in climate. The higher altitude of Asheville prevents some birds from occurring there that are found in summer at Raleigh. Among these may be mentioned the Chuck-will's-widow, Blue Grosbeak, and the Prothonotary Warbler. In a larger number of cases, birds remain through the winter at Raleigh that are seldom if ever found at Asheville during this season. Examples of this class are the Swamp Sparrow, Chewink, Brown Thrasher, and Ruby-crowned Kinglet. These all appear at Asheville as spring migrants.

A few mountain-loving species are regular visitors at Asheville, but occur as rare stragglers only at Raleigh. The Baltimore Oriole is a striking example, and the same preference is shown by the Olive-sided Flycatcher and the Blackburnian Warbler.

As would be expected, spring migration is, on the whole, later at Asheville than at Raleigh, and the voluminous records of the Biological Survey furnish data for a quite exact statement of the amount of variation in the times of arrival at the two places. The late J. S. Cairns sent migration notes for the years 1890 to 1894, inclusive, from the town of Weaverville, ten miles distant from Asheville; Minot Davis recorded the dates of arrival of the birds at Asheville in 1899, and W. M. Rackett the same data for 1902 at Weaverville. These seven years of observation furnish a satisfactory basis for estimating the average dates of arrival in this district. From C. S. Brimley, at Raleigh, the Biological Survey has received a very full report on migration for eighteen years, from 1885, the whole forming, probably, the largest amount of migration data ever recorded by one person at any one locality in the United States. With this amount of material at command, the movements of the birds at Raleigh can be ascertained with great accuracy.

Twenty-one species of common birds arrive in the spring at Raleigh, on the average, 3.6 days earlier than at Asheville, or one day earlier for each 1.4° F. that Raleigh is warmer than Asheville. Most of these birds were migrating during April, and for this month the temperature of the two localities differs scarcely four degrees. Therefore, it can be said that with reference to these two localities spring migration is delayed one day for each degree of cold. This relation, of course, would not hold good for other localities, though the migration between Raleigh and Washington is not much different. During April Raleigh averages six degrees warmer than Washington, and the birds average eight days in making the journey of the two hundred miles between the two places, or one and a third days for each degree of temperature. The trip from St. Louis to St. Paul is performed at a rate of about a day and a half for each degree of difference in temperature.

These statements are the averages of such widely differing quantities that they cannot be used to ascertain even approximately the time that any particular species requires in its passage from one locality to another.

The following dates show how greatly the different species vary in the time of their arrival at the two places, Raleigh and Asheville.

Species.	Average of the first seen.		Difference. Days.
	Raleigh.	Asheville.	
Black and White Warbler	March 26	April 2	7
Blue Gray Gnatcatcher	" 26	March 28	2
Parula Warbler	April 9	April 16	7
Rough-winged Swallow	" 11	" 14	3
Summer Warbler	" 13	" 15	2
Whip-poor-will	" 14	" 18	4
Ovenbird	" 14	" 20	6
Red-eyed Vireo	" 15	" 26	8
Yellow-throated Vireo	" 15	" 21	6
Kingbird	" 17	" 24	7
Wood Thrush	" 17	" 19	2
Ruby-throated Hummer	" 18	" 22	4
Great Crested Flycatcher	" 18	" 20	2
Hooded Warbler	" 18	" 20	2
Summer Tanager	" 20	" 22	2
Catbird	" 20	" 20	0
Wood Pewee	" 24	" 29	5
Chat	" 24	" 26	2
Indigo Bird	" 28	" 30	2
Black-poll Warbler	May 3	May 5	2
Yellow-billed Cuckoo	" 3	" 4	1
Average	April 17	April 21	3.6

In addition there are three species that move much more slowly; the Yellow-throated Warbler appears at Raleigh March 26 and is not seen at Asheville until April 21, a difference of 26 days. The corresponding dates for the Maryland Yellow-throat are March 30 and April 18, a difference of 19 days. For the White-eyed Vireo the times of arrival are April 2 and April 15, a difference of 13 days. These three are all early migrants, and it is true in general that the earlier a species moves northward in the spring the slower will be its average daily advance. All three find near Asheville their highest extension into the mountains, and it is possible that this fact may account for their delayed arrival. Though when birds are migrating in a level country the opposite is true,— they migrate more rapidly as they approach the northern limit of their range.

The most interesting phase of the comparison of migration at the two localities is connected with the time of arrival of the following species:

Species.	Average of the first seen.		Difference. Days.
	Raleigh.	Asheville.	
Solitary Vireo	March 26	March 10	16
Worm-eating Warbler	April 24	April 20	4
Scarlet Tanager.	" 28	" 20	8
Black-throated Blue Warbler .	" 28	" 24	4
Rose-breasted Grosbeak . . .	May 2	" 23	9

Each of these species appears at Asheville, in the mountains, before being seen at Raleigh, on the plains. The probable explanation of this anomaly is that each of these species breeds commonly at Asheville, and rarely or never at Raleigh. There is here a striking and unexpected exemplification of the rule that *the southernmost breeding birds constitute the van in spring migration*. While the present sum of knowledge is not sufficient to warrant the statement that this rule is universal, and very likely further investigation will show some exceptions, yet the above facts furnish strong evidence in its favor.

SPRING BIRD MIGRATIONS OF 1903.

BY ELON HOWARD EATON.

BIRD migration is a very elusive subject. At least we have found it so in western New York, after trying for years to determine its times and seasons, bird routes and isoptoses, causes and results. Even if one could be everywhere all the while at the same time, it would be difficult to run down the last factor in this complex problem. Meanwhile we are after facts.

The writer has been greatly disappointed to find how imperfect are the records of observers in determining the presence of a bird at any given station, rendering it almost impossible to draw correctly the lines of simultaneous arrival. Consequently at Roches-

ter we have taken the observations of several workers at the same time, and thereby seek to determine the true time of arrival and degree of abundance of each species. It is quite surprising at our weekly meetings to learn that some common bird has been in the environs of the city for four or five days, perhaps, before many of us have seen it at all. By comparing and verifying observations we get much closer to the real facts.

Without burdening any one with a mass of detail, we wish to present some of the conclusions which have been reached as the result of observations made near Rochester during the spring of 1903.

First, regarding the yearly migration of hawks, it has been confirmed that an incredible number of these birds pass each spring along the southern shore of Lake Ontario and move toward the east over the country south of the lake, evidently making their way, around its eastern end, toward the north. The height of the migration occurs during the latter part of April and the first week in May. The birds are mostly Sharp-shinned and Broad-winged Hawks. A sprinkling of Marsh and Pigeon Hawks is always present, but surprisingly few of the Cooper's Hawk when its general abundance in many parts of the State is considered. It also seems unusual, at a time when Red-tailed and Red-shouldered Hawks are nesting in western New York, to see many of these species also, soaring high in the air and wheeling toward the east. This is not like the spring soaring of the Buteos over their nesting woods. Many are often seen together or in the same field of view and, as far as I have noticed on these occasions, they are absolutely silent, and when one party has passed off the scene another appears going in the same direction. Thus there is a constant whirling stream passing over, sometimes during the greater part of the day. When the wind is high the Hawks fly low, with less circling. The Sharp-shinned species flies lowest of all, and even in calm fair days, when Buteos are circling almost out of sight, this hawk moves mostly within gunshot. One morning at least one hundred of these birds passed over a single observer within two hours, and on another occasion we saw twenty-five of this species lying in one pile back of the little hotel on Buck Pond, where the proprietor had been trying his marksmanship after breakfast.

The writer was surprised to learn how many of these migrants are Broad-winged Hawks, but they were certainly a conspicuous part of the procession, from the 21st of April to the 17th of May. We were again reminded of this fact while spending the month of August near Lake Restoule in Canada, where the Sharp-shinned and Broad-winged Hawks were the commonest of the family. None of this latter species breeds about Rochester, and it is either of irregular distribution or much more a bird of the Northern Forests than we had previously supposed.

During the spring of 1903 there was a striking scarcity of some birds which are usually very common at our station. Among this number may be placed all warblers with the exception of the Myrtle Warbler, Mourning Warbler, Yellow Warbler, and Redstart. The Yellow-bellied Sapsucker was not more than one-fourth as abundant as in the preceding year; the White-throated Sparrow much less abundant than usual, and the Baltimore Oriole was, perhaps, sparingly represented.

Among the birds which were noted as unusually common were the Crested Flycatcher, Phœbe, Purple Finch, Junco, Indigo Bird, Yellow-throated Vireo, House Wren, Winter Wren, Ruby-crowned Kinglet, and Bluebird. The last-named species was certainly three times as abundant as in any spring since 1895. As many as twenty-seven of these birds were noticed in a single flock during the latter part of March. Their notes were everywhere heard along the roadside as one journeyed about the country.

The most peculiar feature of the spring migration of 1903 was the striking manner in which the general relationship between weather and bird waves was illustrated. During the third week in March a remarkably warm wave brought us the Phœbe and the Great Blue Heron on the 20th, at least a full week ahead of time; while the Robins, Bluebirds, Grackles, Blackbirds, and Meadowlarks, which had first appeared early in the month, became very common. Then as April progressed the season seemed to halt and falter. Although the average temperature was as high as usual, there was no decided warm wave. The early flowers came on in due time, but the leaving out of the trees was slow. April 29th found the shadbush just coming into bloom. On May 10 the foliage of the maples was about half out. Beeches, hornbeams,

and ash trees were just bursting the leaf buds. On May 12 apple orchards were in the height of bloom. But no great migration wave had reached us. Nearly all the May migrants were from four to nine days behind time. Twenty-five observers from the Bird Section of the Rochester Academy of Science were scouring the fields and groves, eager to make a full record of the migrations at our station. The birds did not escape us unless they did it at night. The nearest thing to a migration wave came on the 3rd of May when forty-eight species of birds, including five species of warblers, were seen by a single observer. These species were not all new arrivals, but many of them were. A southerly wind had prevailed throughout the preceding day and evening, but ended in cool, lowering weather. Two nights before ice had frozen one-fourth of an inch in thickness.

In 1902 the greatest bird wave of the season likewise occurred on the 3rd of May, when the same observer above referred to recorded seventy-five species of birds, including nineteen species of warblers. That, however, was a perfect day, warm and sunny, following a low cyclonic center moving from the southwest and culminating in a shower during the night. During the warbler season of 1903 there was no decided southwest cyclonic storm and no remarkable warbler wave. All concomitants of the season conspired to retard and dissipate any wave of migrants in early May. No warm southwest wind swept them upon us. The gradual unfolding of the leaves furnished no sudden opportunities of shelter and insect food. The nights, being uniformly clear and free from storms, did not compel the migrating hosts to halt in our territory. The northern species which came to us were only those which were induced to stop for rest and food as they leisurely pursued the journey toward their breeding grounds. The result of all of these causes was a gradual and uninterrupted stream of migration with little dash and rush and concentration.

These facts tend to show that the shy, foliage inhabiting birds travel largely on the crests of warm waves advancing from the south, and as in western New York these waves usually come from the southwest, it is undoubtedly true that our birds mostly come from that direction. It is not true that birds migrate *only* with the aid of favoring winds; nor when the weather gets warm enough to

be grateful to their sensibilities; nor at night, coming to the earth when the rain or storm overtakes them; nor when a certain kind of food first makes its appearance. Nevertheless all these factors doubtless enter into the problem. Certainly there is a sudden increase of foliage-hunting insects when the leaves unfold. The foliage unfolds when the heat, moisture, and sunshine become favorable. Insectivorous, foliage-inhabiting birds would show little adaptation to their environments if they did not attend the feast spread for them. The food, protection, and grateful temperature are there all at the same time. The birds are there also as sure as the unfolding of leaves follows the advent of springtime, and the increase of insects accompanies the unfolding of the leaves, and the predacious insects the development of their prey. Thus natural selection has finally evolved a large number of species of birds with migratory habits.

THE CASE OF *MEGALESTRIS VS. CATHARACTA.*

BY J. A. ALLEN.

It is claimed by Mr. Franz Poche in the 'Ornithologische Monatsberichte' for February, 1904 (Jahrg. XII, No. 2, p. 23), that the name *Catharacta* Brünnich, 1764, should replace *Megalestris* Bonaparte, 1856, on the ground of priority, and that Brünnich's name should be orthographically improved to stand as *Catarracta*. As this name has, by different authors, been used for several different groups and spelled in many different ways, its history has, in the present connection, considerable interest. It appears to have been first used, in what may be considered a generic sense, by the pre-Linnæan author Moehring in 1752, and in a subsequent edition of his work issued by Nozeman and Vosmaer in 1758. There is necessarily no reference in either edition of Moehring's work to the tenth edition of Linnæus's 'Systema Naturæ,' even the second edition being essentially prior to the beginning of the binomial system. Also, Moehring was not a bi-

nomialist. His form of the word was *Cataractes*, and it was used for the genus of Guillemots now currently known as *Uria*.

It was next employed by Brisson in 1760, as *Catarractes*, for the 'Gorfou' (*Phaëthon demersus* Linn.), a Penguin, now known as *Catarractes chrysocome*; and this constitutes the only tenable application of the name. In 1764 the same word, in the form *Catharacta*, was used in a generic sense by Brünnich for the Skuas. He refers in a footnote to the fact that Brisson had previously made use of the name as a generic designation for *Phaëthon demersus* Linn. (= *Catarractes chrysocome* auct., but which should stand as *Catarractes demersus* ex Linn.¹), but adopts it, notwithstanding, for the Skua Gull because he thinks the name as used by the old authors referred to this bird. It should be noted that he renders Brisson's name, in this connection, with an *h*,—*Catharractes*,—further evidence that the two names are simply variants of the same word, the *Cataracta* of Pliny. The following is a list of some of the variants of it which have been used by different systematic writers:

Cataracta Retzius, 1800; Bonap., 1838, 1856, etc.

Catarracta Pallas, 1811; Leach, 1819; Poche, 1904.

Catharacta Brünnich, 1764.

Catharractes Brünnich, 1764.

Cataractes Moehring, 1752; Fleming, 1819; Gray, 1841.

Catarractes Brisson, 1760; Gray, 1846; Bryant, 1861.

Catarhactes Brandt, 1847.

Catarractes Hombr. & Jacq., 1841; Ogilvie-Grant, 1898.

As to the generic name of the Skuas, it cannot be *Cataracta*, nor *Catarracta*, nor *Cataractes*, nor *Catharacta*, each of which has been used for them, as all are preoccupied by *Catarractes* Brisson, which also has several variants, for a genus of Penguins; all are merely variants of an original *Cataracta* used by Pliny and other early authors for some apparently unidentifiable large oceanic bird. *Catharacta* Brünnich, were it otherwise tenable, is a synonym

¹ The name *demersus* appears to have been rejected for this species on account of a previous *Diomedea demersa* Linn. = *Spheniscus demersus* auct. mod.; but as *Phaëthon demersus* Linn. and *Diomedea demersa* Linn. refer to species belonging to different genera, there is no reason why the specific name *demersa* is not tenable for both.

of *Stercorarius* Brisson, which he intended it to replace, as shown by his citation of Brisson, although he included in it the Skua Gull, left in *Larus* by Brisson. His first species is *Catharacta skua*, and his second, *C. cephus*, which he figured, including structural details, which thus renders it properly the type of *Catharacta*.¹

Brisson (1764) founded the genus *Stercorarius* for the Jaegers, but left the Skuas in *Larus*. Illiger in 1811 proposed *Lestris* for the Jaegers and Skuas, citing both *Catharacta* Brünnich and *Stercorarius* Brisson, but recent authorities agree in considering *Lestris* a synonym of *Stercorarius*. Coues in 1863 adopted the name *Buphagus* for the Skuas, taking it from Moehring, 1752, but subsequently abandoned it, Moehring's names being pre-Linnæan and hence not available.

The first tenable generic name for the Skua Gulls is thus *Megalestris* Bonaparte, 1856, as now currently recognized.

The case of *Megalestris* vs. *Catharacta* temptingly offers a text for further remarks on general questions here involved. *Catharacta* presents a good example of the results of emendation, for whether used as a generic name for Penguins, Guillemots, or Skuas, the word occurs in several forms in each case, while the same form is found applied to more than one of the generic groups, the form employed varying with the preferences of the authors using the word. The forms *Catharacta*, *Cataracta*, *Catar-racta*, *Cataractes*, and *Catarhactes* have, for example, all been applied to the Skuas, and also *catarrhactes* in a specific sense. As cases like this are frequent in zoölogical nomenclature, it is manifestly best to employ only the original form, even if faulty, and to apply the rule of priority to the forms of names as well as to the names themselves. Further, it is emphatically evident that of variants of the same word only the form having priority should be available, while all the others should be rejected.

¹The 'Code of Botanical Nomenclature,' prepared by a Nomenclature Commission of the Botanical Club of the American Association for the Advancement of Science, has been published since this article was sent to the printer (see notice of this Code in 'Recent Literature'), in which, under Canon 15, which deals with the selection of a nomenclatorial type of a genus or subgenus, it is provided: "(b) A figured species is to be selected [as the type] rather than an unfigured species in the same work."

On the other hand, names closely similar in form but known to be different etymologically and in significance, as *Picus* and *Pica*, *Simia* and *Simias*, should be accepted, but knowingly to add to the list of such names must be considered highly undesirable. Such cases are fortunately few, and afford no support for the recently proffered 'one-letter' rule, which would admit any number of literal variants of the same word, even where they fall not only into the same class of animals but even into the same family, as sometimes happens. Even the most strenuous supporters of this innovation are compelled to admit exceptions to its uniform application; and among those who accept it in a modified sense there is lack of agreement as to where the limit should be placed. The 'one-letter' rule would not only admit variants due to gender endings (*cf.* Poche, *l. c.*¹), but to different connecting vowels in compound words, the use or non-use of the aspirate in certain classes of words of Greek origin, the use of *l* or *ll*, *r* or *rr* in many words, the use interchangeably of *i* and *y*, etc. Some who reject differences in gender endings as insufficient differentiation, like *Chlorurus* and *Chlorura*, admit differentiation due to the use of a different connecting vowel, as in *Contopus* and *Contipus*. It seems therefore more conducive to uniformity to maintain the usages of the A. O. U. Committee on Nomenclature in treating as homonyms all variants of the same word, as is generally the custom among naturalists at large, and also exclude emendations, and take names as first proposed by their originators, even if sometimes obviously faulty in construction, and extend, as already said, the rule of priority to the *forms* of names as well as to the names themselves.

¹ Many cases can be cited where the same generic name has been used in all three genders by the same author in the same work or paper, or in different papers within a short period of time. On this point see Palmer (*Index Gen. Mamm.*, 1904, p. 28) on the case of *Pogonias*. See also the same author (*l. c.*, p. 23) on 'emendations.'

ADDITIONAL NOTES ON THE BIRDS OF THE
UPPER PECOS.BY FLORENCE MERRIAM BAILEY.¹

IN 1883 Mr. H. W. Henshaw and Mr. E. W. Nelson spent three months in New Mexico, on the Upper Pecos River which cuts through the southern end of the Rocky Mountains between the desert valley of the Rio Grande on the west and the high plains of the Rocky Mountain plateau on the east. Their camp, which, as Mr. Henshaw says, was the focus of their operations, was only a few miles north of a road that is now being made across the mountains connecting Santa Fé and Las Vegas. The bird notes taken during their stay were published in 'The Auk' under the title, 'List of Birds observed in Summer and Fall on the Upper Pecos River, New Mexico,'² but as their observations were restricted to an area of five square miles, more extended work in the region was left, as Mr. Henshaw explains, for "the labors of future investigators."

While engaged in Biological Survey work last summer, Mr. Bailey and I crossed from the Staked Plains to the southern end of the Rocky Mountains and spent six weeks on the Pecos Forest Reserve, following the Pecos Cañon through the section covered by Mr. Henshaw's notes (his camp was located at 7800 feet), packing up the mountains to the actual sources of the river, and climbing to the summits of Pecos Baldy, and the Truchas Peaks which, at an altitude of over 13,300 feet, mark the vertical faunal terminus of the region. As we entered the Pecos Cañon from the south on July 11, and after working up to the peaks left it again on August 24, we did not see the later migrants recorded by Mr. Henshaw, and since the bird work was only a part of the general biological work to be done, we, in turn, had to leave much to 'future investigators.' The species that we added to Mr. Henshaw's list were mainly Upper Sonoran foothill birds or those

¹ Published with the permission of Dr. C. Hart Merriam, Chief of the Biological Survey.

² 'The Auk,' II, 1885, pp. 326-333; III, 1886, pp. 73-80.

of the Hudsonian and Alpine zones found on or near the peaks. By reason of our more extended vertical work we were able to throw new light on the distribution of the species noted by Mr. Henshaw, fixing altitudes, and in some instances correcting inferences.

As the mountains are pointed with peaks reaching up to twelve or thirteen thousand feet, they attract abundant rains and are supplied with innumerable glacial lakes and streams, and consequently afford a rich vegetation and a wealth of insect life, which, in turn, support a numerically rich avifauna. Vertically the mountains offer congenial homes for a wide range of species, as they include, from the foothills to the peaks, the Upper Sonoran, Transition, Canadian, Hudsonian, and Alpine zones, with their characteristic trees from low piñones and junipers through yellow pines, spruces and firs, dwarf timberline pines and firs, dwarf willows fruiting at three inches, and finally on the peaks, dense mats of arctic plants. Correlated with the floral zones the birds range from Upper Sonoran Piñon Jays to Alpine Pipits and, in rare instances, Ptarmigan. Species like the Vesper Sparrow and Horned Lark, unusual mountain birds, find suitable homes on the broad, treeless, grassy mesas that, lying above ten thousand feet, extend for miles along the range, for, at this southern end the range is already beginning to broaden out into the Rocky Mountain plateau.

The exact locality covered by our list of birds is the core of the extreme southern end of the Rocky Mountains, that is, the north and south section drained by the Pecos River, specifically from the source of the Pecos at the foot of the Truchas Peaks southward to the mouth of the Pecos Cañon at the village of Pecos. To this is added an east and west section seven miles along the foothills on the lower edge of the Transition zone, from Pecos to Glorieta, where the Glorieta divide, on the Santa Fé R. R., separates the drainage of the Rio Grande from that of the Pecos River.

The foothill notes in the list that follows were made before entering the mountains, while the mountain list was made, as stated above, between July 11 and August 24, 1903.

Actitis macularia. SPOTTED SANDPIPER.—Two families of young were found at 8000 feet in the Transition zone where Mr. Henshaw found breeding birds. One brood left the nest on July 15, the other probably a week later. An adult male in beautiful, fresh winter plumage was shot on August 15 by the lake at the foot of Pecos Baldy, at 11,600 feet, and another, August 24, on the Pecos at 7200 feet.

Dendragapus obscurus. DUSKY GROUSE.—Grouse were found throughout the Canadian and Hudsonian zones, but the total number seen by our party during the month that we were in their country was only eleven cocks, nine hens, and six small broods of young. As the birds are supposed to lay from seven to ten eggs and the number of young attributed to four out of the six broods seen was respectively one, two, three, and four, we surmised that the severe mountain hailstorms had depleted the families. Near our camp at the foot of Pecos Baldy, Mr. Bailey discovered a winter roosting tree of the grouse. The tree was on a sheltered part of the wooded slope and was so densely branched that after a prolonged rain the ground beneath was perfectly dry. The earth was strewn with winter droppings, composed entirely of leaves of conifers. Conifer needles had also been eaten by three of the grouse that were taken, under our collecting permit, in July and August, but at this season the birds were living principally on such fresh food as strawberries, bearberries (*Arctostaphylos uvaurisa*), shepherdia berries, flowers of the lupine and paint brush, seeds, green leaves, grasshoppers, caterpillars, ants, and other insects. One crop contained twenty-seven strawberries, twenty-eight bearberries, and twelve shepherdia berries, besides flowers, leaves, and insects, while the accompanying gizzard was filled with seeds, green leaves, and insects.

Lagopus leucurus altipetens. SOUTHERN WHITE-TAILED PTARMIGAN.—A cattleman and one of the range riders of the Reserve both reported having seen a few ptarmigan in previous seasons on the highest peaks, but although Pecos Baldy (12,600 feet) was climbed seven times by different members of our party and Truchas (13,300 feet) three times, our anxious search for the birds was not rewarded. It must be said, however, that on several of our ascents the wind was blowing a gale that would have driven most birds to cover. As this is the extreme southern limit of the Alpine zone in the Rocky Mountain system, and as there is a break of approximately thirty or forty miles in the Hudsonian zone between the high peaks of the Pecos Mountains and the Taos Mountains thirty or forty miles farther north, the range sweeping down to 9300 feet in the lower Canadian zone at Taos Pass, it is hardly to be expected that ptarmigan would be abundant on this isolated southern extremity of the range. There are, however, undoubtedly a few of the birds on the southernmost of the high peaks. At the southern end of the gap in the Hudsonian zone, the game warden told us, eleven years ago he found two of the ptarmigan near Mora Pass at an altitude of more than 11,000 feet. We did not succeed in finding any of the birds, however, even in the Taos

Mountains north of the pass, but, convinced that they must be there, Mr. Bailey, on leaving an assistant, McClure Surber, to collect in the region during the winter months, gave him special instructions to hunt for ptarmigan. The last of January Mr. Surber made a two days' snowshoe trip around the high peaks in the neighborhood of Gold Hill, where the snow had thawed and frozen until, as he said, "the surface crust was more slippery than ice." Here he finally discovered a flock of ptarmigan. One of the birds separated itself from the flock and led him up near the top of the peak, to about 12,500 feet he thought, when it lit within shooting distance. In describing it Mr. Surber says, "I was standing on an ice-covered boulder and just as I got a bead on it one of my feet slipped and in trying to save myself I dropped my gun. For a wonder the bird did n't fly, but my gun was about thirty feet below me and I did n't dare wait to get it. So pulling my revolver I fired and killed the ptarmigan." The specimen which, as Mr. Surber remarks, is a "good one in spite of the bullet," is a male in beautiful winter plumage and is now in the Biological Survey collection substantiating the previously vague reports of ptarmigan in New Mexico.

Meleagris gallopavo merriami. MERRIAM TURKEY.—For Colorado, Mr. Drew gives the breeding range of the turkey as 7000 feet, but in Mr. Mitchell's list of the birds of San Miguel County, New Mexico, he states that they are "common from 8000 feet to timberline." In the Pecos Mountains we were told that they were still common at 11,000 feet, but by the time we reached that altitude, as the game warden explained, they were probably on their way down the mountains. At all events, only four were seen by our party. Mr. Vilas, a cattleman of the country, told us that in the fall they go down to the nut pine and juniper mesas in the Glorieta region and, gathering at the few springs that furnish drinking places, are shot by wagon loads by the Mexicans. The only specimen we obtained was taken July 27 at over 11,000 feet. Its crop and gizzard held mainly grasshoppers and crickets, but also grass seed, mariposa lily buds, and strawberries, while its gizzard contained in addition a few beetles.

Columba fasciata. BAND-TAILED PIGEON.—Mr. Henshaw found the pigeons feeding on elderberries and acorns, but in the scarcity of acorns last summer there were few pigeons. Less than a dozen were seen by us in the mountains, though it must be said that we did not do much work in their section. All but two of those seen were at about 10,000 feet on the upper edge of the Transition zone, the others being at 11,400 feet, evidently only flying over. The only specimen secured had nothing but insects, mainly grasshoppers, in its gizzard.

Zenaidura macroura. MOURNING DOVE.—The unmistakable voices of Mourning Doves were heard at Glorieta on July 8.

Cathartes aura. TURKEY VULTURE.—Mr. Henshaw reported the Vulture as common, but we saw only a few of the birds, and most of these at 11,000 feet, when the mammalogists were running a line of meat-baited traps.

Accipiter cooperi. COOPER HAWK.—One was seen near Glorieta on July 4 flying with a small mammal in its claws.

Buteo borealis calurus. WESTERN RED-TAIL.—Red-tailed Buteos were seen about our camps at 8000 and 11,000 feet.

Aquila chrysaëtos. GOLDEN EAGLE.—Several eagles were observed over the highest peaks. A young one was seen soaring over Pecos Baldy August 18, the white base of its tail showing brilliantly in the sun.

Haliaëetus leucocephalus. BALD EAGLE.—Two or three Bald Eagles were reported at about 8000 feet on the Pecos August 20.

Falco mexicanus. PRAIRIE FALCON.—A Falcon that Mr. Bailey took to be the Prairie was seen August 14 beating up against a storm, attempting to round the peak of Pecos Baldy.

Falco sparverius phalœna. DESERT SPARROW HAWK.—Near Glorieta a pair of Sparrow Hawks were feeding young inside a cottonwood knot-hole on July 8. Of the few individuals noted in the mountains one was seen August 11 flying over Truchas Peak (13,300 feet) and another August 13 flying over Pecos Baldy (12,600 feet). Twice the hawks were seen disputing with Clarke Crows, once at our Hudsonian camp when the hawk and nutcracker took turns chasing each other out of camp.

Bubo virginianus pallescens. WESTERN HORNED OWL.—The remains of a Horned Owl were found near Glorieta and the birds were heard at 8000 and 11,000 feet, while a feather of one was found halfway up the peak of Pecos Baldy.

Ceryle alcyon. BELTED KINGFISHER.—Mr. Henshaw states that although several kingfishers were seen along the Pecos in the fall they did not breed in the locality, but we found them on the Pecos July 11 and 16 at an altitude of about 7800 and 8000 feet.

Dryobates villosus monticola. ROCKY MOUNTAIN HAIRY WOODPECKER.—Hairy Woodpeckers were noted at different altitudes, from 7400 feet on the lower edge of the Transition zone to 11,600 feet in the Hudsonian zone. The gizzard of a young male shot was full of hard-bodied insects. At 11,600 feet on August 15 a family of grown young were going about feeding themselves, calling and drumming. In watching them the red crown patches of the young were so conspicuous as they turned their heads in pecking at the bark that they suggested a possible advantage as recognition marks. Does a parent coming with grubs distinguish its son from its mate a tree away by the red crown? It is certainly a convenient mark from the foot of the tree.

Picoides arcticus dorsalis. ALPINE THREE-TOED WOODPECKER.—A pair of Three-toed Woodpeckers were feeding young about our Hudsonian camp at 11,600 feet August 14. An old male and one of the brood were seen on the same tree, the young one picking about for itself while its parent dug larvæ out of the live bark and fed them to it. A young *Dryobates* flew down while they were enjoying the meal and finally succeeded in driving them off, although they scolded angrily as they went. The stomachs of two adults and one young were full of the larvæ of tree insects.

Sphyrapicus varius nuchalis. RED-NAPE SAPSUCKER.— *Nuchalis* was seen on the Pecos in the Transition zone at 8000 feet.

Sphyrapicus thyroideus. WILLIAMSON SAPSUCKER.— A pair of *thyroideus*, collected at about 8000 feet, had their stomachs full of ants. The highest altitude at which the birds were seen was 9500 feet.

Melanerpes formicivorus. ANT-EATING WOODPECKER.— A single individual was reported near Glorieta about July 8.

Colaptes cafer collaris. RED-SHAFTED FLICKER.— Flickers were fairly common in the mountains from 7400 to 11,600 feet, where we found a pair feeding young nearly ready to fly on August 16. The adults were then calling vociferously. At 11,000 feet an old bird was feeding full grown young, out of the nest, August 6. At 13,000 feet, in a protected timberline alcove on the south side of Truchas, a flicker was seen on August 11 with a party of migrants.

Phalænoptilus nuttallii. POOR-WILL.— A Poor-will was heard at dusk near Glorieta early in July.

Chordeiles virginianus henryi. WESTERN NIGHTHAWK.— Nighthawks were heard booming near Glorieta about July 8.

Aëronautes melanoleucus. WHITE-THROATED SWIFT.— A single swift was seen flying over the top of Pecos Baldy on July 31. In San Miguel County, Mr. Mitchell says, it is "not common." "Breeds in cliffs during May from 8000 feet to timberline."

Selasphorus platycercus. BROAD-TAILED HUMMINGBIRD.— The Broad-tail was fairly common from 7000 feet at Glorieta to 11,600 feet at the foot of Pecos Baldy, where numbers were seen as late as August 16. Others were noted the second week in August flying over the saddle of Pecos Baldy at 12,000 feet, at timberline on Truchas at 12,300 feet, and going over the peak of Baldy at 12,600 feet. The throat of one shot was full of honey and long-tailed, wasp-like insects. On August 25 two young *platycercus* were taken from a flock of hummingbirds three miles south of Pecos in the juniper and piñon pine belt.

Selasphorus rufus. RUFOUS HUMMINGBIRD.— The large numbers of hummingbirds recorded by Mr. Henshaw were absent from the section of the mountains that we visited. On July 25 we made an eight mile horseback trip to secure a pair that Mr. Bailey had located at some flowering spirea and holodiscus bushes at 10,200 feet. Later on we found the birds as high as 12,600 feet, above timberline, on Truchas Peak, and saw one flash across the saddle of Baldy at 12,000 feet. The species does not occur at all in Mr. Mitchell's list of the birds of San Miguel County, which indicates at least that it is not abundant on the east slope of the range in this region. The only large gathering of hummingbirds that we encountered was on August 25 at the southern base of the mountains, three miles south of Pecos. Here a patch of thistles in the bottom of a dry wash had attracted about thirty hummingbirds of various species. As they were nearly all females or young we could not tell what they were, but there was one adult male *rufus*, and young of *platycercus* and *calliope* were both taken.

Stellula calliope. CALLIOPE HUMMINGBIRD.—Two specimens were secured during the summer, one at 11,000 feet on August 8, and one three miles south of Pecos on August 25.

Tyrannus vociferans. CASSIN KINGBIRD.—Reports of *vociferans* were brought us by McClure Surber from Glorieta on July 8, and from 8000 feet on August 19.

Myiarchus cinerascens. ASH-THROATED FLYCATCHER.—In the juniper belt near Glorieta *Myiarchus* was found about July 8.

Sayornis saya. SAY PHŒBE.—On August 14 Mr. Bailey found a Say Phœbe on an open ridge at 12,000 feet, where *Myadestes*, *Anthus*, and *Otocoris* had been found previously. At Glorieta one had been seen around an adobe about July 8.

Nuttallornis borealis. OLIVE-SIDED FLYCATCHER.—*Nuttallornis* was found in the Canadian and Hudsonian zones from Willow Creek at 7800 feet to the foot of Pecos Baldy at 11,600 feet, its familiar call often coming from the tip of a picea spire.

Contopus richardsonii. WESTERN WOOD PEWEE.—*Richardsonii* was seen in the Transition zone from 7000 to 8000 feet.

Empidonax difficilis. WESTERN FLYCATCHER.—Common from 8000 to 11,000 feet, evidently breeding at 11,000 feet on July 15. Mr. Henshaw saw young accompanied by the parents July 19, and on Jack Creek, at 11,000 feet, Mr. Bailey found a nest containing four young on August 5.

Otocoris alpestris leucolæma. DESERT HORNED LARK.—At least half a dozen Horned Larks, among them full grown young, were found with a band of Pipits on a broad open slope at 12,000 feet. They were discovered on July 28, on our first visit to timberline, and found in the same place a number of times afterwards. Two specimens were secured which Mr. Oberholser identified as *leucolæma*.

Pica pica hudsonia. BLACK-BILLED MAGPIE.—Four magpies and three or four ravens were seen August 6 sitting on a corral on the open mesa at 10,400 feet. The carcass of a cow was evidently the attraction and the ravens were trying to drive off the magpies when discovered. On being disturbed the birds all flew off down into the timber.

Cyanocitta stelleri diademata. LONG-CRESTED JAY.—*Cyanocitta* was found from the lower edge of the Transition zone yellow pines through the firs and spruces of the Canadian zone, but at 11,000 feet it was largely replaced by *Perisoreus*. At 7000 feet, near Glorieta, about July 8, a family of six were seen going around together. At 8000 feet, on July 16, an old jay brought its brood into the bushes on the edge of camp, running out into the grass a few yards from our tent to pick strawberries for them. On August 21, at the same altitude, we found another pair of jays going about with their young.

Aphelocoma woodhousei. WOODHOUSE JAY.—On the Pecos *woodhousei* was found as high as 7000 feet, for although the cold slopes of the cañon walls are pineclad at this altitude, the warm slopes are covered with Upper Sonoran junipers and nut pines.

Perisoreus canadensis capitalis. ROCKY MOUNTAIN JAY.—*Perisoreus* was common from 11,000 to 11,600 feet. At 11,000 feet a family of young was found out of the nest on July 23, and on August 4 a full grown young one was caught in a meat trap. Two old birds were also caught in traps baited for martins and foxes, although the traps were partly covered up in the daytime to protect the jays. At this camp the birds stopped only as they went by and did not come within several rods of camp. When we moved up to the foot of Pecos Baldy, however, camping among the dwarf spruces of the Hudsonian zone, the jays flocked around us, joining us at meals with characteristic fearlessness. The only wild food that we saw them eat was toadstool. On our way down the mountains, August 17, we found *Perisoreus* as low as 10,800 feet, near the junction of the Canadian and Transition zones.

Corvus corax sinuatus. AMERICAN RAVEN.—A family of ravens was seen near Glorieta July 10, and another at the foot of Pecos Baldy, 11,600 feet, on July 23. Other ravens were seen flying over the peak. At our 11,000 foot camp *sinuatus*, like the jays and vultures, was attracted by the line of meat baited traps, going so far as to spring some of them and take the bait.

Corvus americanus. CROW.—Although Mr. Henshaw thought the Crows did not breed at this altitude, a few were seen on the Pecos near El Macho, at 7200 feet, and on July 16 two or three families were noted five or six miles above El Macho at about 7600 feet, squawking young being led about by their parents.

Nucifraga columbiana. CLARKE NUTCRACKER.—At our Canadian zone camp a few nutcrackers stopped in the treetops to inspect us in passing, but at our Hudsonian camp they came familiarly for food with the Rocky Mountain Jays. While not so tame as *Perisoreus* they would come within two or three rods of us. They abounded at this level and frequented the dwarf pines near timberline above us. One of the birds was seen shooting down over the top of Pecos Baldy in characteristic fashion. In the woods two of the nutcrackers were seen by Mr. Bailey running up and down a log bordered by blooming larkspurs, chasing sphynx moths that were feeding from the flowers. The moths were darting about and Mr. Bailey did not see any caught. On leaving the mountains in August we found the nutcrackers in the pines as low as 8000 feet, and in rounding the south end of the range, on the way to Las Vegas, the last of August we saw a few scattered individuals as low as 6000 feet in the piñon pine and juniper belt.

Cyanocephalus cyanocephalus. PIÑON JAY.—At 7000 feet, on the upper edge of the Upper Sonoran zone, a large flock of Piñon Jays was seen flying high overhead on August 11, and on August 12 a flock of six or eight wanderers was found feeding on the ground at timberline, 12,300 feet, on the side of Truchas Peak.

Sternella magna neglecta. WESTERN MEADOWLARK.—Mr. Mitchell says the meadowlark breeds as high as 8000 feet in San Miguel County,

but we saw it last a few miles north of Pecos, as in following up the Pecos Cañon there were no suitable breeding grounds for it.

Hesperiphona vespertina montana. WESTERN EVENING GROSBEEK.—Along the Pecos at about 8000 feet Evening Grosbeaks were found near the middle of July going about in flocks and feeding on the ground around roadside springs. The birds, as we inferred from their actions and as their stomach contents proved, were eating small insects which they picked up from the surface of the ground or dug up from under roots or stones. When first discovered they were so tame that we could get within a few feet of them. In a flock of twenty or thirty males only two females were seen. In going up the mountains we found a few pairs at about ten thousand feet near the junction of the Transition and Canadian zones. On our return down the mountains in August only one or two individuals were noted where the large flocks had congregated in July, and as grosbeak voices were heard below Pecos we inferred that the birds had gone down into the juniper and piñon pine country to gather berries.

Pinicola enucleator montana. ROCKY MOUNTAIN PINE GROSBEEK.—Two pairs of Pine Grosbeaks were seen in the Canadian and Hudsonian zones, and one family with grown young was found by Mr. Bailey on August 14 near the Truchas lakes at the head of the Pecos River at 12,000 feet. Both adult and young were taken. The crop and gizzard of the young were stuffed full of small white oval seeds, while the stomach of the adult contained the same seeds with the addition of a few spruce needles, a spruce flower, and a small green caterpillar.

Carpodacus cassini. CASSIN FINCH.—In a flock of Evening Grosbeaks feeding at a spring on July 15, we discovered a solitary male Cassin Finch, the only one seen during the season.

Carpodacus mexicanus frontalis. HOUSE FINCH.—In Colorado the House Finch breeds up to 8000 feet, but on the east side of the Las Vegas range Mr. Mitchell did not find it "to any great extent"; in the Pecos Mountains Mr. Henshaw did not find it at all, and we saw it only at the base of the range between Pecos and Glorieta.

Loxia curvirostra bendirei. BENDIRE CROSSBILL.—At 11,000 feet the crossbills were common, flying about among the cone-laden spruce tops and, hunger appeased, stopping to sing their quaint, pleasing song. At 11,600 feet they were occasionally heard flying over, and on our way down the Pecos, August 21 and 22, they were seen at 8000 feet and again at 7400 feet.

Astragalinus psaltria. ARKANSAS GOLDFINCH.—Goldfinches were found in the cottonwoods at Glorieta July 7.

Spinus pinus. PINE FINCH.—Siskins were seen from 7500 to 11,600 feet, but they were most abundant at 11,000 feet, where they were constantly singing and flying about in small squads, which were probably families. On August 17, as we came down the mountains, a family of young was found out of the nest at 10,400 feet.

Poœcetes gramineus confinis. WESTERN VESPER SPARROW.—Mr. Henshaw secured a single individual which, he says, "was doubtless merely a migrant which had strayed from its proper territory lower down on the plains." The broad grassy mesas of the upper parts of the mountains, however, are ideal breeding grounds for the Vesper Sparrow, and on one of these meadows, at 10,400 feet, the birds were found singing a number of times between July 25 and August 17, one being taken on July 25. In Colorado the Vesper Sparrow breeds commonly to 9000 feet, and sometimes up to 12,000 feet.

Coturniculus bairdii. BAIRD SPARROW.—On August 11 Mr. Bailey took a Baird Sparrow on one of the open mesas near timberline. Others were secured September 2 on the high plains north of Las Vegas.

Zonotrichia leucophrys. WHITE-CROWNED SPARROW.—Mr. Henshaw states that the White-crown is "present only as a rare migrant, it being too far south for the species to breed." Of course it is now known that the breeding range extends, as Mr. Ridgway gives it, "southward to New Mexico and Arizona (San Francisco Mountains)," but had Mr. Henshaw visited the higher levels of the Pecos Mountains he would have extended the range himself, for he would have found the birds abundant breeders there. As in the Sierra, *leucophrys* is one of the commonest and most characteristic birds of the Hudsonian zone. The birds were singing up to timberline on Pecos Baldy as late as the middle of August, and the willows at the base of the peak were alive with them. A molting adult was found carrying food on August 8. In the willows bordering Jack Creek, at 11,000 feet, a nest contained one egg and two young nearly ready to leave the nest on July 27. In watching the parent birds I was struck by their use of their crest. We had been told of a bird with a white crown and I found that when wanting to attract attention, to draw one from the nest, *leucophrys* often spreads its crown so wide that the black bordering stripes might easily be overlooked, the white then serving as a good recognition mark. But, on the other hand, when the birds wanted to steal unobserved through the willows to the nest, they lowered the crown so flat that the black and white lines were of almost equal width.

Spizella socialis arizonæ. WESTERN CHIPPING SPARROW.—Mr. Henshaw found *arizonæ* "an abundant summer resident" of the Transition zone, and we found a nest with nearly grown young at Glorieta July 8, and found the birds common at 11,000 feet, where young, out of the nest, were being fed on July 23. The sparrows were fairly common in the Hudsonian zone the second week in August, and were seen August 11 at timberline, 11,300 feet, on the south side of Truchas.

Junco dorsalis. RED-BACKED JUNCO.—A single specimen of *dorsalis* was taken at 8000 feet on July 13. It was taken near a nest from which we had flushed a Junco the day before.

Junco caniceps. GRAY-HEADED JUNCO.—Juncos were breeding abundantly at 11,000 feet, nests being found everywhere in the open. On July 22 a nest was found containing partly feathered young; on July 24 one

nest of three eggs, and two broods out of the nest were found; on July 25 young were seen going about with their parents; on July 30 a nest was found with one egg and newly hatched young; on July 31 a nest of four eggs was discovered; on August 6 an old bird was seen feeding young in a tree; August 7 a nest was found with four eggs, and on August 15 an old Junco was seen collecting food. All of the nests were on the ground, completely hidden by tufts of grass or bunches of weeds, being discovered only by flushing the brooding bird. When the Junco is not flashing its white tail feathers its rufous back may well serve its relatives as a recognition mark, especially in the dull light on the edges of clearings where other small birds gather.

Melospiza lincolni. LINCOLN SPARROW.—This was the only *Melospiza* found in the mountains, although we were on the lookout for *montana*, and in San Miguel County Mr. Mitchell says it breeds from 7000 to 9000 feet. Mr. Henshaw says that *lincolni* "evidently does not occur in summer," but we found it breeding in the higher parts of the mountains, both on Jack Creek at 11,000 feet, and by the lake at the foot of Pecos Baldy at 11,600 feet. Young were being fed out of the nest at 11,000 feet on July 29.

Pipilo maculatus megalonyx. SPURRED TOWHEE.—Mr. Henshaw found only one or two pairs of *megalonyx* and we saw the bird only once or twice in the mountains, but found it fairly common in the foothills between Pecos and Santa Fé on the lower edge of the Transition zone.

Pipilo fuscus mesoleucus. CAÑON TOWHEE.—*Mesoleucus* is one of the common cañon birds of the Upper Sonoran juniper and nut pine belt and follows its zone up the Pecos to its limit at 7200 feet.

Oreospiza chlorura. GREEN-TAILED TOWHEE.—We obtained a single specimen of *chlorura* on July 13 at 8000 feet, and Mr. Henshaw found one brood and saw a few migrants.

Zamelodia melanocephala. BLACK-HEADED GROSBEEK.—A male grosbeak was taken July 15 at 8000 feet, one was seen July 20 at 8700 feet, and a female was obtained at about 10,000 feet, near the upper limit of the Transition zone.

Guiraca caerulea lazula. WESTERN BLUE GROSBEEK.—A Blue Grosbeak was reported on August 6 about eight miles north of Pecos in the Upper Sonoran zone. Another was seen earlier in the season between Glorieta and Pecos.

Piranga ludoviciana. WESTERN Tanager.—At 8000 feet we found a pair of tanagers feeding young on the edge of camp July 16. The song and call notes were constantly in our ears. When the female was away the male would sit on a branch and call *pit-ic, pit-ic, pit-ic* by the half hour. He would call in the same way when hunting for food, moving slowly and quietly over the cottonwood branches. The female often gave a three syllabled call of *pit-er-ick, pit-er-ick*. A nestling that I succeeded in catching in my hand, much to the temporary distress of the old birds, was, as Mr. Ridgway says, marked much like the female. Its upper

parts were olivaceous and the wings were crossed by two yellowish bars. The throat, but not the chest, was streaked, and the belly was whitish, its median line and the under tail coverts being bright yellow. Tanagers were seen on July 19 at 8700 feet and July 25 at 10,200 feet, on the upper edge of the Transition zone. Before this they had been found in the foothills between Santa Fé and Glorieta. On August 27 we saw one as low as 6350 feet at the foot of the pine-covered Bernal mesa.

Progne subis. PURPLE MARTIN.—Martins were found near Glorieta July 10.

Petrochelidon lunifrons. CLIFF SWALLOW.—Seen between Glorieta and Pecos on July 4.

Hirundo erythrogastra. BARN SWALLOW.—At 7200 feet Barn Swallows were seen on August 24, and they were common about Mexican adobes at the base of the mountains during the summer.

Tachycineta thalassina lepida. NORTHERN VIOLET-GREEN SWALLOW.—*Tachycineta* was found from near Glorieta at the base of the mountains up to 11,000 feet, but was most abundant at 8700 feet. Near Glorieta on July 10 we found the Violet-greens nesting in cottonwoods; at 8700 feet on July 19 they were evidently breeding in crevices in the rocks, flying about the brow of a cliff in great numbers; and on July 25 we found a large community of them breeding in an aspen grove on the mesa at 10,300 feet. A grown young was secured in this place on August 14. Mr. Henshaw found the swallows principally in the pine woods.

Vireo gilvus swainsoni. WESTERN WARBLING VIREO.—At Glorieta the Warbling Vireo was singing in the cottonwoods on July 7, and at 8000 feet one was singing and carrying food on July 15. Others were found as high as 10,300 feet in the poplars on the mesa.

Vireo solitarius plumbeus. PLUMBEOUS VIREO.—Mr. Henshaw speaks of *plumbeus* as "rather common in summer," being "almost exclusively restricted to the pines"; but we found it only on the lower edge of the pine belt at the base of the mountains in a cottonwood grove near Glorieta.

Helminthophila virginiae. VIRGINIA WARBLER.—Mr. Henshaw was surprised at the absence of the Virginia Warbler, which "breeds abundantly in middle Colorado," and suggested that "it may possibly summer in the foothills." That this is the case we proved by taking a specimen on July 10 near Glorieta on the lower edge of the Transition zone.

Helminthophila celata. ORANGE-CROWNED WARBLER.—Taken at about 8000 feet on the Pecos July 16.

Helminthophila celata lutescens. LUTESCENT WARBLER.—Taken at 8000 feet on August 19.

Dendroica auduboni. AUDUBON WARBLER.—These warblers were found from 7000 to 11,600 feet, where, on August 12, they were going about in fall flocks of Juncos, Kinglets, and Warblers.

Geothlypis tolmiei. MACGILLIVRAY WARBLER.—Mr. Henshaw, while expecting to find *tolmiei* breeding, saw it only as a migrant late in August, but we secured a specimen on July 15 on a branch of the Pecos at 8000 feet, so it doubtless breeds in the vicinity.

Wilsonia pusilla pileolata. PILEOLATED WARBLER.—Mr. Henshaw says, "So far as we could ascertain, this bird did not breed in the locality," but higher up the mountains, at 11,000 feet, on July 23, we found it feeding young in the willows along Jack Creek. The parent bird was, at the time, in the middle of its molt. When we came down the mountain the latter part of August we found *pileolata* in the alders along the streams in the same surprising numbers that Mr. Henshaw had noted.

Anthus pensilvanicus. PIPIT.—Instead of the Ptarmigan and Leucosticte that we had hoped to discover on the peaks, we found the Pipit, the one Alpine bird. This was not surprising, as the snow had melted back to small patches on the cold slopes in time to give it an open breeding ground. From a little below timberline we found the birds ranging to the highest peaks, actually encountering them in a fierce wind within fifty feet of the summit of Truchas, at an altitude of 13,250 feet. From the top of Pecos Baldy another day I discovered, high in the air, a Sparrow Hawk pursued by a Pipit. As this was on the thirteenth of August the Pipit was probably guarding his brood, for we had found young being fed as late as July 28. The breeding ground where we discovered them was a broad grassy slope, an ancient 'burn' near timberline where *Otocoris* was going about with grown young. Some of the Pipits had food in their bills and they did individually what they do in flocks after the breeding season,—rose from the ground, flew out and circled back, uttering their plaintive *cheep*. In this case they often lit on old gray stumps and logs. On July 31 we found the birds on both sides of the knifeblade rocky ridge connecting the east and west peaks of Pecos Baldy flying about cheeping, blown by the wind, and lighting on the rocks and tipping their tails; but though they acted most suspiciously, we did not succeed in finding nests or young.

Cinclus mexicanus. WATER OUZEL.—The Ouzel was seen on the Pecos from 7200 to 8700 feet in July and August. At 8700 feet we left the Pecos, following up Jack Creek to the foot of Pecos Baldy. This stream probably had too few cascades to suit the ouzels, but on the north slope of Baldy, at 10,000 feet, Mr. Bailey again encountered them. The gizzard of one collected was full of small insects.

Salpinctes obsoletus. ROCK WREN.—Mr. Mitchell says that the Rock Wrens breed "most commonly from 8000 feet down, and although a few individuals were seen by us in the mountains, one being met at 12,550 feet, fifty feet from the top of Pecos Baldy we missed the friendly little fellows in the high country, for they had met us at every turn along the sandstone of the low country.

Troglodytes aëdon aztecus. AZTEC WREN.—On July 10 we found two wren nests in holes in cottonwoods at our Glorieta camp, and on July 14, at 8000 feet, were shown a family of nearly fledged young which the children of the range rider had rescued from a snake that climbed to its nest. On August 9, wrens were singing at 11,600 feet.

Certhia familiaris montana. ROCKY MOUNTAIN CREEPER.—Young

creepers were seen at 11,600 feet on August 14 and 16, and one was taken at 8000 feet on August 18.

Sitta carolinensis nelsoni. ROCKY MOUNTAIN NUTHATCH.—In going about the mountains we thought a number of times that we detected the notes of *nelsoni* at a distance, and we were doubtless right, for Mr. Henshaw found them breeding abundantly in the pines. They were, moreover, taken at our Glorieta camp on the lower edge of the yellow pines as well as on pineclad mesas on the plains.

Sitta pygmæa. PYGMY NUTHATCH.—During July and August the Pygmy was found throughout the limits of the Transition zone from 7400 to 9800 feet.

Bæolophus inornatus griseus. GRAY TITMOUSE.—As *griseus* is a common bird of the piñon pine and juniper belt and was found in the Glorieta region, it would doubtless have been found on the Upper Sonoran slopes of the Pecos cañon had we stopped to work them.

Parus atricapillus septentrionalis. LONG-TAILED CHICKADEE.—A family of nine were seen August 17 at 8000 feet, and one was taken at about 10,500 feet. Its gizzard was filled with minute eggs and some insects.

Parus gambeli. MOUNTAIN CHICKADEE.—While *septentrionalis* was seen only twice, *gambeli* was common at Glorieta and on the mountains in the Canadian and Hudsonian zones.

Psaltriparus plumbeus. LEAD-COLORED BUSH-TIT.—Like *Bæolophus*, a typical bird of the juniper and nut pine country, *Psaltriparus* was found in the Glorieta foothills, and was undoubtedly on the Upper Sonoran slopes of the Pecos Cañon.

Regulus satrapa. GOLDEN-CROWNED KINGLET.—A young *satrapa* in pinfeathers was taken July 31 on Pecos Baldy. As this gives a breeding record it makes a long southward extension of the breeding range.

Regulus calendula. RUBY-CROWNED KINGLET.—On July 21, when we camped in the spruces at 11,000 feet, the Kinglets were in the height of their song, their cheery round being heard all through the day as they made their circuits of the spruce tops above camp. By August 1 their songs were much less in evidence, probably for good family reasons. By August 9 their songs were so rarely heard as to be notable, and before we left the foot of Pecos Baldy, August 17, the young were flying about quite independently.

Myadestes townsendii. TOWNSEND SOLITAIRE.—A pair of *Myadestes* was seen about July 15 at 8000 feet, and a grown young one was shot July 28 at 11,000 feet. On the same day a nest with four fairly fresh eggs was found at 12,000 feet. The nest was on the same grassy ridge where *Anthus* and *Otocoris* were flying about. As we rode along on horseback the bird flew from under an old gray log at our feet, and on dismounting we found the nest on the ground roofed over by a cavity burned in the log just about large enough to give head space to the Solitaire. The nest was made wholly of grass and weed stems and lined with fine grass. On the side of Pecos Baldy *Myadestes* was seen above 12,000 feet, and on Truchas above timber-

line on straggling dwarf spruces at 12,600 feet. At our Hudsonian zone camp at 11,600 feet we saw a number of the birds up to the time of our departure, on August 17. On our way down the mountains we found it as low as 8000 feet, whether having bred there or having come down after the cold storms we could only surmise.

Hylocichla guttata auduboni. AUDUBON HERMIT THRUSH.—When we camped in the spruces at 11,000 feet Hermit Thrushes were singing in chorus in such unusual numbers that we called the place *Hylocichla Camp*, but by August 1 the thrushes had almost stopped singing. On July 23 we found a young bird out of the nest, and from that time on encountered bob-tailed young in the woods until August 15, just before our departure for the lowlands. The stomach of a thrush shot contained insects and a few berry seeds, probably strawberry.

Merula migratoria propinqua. WESTERN ROBIN.—Mr. Henshaw says the Robin "was not detected breeding, although it probably summers here." During our stay the birds were found from Pecos to the foot of Pecos Baldy. At 8000 feet, on July 15, we found young being fed out of the nest; on July 16 we found a pair just about finishing a nest; on July 23 a nest was seen with eggs at 11,000 feet; on August 20, young were found being fed in the nest at 8000 feet. On August 16, at 11,000 feet, we saw a tailless old bird in the midst of its molt.

Sialia mexicana bairdi. CHESTNUT-BACKED BLUEBIRD.—On July 10 *bairdi* was found nesting in a cottonwood near Glorieta. In the mountains it was seen as high as 10,200 feet.

Sialia arctica. MOUNTAIN BLUEBIRD.—Mr. Henshaw says, "Apparently the *Sialia arctica* does not breed here"; but Mr. Mitchell gives it as breeding "up to 9000 feet" on the east of the range, and we found it common at Glorieta July 8 and on the open mesa at 10,300 feet, where we found a nest in an aspen on July 25. At the same time families of young and old were going about together up at 11,000 feet. By August 5, numbers of Bluebirds, with Flickers, Chipping Sparrows, and Juncos were wandering about in families, the woods as well as the meadows being filled with birds. On August 11 we found a flock of the Bluebirds with Chipping Sparrows and Flickers at 12,300 feet, on a protected slope in the dwarf evergreens of timberline on the south side of Truchas.

THE ORIGIN AND DISTRIBUTION OF THE CHEST-
NUT-BACKED CHICKADEE.

BY JOSEPH GRINNELL.

THE Chestnut-backed Chickadee (*Parus rufescens*) is a boreal species of peculiarly limited distribution. It is almost exclusively confined to the humid Pacific Coast region of North America, within which it is the most abundant, and in many places the only, member of the genus *Parus* present. We find it characteristically at home within the densest coniferous forests, or along their edges, where there is much shade and an even temperature.

The range of the Chestnut-backed Chickadee is nearly two thousand miles long north and south, extending from a little north of Sitka, Alaska, to some forty miles below Monterey, California. (See Map I.) But its width is very narrow, only within the confines of Oregon and Washington exceeding one hundred miles and elsewhere usually much less, save for one or two isolated interior colonies to be mentioned later.

The influences determining this queer-shaped distribution area may be safely assumed to be atmospheric humidity, with associated floral conditions. For this habitat coincides quite accurately with the narrow coastal belt of excessive cloudy weather and rainfall.

The specific character distinguishing *Parus rufescens* from all other American chickadees is the color of the back, which is an intense rusty brown approaching chestnut. It is of common note that the most evident effects of similar climatic conditions on other animals is a corresponding intensification of browns, especially dorsally. We may therefore consider the Chestnut-backed Chickadee, as indicated by its chief specific character, to be a product exclusively of the peculiar isohumic area to which we find it confined.

Parus rufescens, from Sitka to Monterey, has a chestnut-colored back. And from Sitka to Point Arena, between which we find the extremest humidity, another conspicuous character is uniform,—the color of the sides, which are also deep rusty brown. But from Point Arena south to San Francisco Bay (Marin District), these

lateral brown areas suddenly weaken to pale rusty; while from San Francisco south past Monterey (Santa Cruz District), adult birds have the sides pure smoke gray without a trace of rusty. (See Map II.)

The species thus presents geographic variation within itself, and three distinguishable forms have been named, respectively, the Chestnut-sided Chickadee (*Parus rufescens rufescens*), the Marin Chickadee (*Parus rufescens neglectus*), and the Santa Cruz Chickadee (*Parus rufescens barlowi*). But all three subspecies are unmistakably the Chestnut-backed Chickadee (*Parus rufescens*). (For detailed descriptions, distribution and synonymy see beyond.)

This southward paling of the lateral feather tracts seems to be parallel to the relative decrease in the humidity of the regions occupied. But still, even the Santa Cruz District with its gray-sided *barlowi* has very much greater rainfall and cloudiness than regions immediately to the southward and interiorly. The too abrupt aridification with accompanying sudden floral changes apparently forms the present barrier to further distribution in these directions.

The paling of the sides in the southern bird seems to be a secondary condition, as I hope to show further on by age comparisons. We can reasonably infer that *Parus rufescens rufescens* was the ancestral form from which *Parus rufescens neglectus* and then *Parus rufescens barlowi* successively arose through exodus distally from its point of differentiation further north, where the faunal conditions were doubtless then as now most effective.

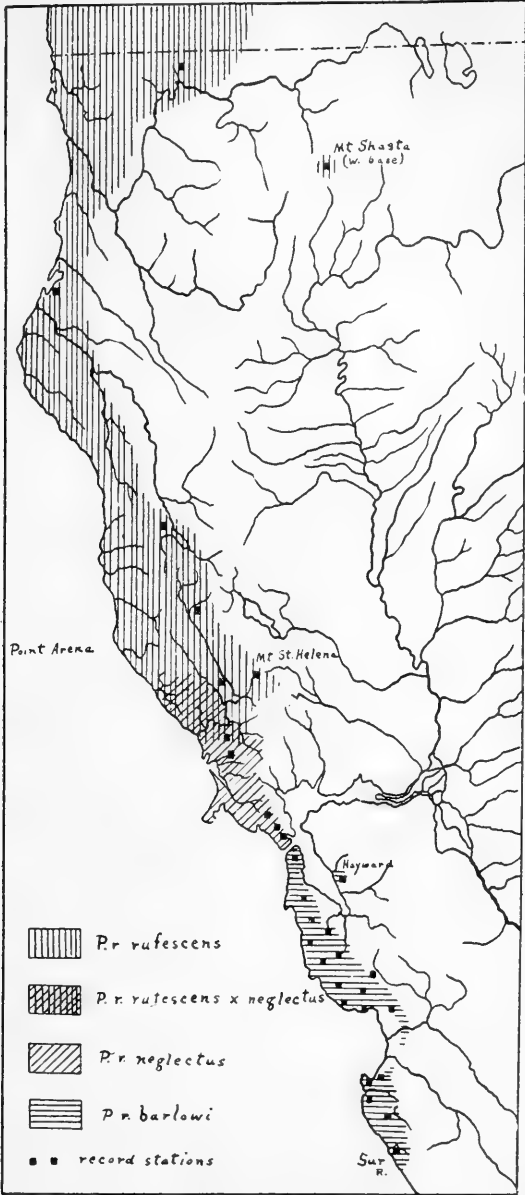
First, as to the origin of the species, *Parus rufescens*. Can we find a chickadee now occupying a faunal area which can be considered as nearer the common ancestral form than *rufescens* now is?

An affirmative answer seems plausible when we come to consider *Parus hudsonicus*, which occupies the interior of Alaska and British Columbia east to Labrador and Nova Scotia. This wide-ranging boreal species also affects coniferous forests, and according to my own experience possesses life habits quite similar to those of *Parus rufescens*; in fact to me indistinguishable. The latter differs from *Parus hudsonicus* in smaller size and particularly in shortness of tail. The color areas on the two species are coextensive, but the colors themselves are different in intensity. The top of the



MAP I.

(Dotted area = range of *Parus rufescens*.)



MAP II. RANGES IN CALIFORNIA OF THE RACES OF *PARUS RUFESCENS*.

head in *hudsonicus* is broccoli brown, while in *rufescens* it is dark hair brown. The back of *hudsonicus* is pale grayish olive brown, while in *rufescens* it is chestnut brown. The sides and flanks of *hudsonicus* are rather pale hazel brown, while in *rufescens* they are deep hazel brown approaching chestnut. Otherwise the two species look practically alike.

These differences are just those we find so commonly in two conspecific representatives, one occupying an arid habitat, the other a comparatively more humid one. Indeed we can find exactly parallel cases in certain other bird races occupying the same two regions as the chickadees in question, but which as yet are not disconnected by intermediates, and in which the degree of difference is not so great. (For example, *Melospiza lincolni lincolni* and *Melospiza lincolni striata*, and *Regulus calendula calendula* and *Regulus calendula grinnelli*.) It is the same story, of intensification of browns and decrease in size under the conditions of a moist climate.

As to the greater relative decrease in length of tail in *rufescens*, it may be suggested that it is an observed rule among the Paridae (and in some other birds of similar habits, though not without exception) that those species which habitually forage highest above the ground in the foliage of tall trees possess the relatively shortest tails, while conversely those which haunt low thick trees or underbrush exhibit the greatest caudal development. (For example, *Psaltriparus* and *Chamaea*.) These conditions doubtless bear some definite relation to mode of flight. The shorter the flights the slower they are, and therefore the greater must be the tail surface distally in furnishing sufficient opposition to the air to direct or arrest flight. At any rate, *rufescens* haunts much higher and more open trees than *hudsonicus*.

It seems to me reasonable to suppose that *Parus hudsonicus* approaches closely the common ancestral form. Its wide range, which, if we take the Old World *Parus cinctus* of such close resemblance as conspecific, is almost holarctic, favors this idea. At some early period there may have been no representative of *Parus* in the Northwest Coast belt. By a process of invasion of individuals of the hypothetical stock form (which we may call *Parus pre-hudsonicus*) from the adjacent region, and their subsequent

gradual response to the new set of environmental factors, a geographical race became differentiated which might have then been properly called *Parus pre-hudsonicus rufescens*.

Unfortunately this process, which I believe to be constantly going on among all animals, is so slow that its actual operation under natural conditions has so far defied direct observation and measurement during a man's lifetime. But it seems quite logical to consider the natural process identical with that under 'artificial' conditions, where the rate is readily perceptible.

We seem warranted in considering all observed living forms, including 'species,' and completely isolated (insular) as well as intergrading 'races' as just a momentary glimpse, so to speak, of a tree-like branchwork slowly rising through time, some of the limbs ramifying freely and rapidly, others growing slenderly without offshoots, but all advancing continually, though changing in outward appearance at different rates; only we at our brief glance can see but a horizontal section, that is, only the set of *tips* of this otherwise ancestral tree.

Accepting this standpoint as the most reasonable hypothesis yet presented, and moreover not at variance with our facts, I feel justified in judging of the methods of ramification and progress through time from observation of the existing set of 'tips' (= species and subspecies). Among these, from the nature of the case, we should be able to recognize various stages in the process of species formation, and from these judiciously selected steps demonstrate the completed stairway which leads up from the very incipiency of differentiation (as impossible of ultimate detection by us as the vanishing point) to the complete separation of two distinct species. The steps are of course really infinite in number, like the points in a geometrical line; the transition proceeds gradually without a break.

In tracing the hypothetical lines of development of the chickadees, I do not feel guilty of bold speculation; for I am only attempting to express in a selected case what is to me clearly evidenced from a survey of bird races in general.

As has already been asserted, *Parus rufescens* doubtless arose as a geographical race of *Parus pre-hudsonicus*. It is now called a 'species' because intermediates have dropped out; in other

words, the divarication is now wholly complete and there are two separate twigs. The area of intermediate faunal conditions between the humid coast belt and the arid interior region of British Columbia and Alaska is very narrow, consisting, in places personally traversed by me, of but a few miles over a mountain ridge. This very narrowness of the area of faunal mergence probably accounts for the lack of intermediates at the present day between *hudsonicus* and *rufescens*.

The center of distribution of any animal is where the greatest rate of increase is. The greatest rate of reproduction is presumably where the species finds itself best adapted to its environment; and this is also where the death rate is least, unless an enemy rapidly multiplies so as to become a serious check. In a wide-ranging species, or one that is rapidly spreading over a region of varying climatic and associated conditions, sub-centers of distribution will arise at points which prove to be more favorable, in point of food supply and minimum of enemies, than intervening areas. From each of these new centers of distribution there will be a yearly radiating flow of individuals into the adjacent country, so as to escape intra-competition at any one point.

Such centers of distribution will obviously, as time goes on, harbor only locally pure-bred individuals, for foreign individuals will not stem the tide of population from season to season slowly emigrating. This will amount to operative isolation and allow of the time necessary for the impress, by local factors of environment, of incipient characters, which, through cumulative inheritance as the element of time further increases, become to us perceptible and characterize this set of individuals as a geographical race or 'subspecies.'

Let us suppose that descendants from the interior *Parus pre-hudsonicus* from season to season pushed their way further and further into the primæval coast belt until the latter supported a vigorous colony. The coastal humidity was very likely at that time but slightly greater than that of the interior, having gradually increased through slow shifting of ocean currents or other causes, so that the faunal boundary was not so abrupt and did not then as now constitute a formidable barrier to invasion.

Faunal conditions are without doubt undergoing constant alter-

ation. Endemic animals must adaptively respond or else be exterminated or restricted to the places where faunal change is slowest. The possibility at once presents itself of *Parus pre-hudsonicus* having been already native of the coast before the latter became faunally distinct from the interior. But in either case the original populating of the region must have been through invasion from elsewhere, as effected by shifting climatic conditions.

At any rate a center of distribution must have arisen in the new region of different faunal conditions. Just as quick as the new colony began to reproduce fast enough to furnish a return flow of individuals the immigration of individuals bearing the inherited stock characters from the parent region would be checked. This would mean that the new colony would become a new center of differentiation because of the isolation thus afforded. (As to what brings about the acquisition or change of innate characters, whether by natural selection or some other more direct cause, we need not here try to discuss.)

As the dissemination of individuals to prevent congestion of population will be continually away from the centers of distribution, it follows that the characters newly acquired at the centers where the rate of differentiation is greatest will be constantly carried away from those centers. If the region of intermediate faunal conditions were narrow, as in the present case, individuals bearing the inherited characters impressed by their separate areas of differentiation would from generation to generation invade toward each other until intermediates would be swamped, or there might be an unfit strip left between where neither would flourish. This might be bridged over by hybrids for a while. But the specific characters becoming strengthened by time would make hybridization less and less likely to take place, and there would result the two distinct species as we now know them.

In the case of *Parus rufescens* and *Parus hudsonicus* there seems to be now a narrow hiatus between the two. At least I can find no record of the two species having been found in the same locality. The narrowness of the region of intermediate faunal conditions may therefore be considered as the reason why we do not find connecting links between *hudsonicus* and *rufescens* at the present time. For the amount of difference between these two chicka

dees does not strike me as any greater than, for instance, between *Melospiza cinerea montana* and *Melospiza cinerea rufina*, between which there is continuous distribution and free interosculation. But we cannot expect any two species of birds or other animals to present the same degrees of differentiation in the same length of time or under the same conditions, much less under different conditions. For in no two animals is the physical organization in all respects exactly the same.

In a given aggregation of individuals constituting a new colony a certain amount of time is necessary for the set of environmental factors to become operative in bringing about new inheritable characters to a degree perceptible to us. Then the inherited effects of invasion and crossbreeding from season to season from the adjacent parent center of differentiation will be evidenced less and less, as time elapses, as the distance from this center increases. The offspring of successively further removed unions will, of course, inherit to a less and less degree the distinctive characters of the ancestral stock on one side and more and more of the incipient ones on the other.

If, now, the distance is great enough to permit of the time required for adaptive manifestations to become innate, then we would find new characters making their appearance distally nearest the new center of differentiation. If the distance were too short we would not find new characters showing themselves because they would be constantly crowded down by the influx of the old. The time factor may therefore be reduced by the intervention of an impassable barrier. As an instance we find three (and there are probably two other) insular forms of the Song Sparrow within a limited distance among the Santa Barbara Islands, while through the same distance on the adjacent mainland there is but one. Or in the case of continuous distribution the time element may be comparatively lessened by the great distance between the range limits, and it may be still further decreased as these limits lie in faunal areas of more emphatically different nature. The Horned Larks as well as Song Sparrows furnish us several good examples of the latter two rules.

It is *isolation*, either by barriers or by sufficient distance to more than counterbalance inheritance from the opposite type, that seems

to me to be the absolutely essential condition for the differentiation of two species, at least in birds.

A strong argument in support of this conviction is that we never find two 'subspecies' breeding in the same faunal area, and no two closely similar species, except as can be plainly accounted for by the invasion of one of them from a separate center of differentiation in an adjacent faunal area. An appropriate instance in illustration of the latter is the occurrence together in the Siskiyou Mountains of northern California of the brown *Parus rufescens* of the wet coastal fauna and the gray *Parus gambeli* of the arid Sierran fauna. (See Anderson & Grinnell, Proc. Ac. Nat. Sc. Phila., 1903, p. 13.) The Siskiyou Mountains occupy a line of merger between the two faunæ, and the two respectively representative chickadees have evidently extended their ranges toward each other until now over this one small area they occupy common ground. Several parallel cases could be cited; their significance seems obvious.

We come now to consider the origin of the races of *Parus rufescens*. In a species of recent arrival into a new region (by invasion from a neighboring faunal area), as it adapts itself better and better to its new surroundings, granted the absence of closely related or sharply competing forms, its numbers will rapidly increase. This means that there will be increased competition within the species itself, on account of limited food supply. The alternative results are either starvation for less vigorous individuals during recurring seasons of unusual food scarcity, or dissemination over a larger area. In a way the first might be considered as beneficial in the long run, as doubtless leading to the elimination of the weaker; such a process evidently does take place to a greater or less degree all the time, and is important for the betterment of the race. But as a matter of observation Nature first resorts to all sorts of devices to ensure the spreading of individuals over all inhabitable regions; in other words, the extremest intra-competition does not ensue until after further dissemination is impossible. In birds we find a trait evidently developed on purpose to bring about scattering of individuals. This is the autumnal 'mad impulse' which occurs just after the complete annual moult, when both birds-of-the-year and adults are in the

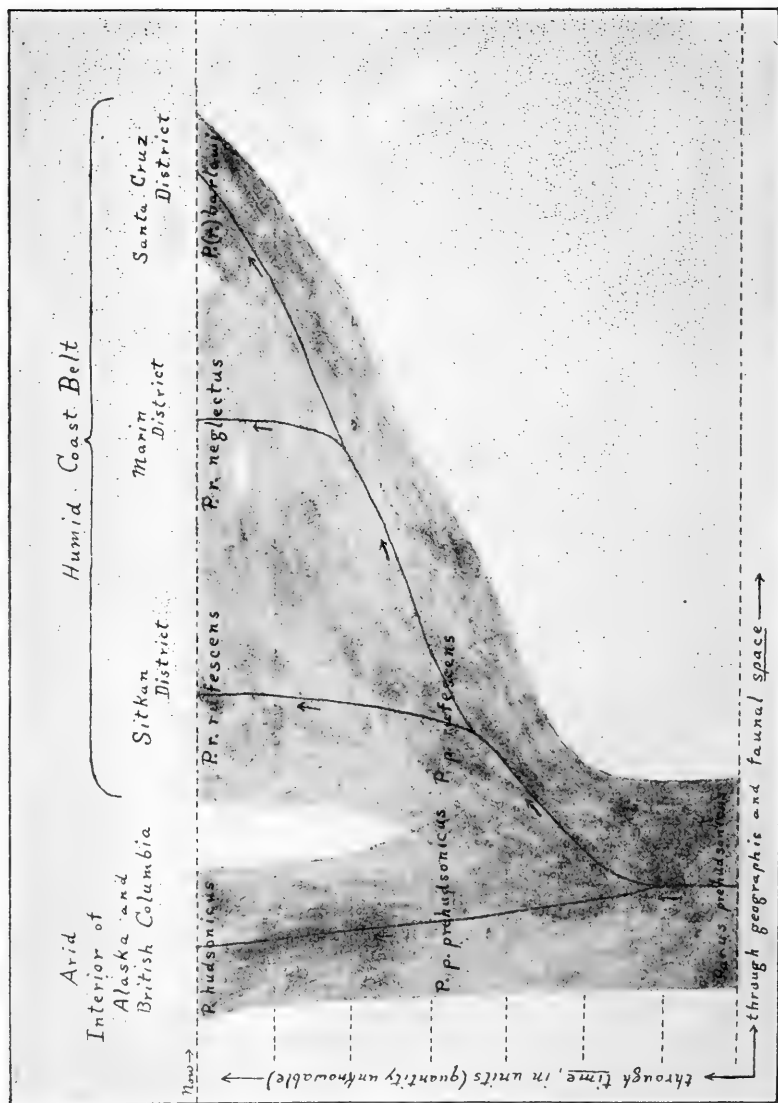
best physical condition, and just before the stress of winter food shortage. Even in the most sedentary of birds, in which no other trace of a migratory instinct is discernible, this fall season of unrest is plainly in evidence. I may suggest not unreasonably that autumnal migration may have had its origin in such a trait as this, the return movement in the spring becoming a necessary sequence. (See Loomis, Proc. Cal. Acad. Sc., 3rd Series, Zoölogy, II, Dec., 1900, 352.) It is a matter of abundant observation that autumn is the season when we find the most unlooked-for stragglers far out of their normal range, and when sober, stay-at-home birds, like *Pipilo crissalis* and the chickadees, wander far from the native haunts where they so closely confine themselves the rest of the year. It is also the experience of collectors that the greatest number of these stragglers are birds-of-the-year, which thus, obeying the 'mad impulse,' are led away from their birthplace into new country, where they may take up their permanent abode, and be less likely to compete with their parents or others of their kind. Then, too, crossbreeding of distantly related individuals is more likely. The records of the Santa Cruz Chickadee outside of its regular breeding range are all of August to October dates (Haywards, Gilroy, San Jose, etc.).

Thus, as above indicated, by the occupancy of new territory the number of individuals which can be supported will correspondingly grow. Hence a vigorous colony will spread out along lines of least resistance, being hindered by slight faunal changes, but completely checked only by topographic or abrupt climatic barriers. *Parus hudsonicus* and its near relative *Parus rufescens* are boreal species, the former inhabiting the Hudsonian Zone and the latter a certain portion of the Canadian. It seems reasonable to suppose that *rufescens* differentiated in the northern part of the humid coast belt, which has been called the Sitkan District. This is a faunal subdivision of the Canadian Zone, and its northern part approximates more closely Hudsonian conditions than southerly. Granting that the early center of differentiation and distribution of *Parus pre-hudsonicus rufescens* was in the northern part of the Sitkan District, then the route of emigration would be confined to the narrow southward extension of that faunal area. The habitat of *Parus rufescens* thus gradually acquired the long north and south

linear appearance as shown at this day. But when the pioneer invaders at the south reached the vicinity of Point Arena, they met with somewhat changed temperature and consequent floral conditions, but not so abrupt as to constitute a permanent barrier. Doubtless the progress of invasion was retarded until adaptive modifications evolved, which correlatively allowed of further invasion, until the abrupt limits of the Santa Cruz District were reached.

San Francisco Bay and the Golden Gate seem to now form a pretty effectual barrier between *neglectus* on the north and *barlowi* on the south. At least, among the large number of skins examined by me with this point in view, I can find none from one side that can be confidently determined as being identical with the race on the other. Neither chickadee has been found east of the bay, nor anywhere nearly so far from the coast belt, except for one record of a specimen taken in the fall at Haywards. This has been reexamined and proved to be *barlowi*, as was to be expected from its contiguity. However, the Golden Gate is so narrow that an occasional crossing may take place. This was more probable formerly, when the redwood timber grew up to the Gate on both sides. Heermann in 1853 recorded the species from "San Francisco." But now, I think, the bird is unknown for several miles on either side of the Gate. Doubtless this barrier accounts in part for the origin of the distinct form *barlowi* within so short a distance.

As to the distance to which a species may invade, we can surmise that, topography permitting, theoretically there is no limit so long as adaptive modifications continually take place. The geographic variation in *Melospiza* may be called to attention as an extreme illustration. But practically, in the case of *Parus rufescens barlowi*, much further invasion is improbable, because in adjoining areas are already firmly established members of the same family (*Baeolophus*, *Psaltriparus*, *Chamaea*) thoroughly adapted to prevailing food conditions. No one of these could probably be successfully competed against by a foreigner. Every animal tends to increase at a geometric ratio, and is checked only by limit of food supply. It is only by adaptations to different sorts of food, or modes of food getting, that more than one species can occupy the same



MAP III. ROUTES OF DISSEMINATION AND DIFFERENTIATION OF THE *PARUS RUFESCENS* GROUP OF CHICKADEES.

locality. Two species of approximately the same food habits are not likely to remain long evenly balanced in numbers in the same region. One will crowd out the other; the one longest exposed to local conditions, and hence best fitted, though ever so slightly, will survive, to the exclusion of any less favored would-be invader. However, should some new contingency arise, placing the native species at a disadvantage, such as the introduction of new plants, then there might be a fair chance for a neighboring species to gain a foothold, even ultimately crowding out the native form. For example, several pairs of the Santa Cruz Chickadee have taken up their permanent abode in the coniferous portion of the Arboretum at Stanford University, while the Plain Titmouse prevails in the live oaks of the surrounding valley.

In accordance with the above outlined theories of distribution it is easy to account for isolated breeding colonies, such as that of *Parus rufescens rufescens* in northern Idaho (Fort Sherman and Cœur d'Alene Mountains). Fall stragglers, wandering unusually far and finding themselves suddenly amid familiar conditions, would tarry there to breed, and with the continuance of a favorable state of affairs, and with no serious competition, might soon result in a well-established colony, itself a center of distribution. The record of *rufescens* from Mt. Shasta (July 14) seems to have been based on a lone straggler, for the species has not been found there since. (For references and localities see beyond.)

As has become a generally accepted idea, the young plumages of birds, if different at all from those of the adults, present a generalized type of coloration; or, to express it in another way, the young more nearly resemble recent ancestral conditions. The familiar examples of the spotted, thrush-like plumage of the young robin and the streaked, sparrow-like plumage of young towhees and juncos are cases in point. Accepting this phylogenetic significance of ontogeny, we find the chickadees giving some interesting illustrations.

Although the adult of *barlowi* has the sides pure smoke-gray, the juvenal plumage possesses pale rusty sides. This points towards a rusty sided ancestor like *neglectus*. This also agrees perfectly with the distributional evidence of origin. The adult of *neglectus* has pale rusty sides; the young also has rusty sides, but

somewhat darker than in the corresponding age of *barlowi*, and moreover is more nearly like the juvenal plumage of *rufescens*. But the sides in adult *rufescens* are deep brown, almost chestnut, while the young has much paler, merely dark rusty sides. And what is most significant is that the young of *rufescens* and *hudsonicus* are much nearer alike than are the adults, the former having only very slightly darker rusty on the flanks. The young of *hudsonicus* in respect to intensity of browns almost exactly equal the adults of the same species, showing that the present coloration is of very long standing, and offering further evidence that *hudsonicus* is nearest the common stock form of all the chickadees under consideration. Juvenal characters, resembling ancestral conditions, lag behind the newer acquired adult characters.

To repeat: The young of *barlowi* has the sides paler rusty than *neglectus*, *neglectus* slightly paler than *rufescens*, but *rufescens* has the sides slightly more rusty than *hudsonicus*, a sequence which accords well with the present theories of origin. (See Map III.)

MEASUREMENTS (IN INCHES AND MILLIMETERS) OF THE RACES OF
Parus rufescens.

<i>Parus rufescens rufescens.</i>			<i>Parus rufescens neglectus.</i>			<i>Parus rufescens barlowi.</i>		
	Wing.	Tail.		Wing.	Tail.		Wing.	Tail.
21 ♂♂	max. 2.50 (63)	2.33 (59)	6 ♂♂	max. 2.38 (60)	2.21 (56)	25 ♂♂	max. 2.50 (63)	2.36 (59)
	av. 2.42 (61)	2.18 (56)		av. 2.35 (59)	2.17 (55)		av. 2.42 (61)	2.26 (57)
	min. 2.38 (60)	2.08 (53)		min. 2.30 (58)	2.07 (53)		min. 2.32 (59)	2.19 (56)
11 ♀♀	max. 2.41 (61)	2.21 (56)	5 ♀♀	max. 2.28 (58)	2.16 (55)	10 ♀♀	max. 2.45 (62)	2.24 (57)
	av. 2.28 (58)	2.10 (53)		av. 2.24 (57)	2.12 (54)		av. 2.30 (58)	2.13 (54)
	min. 2.15 (55)	2.03 (52)		min. 2.21 (56)	2.08 (53)		min. 2.22 (56)	2.05 (52)

COMPARATIVE COLORATION¹ OF THE RACES OF *Parus rufescens*.

<i>Parus rufescens rufescens</i>	<i>Parus rufescens neglectus.</i>	<i>Parus rufescens barlowi.</i>
(♂ ad.; No. 5623, Coll. J. G.; Seiad Valley, Siskiyou Mountains, California; Dec. 12, 1901; collected by M. P. Anderson.) Top of head and hind neck dark seal brown; ocular stripe sooty. Mantle chestnut, inclining slightly toward hazel; rump the same. Sides of head and neck white, forming a wedge-shaped patch from bill to shoulder. Chin and throat dark seal brown. Sides and flanks chestnut, inclining slightly toward hazel. Wings and tail fuscous, pale-edged.	(♂ ad.; No. 5624, Coll. J. G.; San Geronimo, Marin County, California; Feb. 13, 1902; collected by J. & J. W. Mailliard.) Top of head and hind neck dark seal brown; ocular stripe sooty. Mantle chestnut, inclining toward hazel; rump slightly paler. Sides of head and neck white, forming a wedge-shaped patch from bill to shoulder. Chin and throat dark seal brown, very slightly paler. Sides and flanks pale hazel. Wings and tail fuscous, pale-edged.	(♂ ad.; No. 4425, Coll. J. G.; Stevens Creek Cañon, Santa Clara Co., California; Oct. 13, 1900; collected by J. Grinnell. [Type.]) Top of head and hind neck dark seal brown, very slightly paler; ocular stripe sooty. Mantle chestnut, inclining strongly toward hazel; rump paling to clay color. Sides of head and neck white, forming a wedge-shaped patch from bill to shoulder. Chin and throat dark seal brown, very slightly paler. Sides and flanks pure smoke gray. Wings and tail fuscous, pale-edged.
(♂ juv.; No. 1194, Coll. J. G.; Sitka, Alaska; June 26, 1896; collected by J. Grinnell.) Similar to adult, but: Top of head and hind neck dark hair brown. Mantle burnt umber; rump inclining toward hazel. Chin and throat dull seal brown. Sides and flanks dark hazel.	(♂ juv.; No. 5625, Coll. J. G.; San Geronimo, Marin Co., Cal.; June 30, 1903; J. & J. W. Mailliard.) Similar to adult, but: Top of head and hind neck dark hair brown. Mantle dull burnt umber; rump slightly paler. Chin and throat dull seal brown. Sides and flanks pale hazel.	(♂ juv.; No. 4684, Coll. J. G.; Palo Alto, Santa Clara Co., Cal.; May 11, 1901; collected by J. Grinnell.) Similar to adult, but: Top of head and hind neck dark hair brown. Mantle pale burnt umber, merging into pure hazel on the rump. Chin and throat dull seal brown. Sides and flanks very pale tawny.

¹ Color names taken from Ridgway's 'Nomenclature of Colors.'

LOCALITIES OF OCCURRENCE.

Parus rufescens rufescens.

Specimens examined.—Sitka, Alaska. British Columbia: Mt. Lehman; North Saavich, Vancouver Id. Fort Canby, Wash. Oregon: Cedar Mill, Washington Co.; Salem; Butteville; Upper Klamath Lake. California: Siskiyou Mts.; Eureka; Healdsburg; Mt. St. Helena.

Other stations (mostly from published records).—Alaska: Juneau; Portage Bay; Lituya Bay; Haines; Skaguay; Glacier. Queen Charlotte Ids., B. C. Washington: Seattle; Ft. Steilacoom; Ft. Vancouver; Gray's Harbor; Cape Disappointment; Stehekin Valley, Okanogan Co. Idaho: Cœur d'Alene Mts.; Ft. Sherman. Oregon: Wilbur; Yakima Bay; Dayton; Sheridan; Portland; Corvallis; Clatsop Co. California: Cahto, Mendocino Co.; west base Mt. Shasta.

Parus rufescens neglectus.

Specimens examined (all from California).—Marin County: San Geronimo; Nicasio; Fairfax. Sonoma County: Sebastopol (intermediate, toward *rufescens*); Cazadero (intermediate, toward *rufescens*).

Record station.—Ukiah, Mendocino Co.

Parus rufescens barlowi.

Specimens examined (all from California).—San Mateo County: San Mateo; King Mt.; Woodside; Pescadero Cr.; La Honda. Santa Clara County: Palo Alto; Stanford University; Stevens Creek Cañon; Gilroy. Alameda County: Haywards; Alvarado. Monterey County: Monterey; Pacific Grove; Carmel Bay.

Other stations (from published records).—San Francisco. Santa Cruz County: Boulder Creek; Santa Cruz; Saratoga; Watsonville. Little Sur River, Monterey Co.

SYNONYMY.

Parus rufescens rufescens.

Parus rufescens TOWNSEND, Journ. Ac. Nat. Sc. Phil. VII, 1837, 190 (orig. descr.; "Inhabits the forests of the Columbia river").—AUDUBON, Orn. Biog. IV, 1838, 371.—TOWNSEND, Journ. Ac. Nat. Sc. Phil. VIII, 1839, 152.—AUDUBON, Synopsis, 1839, So.—NUTTALL, Man. Orn. I, 1840, 267, part (notes and habits).—AUDUBON, Bds. Am. 1841, 158, pl. 129.—CASSIN, Bds. Cal. & Tex., 1853, 18.—BAIRD, Pac. R. R. Rep. IX, 1858, 394, part (Ft. Vancouver; etc.).—COOPER & SUCKLEY, Pac. R. R. Rep. XII, 1860, Zool. Rep., 194 (Ft. Steilacoom).—"SCLATER, Cat. Am. Bds., 1861, 14, No. 86."—BAIRD, Rev. Am. Bds., Aug. 1864, 83, part.—BROWN,

Ibis, 2nd Ser. IV, Oct. 1868, 421 (Vancouver Id.).—GRAY, Hand-list Bds. I, 1869, 232 ("*sitchensis*, Kittl.").—COOPER, Am. Nat. III, April 1869, 75 ("dense forests of the higher Cœur d'Alene Mountains").—DALL & BANNISTER, Trans. Chicago Ac. Sc. I, 1869, 280 (Sitka).—COOPER, Orn. Cal. I, 1870, 47, part.—COUES, Key, 1872, 81.—COUES, Bds. Northwest, 1874, 22.—BAIRD, BREWER & RIDGWAY, Hist. N. Am. Bds. I, 1874, 104.—RIDGWAY, Proc. U. S. N. M. I, March 1879, 395.—RIDGWAY, Proc. U. S. N. M. I, May 1879, 486 (synonymy).—HENSHAW, Rep. Wheeler Surv. 1879, 288.—RIDGWAY, Proc. U. S. N. M. III, Aug. 1880, 169.—GADOW, Cat. Bds. British Mus. VIII, 1883, 34, part (Upper Klamath Lake; etc.).—HARTLAUB, Journ. für Orn. XXI, July 1883, 266 (Portage Bay, Alaska, Dec.-Feb.).—ANTHONY, Auk, III, April 1886, 171 (Washington Co., Oregon, breeding).—NELSON, Rep. Nat. Hist. Coll. Alaska, 1887, 214 (Lituya Bay; etc.).—TOWNSEND, Proc. U. S. N. M. X, 1887, 229 (coast of Humboldt Co.; Mt. Shasta, west base, 1 spec, July 14).—COUES, Key, 1890, 267.—BELDING, Land Bds. Pac. Dist. Sept. 1890, 242 (Wilbur, Oregon; etc.).—CHAPMAN, Bull. Am. Mus. Nat. Hist. III, Sept. 1890, 153 (coast of British Columbia).—SWALLOW, Auk, VIII, Oct. 1891, 397 (Clatsop Co., Oregon).—LAWRENCE, Auk, IX, Jan. 1892, 47 (Gray's Harbor, Wash.).—RHODES, Proc. Ac. Nat. Sc. Phil., 1893, 58.—MCGREGOR, Nidologist, IV, Sept. 1896, 8 (Cahto, Mendocino Co., Cal.).—MERRILL, Auk, XV, Jan. 1898, 21 (Ft. Sherman, Idaho, resident; specimens, according to Brewster, identical in every respect with skins from coast of British Columbia).—GRINNELL, Auk, XV, April 1898, 130 (Sitka, Alaska, breeding).—KOBÉ, Bull. Cooper Orn. Club, I, Sept. 1899, 84 (Cape Disappointment, Wash., nesting habits; etc.).—MERRIAM, N. Am. Fauna No. 16, Oct. 1899, 132.—KOBÉ, Auk, XVII, Oct. 1900, 357.—BISHOP, N. Am. Fauna No. 19, Oct. 1900, 93 (Alaska: Haines, Skaguay, and Glacier).—GRINNELL, Condor, II, Nov. 1900, 127.—FISHER, Condor, II, Nov. 1900, 138 (Mt. St. Helena).—FISHER, Condor, III, July 1901, 91.—DAWSON, Auk, XVIII, Oct. 1901, 403 (Stehekin Valley, Okanogan Co., Wash.).—OSGOOD, N. Am. Fauna No. 21, 1901, 50 (Queen Charlotte Ids., B. C.).—WOODCOCK, Bull. 68, Oregon Agr. Exp. Sta., Jan. 1902, 93 (Oregon: Yakima Bay; Dayton; Sheridan; Salem; Portland; Corvallis).—RATHBUN, Auk, XIX, April 1902, 140 (Seattle, Wash., breeding).—FISHER, Condor, IV, Nov. 1902, 135.—BAILEY, Handbook Bds., Nov. 1902, 459.

Pucila rufescens BONAPARTE, Conspectus Avium, I, 1850, 230.

Parus rufescens rufescens GRINNELL, Pac. Coast Avif. No. 3, June 1902, 71.—ANDERSON & GRINNELL, Proc. Ac. Nat. Sc. Phil., Jan. 1903, 13 (Siskiyou Mts., Cal.).

Parus rufescens neglectus.

Parus rufescens BREWSTER, Bull. Nutt. Orn. Club, III, Jan. 1878, 20 (Nicasio).

Parus rufescens, β . *neglectus* RIDGWAY, Proc. U. S. N. M. I, May 1879, 485 (orig. descr.; type locality not indicated, but later determined to be Nicasio).

Parus rufescens neglectus ALLEN, Bull. Nutt. Orn. Club, V, April 1880, 89.—RIDGWAY, Proc. U. S. N. M. III, Sept. 1880, 169, 215.—A. O. U. Checklist, 1886, 336, part?.—RIDGWAY, Man. N. Am. Bds., 1887, 564, part.—BELDING, Land Bds. Pac. Dist., Sept. 1890, 242, part (Ukiah; Sebastopol; etc.).—COUES, Key, 1890, 267, part?.—MAILLIARD, Condor, II, May 1900, 67 (Marin County).—GRINNELL, Condor, II, Nov. 1900, 127.—GRINNELL, Pac. Coast Avif. No. 3, June 1902, 71.

Parus rufescens barlowi.

Parus rufescens NUTTALL Man. Orn. I, 1840, 268, part ("Upper California").—GAMBEL, Proc. Ac. Nat. Sc. Phil., Feb. 1847, 155 (Monterey).—GAMBEL, Journ. Ac. Nat. Sc. Phil., 2nd Ser. I, Dec. 1847, 36.—HEERMANN, Journ. Ac. Nat. Sc. Phil., 2nd Ser. II, Jan. 1853, 264 (San Francisco, breeding).—BAIRD, Pac. R. R. Rep. IX, 1858, 394, part.—HEERMANN, Pac. R. R. Rep. X, 1859, 42.—COOPER, Pac. R. R. Rep. XII, 1860, 194, part.—BAIRD, Rev. Am. Bds., Aug. 1864, 83, part.—COOPER, Orn. Cal. I, 1870, 47, part.—BAIRD, BREWER & RIDGWAY, Hist. N. Am. Bds. I, 1874, 104; III, 502, part (Santa Cruz, breeding).—GADOW, Cat. Bds. VIII, 1883, 34, part.

Parus rufescens neglectus SKIRM, Orn. & Ool. IX, Dec. 1884, 149 (Santa Cruz).—RIDGWAY, Man. N. Am. Bds. 1887, 564, part.—DAVIE, Nests and Eggs N. Am. Bds. 4th Ed., 1889, 421.—BELDING, Land Bds. Pac. Dist. Sept. 1890, 242, part.—FISHER, N. Am. Fauna No. 7, May 1893, 140 (Boulder Creek, Santa Cruz County).—A. O. U. Checklist, 2nd Ed., 1895, 310, part?.—VAN DENBURGH, Proc. Ac. Nat. Sc. Phil., April 1898, 218 (Santa Cruz County: Saratoga to Boulder; Watsonville).—VAN DENBURGH, Proc. Am. Philos. Soc. XXXVIII, Nov. 1899, 178 (Palo Alto).—EMERSON, Condor, II, Jan. 1900, 19 (Haywards).—RAY, Osprey, V, Oct. 1900, 7 (Little Sur R., Monterey Co.).—BAILEY, Handbook Bds., Nov. 1902, 459, part?

Parus rufescens barlowi GRINNELL, Condor II, Nov. 1900, 127 (orig. descr.; type from Stevens Creek Cañon, Santa Clara Co., Cal.).—ALLEN, Auk, XVIII, April 1901, 178.—MCGREGOR, Pac. Coast Avif. No. 2, May 1901, 20.—GRINNELL, Pac. Coast Avif. No. 3, June 1902, 71.—FISHER, Bailey's Handbook Bds., Nov. 1902, lvi (Santa Cruz Mts.).—A. O. U. COMMITTEE, 12th Sup., Auk, XX, July 1903, 359.—ANDERSON & JENKINS, Condor, V, Nov. 1903, 155 (La Honda, San Mateo Co.).

Parus barlowi GRINNELL, Condor, IV, Nov. 1902, 127 (Little Sur R., Monterey Co.).



BLACK-CAPPED PETREL.
Taken at Pittsfield, N. H., Aug. 30, 1896.

GENERAL NOTES.

Black-capped Petrel in New Hampshire.—Recently Mr. Henry W. Osgood sent me a photograph (see Plate XXII) of a Black-capped Petrel (*Estrelata hasitata*) taken at Pittsfield, N. H., August 30, 1893, but not hitherto recorded.¹ The locality of capture is forty miles from the sea. The specimen was a male, and fell, in an exhausted condition, near Mr. Osgood's home. Its stomach was empty. This is the first record of the species for New Hampshire, though previously reported from Vermont.

This straggler from tropical seas has the following North American records: (1) Near Indian River, Florida, winter of 1846 (Lawrence, Ann. Lyc. Nat. Hist. New York, IV, p. 475). (2) Quoque, Long Island, N. Y., July, 1850 (Lawrence, Ann. Lyc. Nat. Hist. New York, V, 1852, p. 220). (3) Blacksburg, Va., Aug. 30, 1893 (Smyth, Auk, X, 1893, p. 361). (4) Oneida Lake, N. Y., Aug. 28, 1893 (Bagg, Auk, XI, 1894, 162). (5) Toronto, Canada, Oct. 30, 1893 (McIlwraith, Birds of Ontario, 1894, p. 414). (6) Vermont, place and date not recorded (Allen, Auk, XI, 1894, p. 241). (7) New Paltz, Ulster Co., N. Y., Jan. 26, 1895 (Foster, Auk, XII, 1895, p. 179). (8) Cincinnati, Ohio (two specimens), Oct. 5, 1898 (Lindahl, Auk, XVI, 1899, p. 75). (9) Augusta, Ky., Oct. 4, 1898 (Lindahl, Auk, XVI, 1899, p. 75). (10) The New Hampshire specimen recorded above—ten records, eleven specimens.—J. A. ALLEN, *Am. Mus. Nat. Hist., New York City.*

Holbøll's Grebe in Lancaster, Mass.—A live Holbøll's Grebe (*Colymbus holbøllii*), a young male, was found in Lancaster, Mass., February 15, 1904, by one of the local sportsmen and given to me. It did not seem injured in the least, and lived in confinement for nine days. It was found in a marshy meadow near the main street, near several houses.—JOHN E. THAYER, *Lancaster, Mass.*

European Widgeon in Southern California.—A male European Wid-

¹Since this note was sent to the printer I have received a copy of Mr. Glover M. Allen's 'A list of the Birds of New Hampshire' (Proc. Manchester Institute of Arts and Sciences, IV, Pt. 1, pp. 23-222), in which (p. 69) occurs the following: "A single specimen was captured at Pittsfield, in Merrimack County, in August, 1893, and beyond an anonymous paragraph in the Boston Sunday Herald ('93), appears not to have been recorded. The bird is now in the mounted collection of Mr. William Brewster, No. 46,076, catalogued under date of August 30, 1893. Doubtless the bird was blown up the coast by the tropical hurricane of the last week of August in that year," with also Nos. 3, 4, and 6 of the above list.

In a letter just received Mr. Osgood confirms Mr. Allen's statement that the New Hampshire specimen, recorded above, is now in Mr. Brewster's collection.

geon (*Mareca penelope*) was shot by C. H. Mears, February 16, 1904, on the Pasadena Duck Club preserves at Bixby, Los Angeles County, California. The specimen is now owned by Joseph Welsh of Pasadena, who kindly turned it over to me for examination and permitted the present record. The bird is in full plumage, and closely resembles the usual male Baldpate in all respects except the head and neck, which are almost uniform chestnut in color. The top of the head, from base of upper mandible to occiput, is plain white, slightly rusty anteriorly. The throat is largely blackish, while minute arrowheads of black dot the cheeks and loreal regions. Back of the eye the chestnut ground color is overlaid by numerous flecks of metallic green. This bird was a novelty to local sportsmen, who at first took it for a hybrid of some sort. "Redhead X Baldpate" was suggested. — JOSEPH GRINNELL, *Pasadena, Cal.*

On the Evanescent Ground-tint of Woodcock's Eggs. — My dog stood a Woodcock (*Philohela minor*) on its nest, containing four perfectly fresh eggs, April 10th of this year. The peculiarity of these eggs was their very dark coloration, the ground tint being slightly darker even than the dead oak leaves that surrounded and composed the nest. On comparing the eggs the next day with the series in the U. S. National Museum, in conjunction with Dr. Ralph, we could find no eggs that were anywhere near as dark; in fact, they were darker even than the darkest eggs of *Gallinago delicata*, and we were congratulating ourselves on adding an unique set to the collection, when after a week's duration, in moth-proof museum cases, one egg faded out to the usual Woodcock ground tint, followed in a day or so by the other eggs. Now I would like to ask the readers of 'The Auk' if freshly laid eggs of the Woodcock are always so dark, fading out during incubation or without it? — J. H. RILEY, *Washington, D. C.*

How an Abnormal Growth of Bill was Caused. — The articles by Mr. B. S. Bowdish and Mr. P. A. Taverner in the last two numbers of 'The Auk' on abnormal bills call to mind an incident that happened several years ago and resulted in a somewhat similar growth.

A young friend of mine took an acquaintance to visit a Flicker's (*Colaptes auratus*) nest which he had discovered. The nestlings were then only two or three days old. The boy put his hand into the nesting cavity and lifted out one of the young birds by the bill. In so doing he somehow twisted the mandibles. On another visit to the nest the young birds were found to be well feathered and almost ready to shift for themselves. The injured bill had grown in the twisted shape and the mandibles were now crossed very similar to those of the Crossbill (*Loxia curvirostra minor*). The bird was otherwise in as good condition as the others, but of course the parents were still feeding them, and the specimen was not seen after leaving the nest. — CHRISWELL J. HUNT, *Philadelphia, Pa.*

The Evening Grosbeak in Central New York in April.—On April 11 a neighbor described to me two birds which she had seen in the fruit trees in her yard so accurately that I had no doubt that she had seen a pair of Evening Grosbeaks (*Hesperiphona vespertina*). A later search failed to reveal them that day, however, but on the following day I was sent for, and on nearing the place heard their curious notes, and had no difficulty in finding the birds. They were quite tame, and I watched them for a long time. They spent most of the time on the ground or in the lower branches of the trees, and the male in particular seemed very partial to the shriveled and discolored apples that lay on the ground or clung to the branches. Whether he ate the pulp or the seeds I could not tell positively.

In the winter of 1901-02 these birds were quite common here, but I have since had no report of them until the present instance, and I was surprised to see them here this year after the spring had broken and all the early birds were starting their nesting.—LOUIS AGASSIZ FUERTES, *Ithaca, N. Y.*

The Evening Grosbeak at Beverly, Mass.—In the winter of 1889-1890 there was a great incursion of the Evening Grosbeak (*Hesperiphona vespertina*) to Massachusetts, a number of specimens being taken at Boxford and Lynn. This was considered the most interesting flight of birds ever recorded in the State. Most of the specimens secured were placed in the Peabody Academy of Science at Salem. I believe the species has not been seen since then until Wednesday, March 23, 1904, when I came upon a flock of five of them. They were in a willow tree along with some Robins and Rusty Grackles. The Robins and Grackles flew when I passed under the tree, but these birds remained, and to my surprise I discovered that they were the Evening Grosbeak. They were much scattered, and I fired at one old male which I secured. They flew perhaps an eighth of a mile before alighting again. I followed and secured two more, a young male and a female. They were all fine birds, in good condition, and their stomachs were well filled with buds and seed. They have been purchased by Mr. John E. Thayer of Lancaster, Mass.; two of them will be placed in the collection of the Boston Society of Natural History and the other retained for his own collection.—C. EMERSON BROWN, *Beverly, Mass.*

Nelson's Sharp-tailed Sparrow in North Dakota—On June 12, 1902, while dragging with a long rope, over low prairie land near a small slough, I flushed a little sparrow from a heavy tangled growth of grass. The spot was marked and upon returning an hour later the bird was again started from the grass nearby. A careful search ended fruitlessly; I then retired a short distance and waited about fifteen minutes. The next time I approached the spot on a run and the bird fluttered from the grass at my very feet, only to drop into the grass a few yards away, as she

had done before. I began searching over every inch of ground and after half an hour's work I found a tiny nest sunken on a level with the ground, which was so well concealed by its small size and the thick clump of grass in which it was located that I could not remove my eyes without again having to search for it. The structure was four inches in depth and well arched over at the top, resembling nothing more than a tiny burrow; so dark was the interior of the nest that the eggs could not be discerned until the surrounding growth had been displaced. This nest was composed of fine grasses, very compactly woven, and the walls were thick and strong. Incubation was far advanced in the five eggs which it contained, the ground color of which was grayish white thickly and uniformly marked with specks of light brown.

I found it no easy matter to obtain the bird, as it never flew for more than a few yards without dropping into the grass, and only took wing when almost trampled upon. At last, however, I secured the bird with a snap shot when it took a longer flight than usual. The bird proved beyond all question to belong to *Ammodramus nelsoni*, and the bird, nest and eggs are now in the collection of Dr. H. B. Bishop. Few sets, if any, of this sparrow have been taken within the limits of the United States, though Arnold and Raine have taken sets in Canada. The set described above was taken near Devils Lake City, N. D. — CHARLES W. BOWNAN, *Devils Lake, N. D.*

Henslow's Sparrow in Chester County, Pa.—On April 25, 1904, I shot a male Henslow's Sparrow (*Ammodramus henslowii*) at Cupola, Chester Co., Pa. There were some six pairs of these sparrows in an overgrown, upland field. They ran under the matted grass like meadow mice and it was almost impossible to flush them, but their weak, two-syllabled notes could be heard on every side. On another visit to the locality, on May 8, only a single bird was seen and on May 22 they seemed to have entirely deserted the spot, as none were to be found.—CHRESWELL J. HUNT, *Philadelphia, Pa.*

Henslow's Sparrow at Bethlehem, Pa. — A Correction.—In view of the recent occurrences of Henslow's Sparrow (*Ammodramus henslowii*) in New Jersey and Pennsylvania, it seems desirable to call attention to an erroneous record furnished to Dr. B. H. Warren and first published in his *Birds of Pennsylvania*. On p. 236 he says: "Nests have been taken in our state by Dr. Detwiller of Bethlehem and Mr. Roddy of Millersville." In my *Birds of Eastern Pennsylvania and New Jersey*, after corresponding with both gentlemen, I published more explicit data concerning the dates and localities of these nests.

Subsequently a portion of the late Dr. Detwiller's collection came into possession of the Academy of Natural Sciences, and among other specimens are two birds labeled "*Coturniculus henslowii*, Bethlehem, June,

1883, shot after procuring three sets of eggs." Further comment is hardly necessary when I state that both birds are Baird's Sparrow (*Coturniculus bairdii*), the "male" being an adult, the "female" a juvenal specimen. From the peculiar make-up of the skins I have no hesitation in saying that they were taken by Mr. Krider on a trip which he took to North Dakota with Dr. W. L. Abbott in 1881. Dr. Detwiller obtained many specimens from Krider.—WITMER STONE, *Academy of Natural Sciences, Philadelphia, Pa.*

What has happened to the Martins?—Last summer the Martins (*Progne subis*) were suddenly either destroyed or driven away from their boxes in this town where for many years they have been domiciled. I watched interestedly for their arrival this spring, and was delighted on May 8, 1904, to see one about their old homes; but my delight has been short-lived, as the one lone bird disappeared and no others have come. Does it mean that the largest Concord colony I know of, where for many years at least fifteen pairs have nested, is wiped out? I would like to know if other New England towns have so mysteriously lost their Martins.—REGINALD HEBER HOWE, JR., *Concord, Mass.*

Breeding of Lawrence Warbler in New York City.—It is with pleasure that I am able to place on record some notes of the breeding of Lawrence Warbler (*Helminthophila lawrencei*). This is, I believe, the twelfth individual of this species to be recorded, and the first instance of its breeding, the other eleven birds being migrants.

The discovery of the nest was first made by Dr. Wiegmann early in June of the present year, and many of the following notes are from his observations.

Occurrence.—On May 15, 1903, Dr. Wiegmann observed a Lawrence Warbler in the New York Zoölogical Park, and on June 6 of last year I made a note of this species in my journal, but the glimpse I had of the bird was so brief that I then recorded the identification as not sufficiently certain for publication. The bird was first observed in the Park on May 18 of this year, and almost every day thereafter until June 16.

Plumage.—The individual Lawrence Warbler under consideration was exactly like the type specimen of Herrick as described in Ridgway's 'Birds of North and Middle America' (U. S. Nat. Mus. Bull. No. 50, Part II, p. 452) except that the gular patch of black extended over the entire chin. The bird was in finest plumage, the markings of the throat and lores being jet black. The wing bars were white with just a tinge of yellow when seen in a favorable light at short range.

Habitat.—The bird's breeding place in the Zoölogical Park was in an open hardwood growth, near one of the Society's buildings, hardly a stone's throw from the Bird House.

Song.—This resembled very closely the dreamy *zee-e-e, zwee-e-e-e* of the Blue-winged Warbler (*H. pinus*). An acute ear, however, could

detect that the first phrase was a typical *chrysoptera* syllable, while the second was a perfect *pinus* syllable, thus: *shree-e-e*, *zwee-e-e-e*, the first syllable penetrating and somewhat harsh, the second long-drawn, dreamy and wheezy.

Habits.—Very similar to *pinus*. The male Lawrence Warbler was mated with a typical female Blue-winged Warbler. The nest was placed on the ground among a thick layer of dead leaves, and was arched over and almost concealed from view by sweet-brier vines. It was a well-made cup of dried leaves lined with strips of cedar bark. On June 13 there were six vigorous young birds in the nest, all in the typical nestling plumage of *H. pinus*, showing no traces of the black markings of *H. lawrencei*. Within five minutes after our arrival, both parents appeared, carrying mouthfuls of green cut-worms. The birds were very tame, allowing us to approach within eight feet without showing fear. At other times the birds were within a yard of the observer. Both parents kept up the sharp chips of warning to the young. The young birds left the nest in safety on June 16, and though search has been since made, they have not again been observed.

It is hoped that this interesting and rare species, whether it be a hybrid or, as I half suspect, a species in the process of making, will make the Zoölogical Park its home for a third year. It has seemed to us that when the identification is as certain as in this instance, the interests of science may best be served by permitting the bird to breed unmolested, rather than by simply adding a twelfth skin to our collections, and by so doing, put an end to all hope of future observations of the bird or its offspring. I wish that ornithologists would do likewise more often in the case of extra-limital records of species where the identification of the living bird is certain.—C. WILLIAM BEEBE, *Curator of Ornithology, New York Zoölogical Park.*

Myrtle Warblers Wintering in Maine.—Several years ago there was some comment in 'The Auk' with reference to a claim that Myrtle Warblers had been found wintering in this State. Under title of 'The Yellow-rumped Warbler Wintering in Maine,' Dr. Joseph L. Goodale reported the capture of two of these birds from a flock of six at Pine Point, Me., Jan. 1, 1885 (Auk, Vol. II, p. 216). Mr. Nathan Clifford Brown later expressed a doubt that these Pine Point birds tarried in Maine throughout the season, implying that it was a time of unusually severe cold (Auk, Vol. II, p. 307).

I am now able to establish by reliable evidence the wintering in Maine the past winter of a flock of three to six Myrtle Warblers. The season, it should be remembered, was more severe than usual, the thermometer being near the zero mark morning after morning through January, when the birds were found. Jan. 10, 1904, I walked to Pond Cove, Cape Elizabeth, the snow being about two feet deep and the day severely cold. There I saw several birds flying about the trees near the road, but I did

not at that time succeed in fully identifying them, the snow being deep and I was not suitably dressed for wading. Jan. 17, 1904, equipped for any depth of snow, I went to the same locality for the purpose of ascertaining if possible what the birds were. They were found in the same general locality and identified fully as Myrtle Warblers. I saw three at that time. They were living in the edge of evergreen woods and were found feeding on a weedy slope a hundred feet from the shore of Casco Bay. The principal growth here was the bayberry or wax myrtle, and the birds were observed feeding in these bushes. Jan. 24, 1904, I took with me to the place J. F. Fanning, Esq., and J. W. Leathers, Esq., of Portland, both members of the Maine Ornithological Society and both experienced observers. The identity of the Myrtle Warblers was fully confirmed by them. Three and perhaps four of the birds were seen at this time. Jan. 31, 1904, I took with me Mr. Leathers and Mr. Arthur H. Norton, of Westbrook, the latter the leading ornithologist of this locality, whose contributions to 'The Auk' are familiar to all its readers. The birds were again fully identified and it was made almost certain that there were four in the flock. Feb. 7, 1904, I again visited the place and found the birds still there, but could not count more than three. Feb. 14, 1904, in company with Mr. Fanning and Mr. Leathers, I saw one Myrtle Warbler at Cumberland, fully ten miles from Pond Cove. This one was near a large growth of wax myrtle bushes. I did not visit Pond Cove again until Feb. 28, 1904. At this time it was raining and no Myrtle Warblers were seen. March 6, 1904, I was again at Pond Cove but saw no warblers. March 13, 1904, Mr. Fanning, Mr. Leathers and I visited Pond Cove and found the Myrtle Warblers in the same place as on previous visits. This time six of them were seen in the air at the same time, as they flew up from the wax myrtle bushes at our approach, and were again identified beyond a doubt by all three of us.

Two Robins wintered in this same locality, being seen on four or five visits through January to March. A Song Sparrow was also seen here in January and one on March 13. All these birds apparently found plenty of food during the very cold weather and all thrived on the fare they secured from the sunny slope on which they spent the greater part of the time.

The winter was the severest for at least twenty-five years, as evidenced by the freezing of the whole of Casco Bay inside the islands. From 300 to 500 Black Ducks were driven into the inner harbor by the closing of their usual feeding grounds among the islands. They congregated near Martin's Point bridge on the Falmouth shore and for several weeks staid within two hundred yards of the bridge, flying up at the approach of the electric cars which cross the bridge every fifteen minutes. They suffered to some extent for food, and corn and other things were thrown on the flats for them by kind-hearted persons, who thought the birds were liable to starve. Not one of them died, as a matter of fact, except a few whose death was doubtless due to flying against the wires which pass over the

bridge. They staid until the ice began to leave the bay, objects of great curiosity to hundreds of persons who went there for the purpose of seeing so unusual a sight.—W. H. BROWNSON, *Portland, Me.*

Phylloperstus versus Phylloscopus.—In a recent connection (Hand List Gen. and Spec. Birds, IV, 1903, p. 358). Dr. Sharpe very properly calls attention to the fact that *Phylloperstus* is untenable as the generic name of the group of willow (or leaf) warblers to which it has been more or less frequently applied. The proper designation is *Phylloscopus* Boie (Isis, 1826, p. 972), as Dr. Sharpe has shown (*loc. cit.*), for in both the supposed earlier references to *Phylloperstus*, or *Phylloperste* (Meyer, Vög. Liv. u. Esthlands, 1815, p. 122; *ibid.*, Taschenb. Deutsch. Vögel, III, 1822, p. 95), the name is employed not in a generic sense but as a plural group heading, and is spelled "*Phylloperstæ*." The generic name *Phylloperstus*, however, has for long stood in the American Ornithologists' Union Check-List; and the present writer, in suggesting to Dr. Sharpe the propriety of using this name in place of *Phylloscopus*, did so without considering the necessity of verifying the original reference, but relying upon the presumed correctness of the Check-List. Now, however, the ghost of *Phylloperstus* having been finally laid, *Phylloscopus* may rest undismayed in possession of its own.

The only willow warbler occurring in North America — *Phylloperstus borealis* (Blasius) of the A. O. U. Check-List (1895, p. 313) — is, as many authors have contended, generically different from *Phylloscopus*, and should be called *Acanthopneuste borealis* (Blasius).—HARRY C. OBERHOLSER, *Washington, D. C.*

Peculiar Nesting-site of the Bluebird in the Bermudas.—On June 28, 1903, I found a Bluebird (*Sialia sialis*) at Hungary Bay in Bermuda. Unlike any that I had ever seen, it was built of grass and weeds, rather bulky, and placed on the branch of a cedar tree about fifteen feet from the ground, and several feet out from the trunk of the tree. It contained one fresh egg which undoubtedly belonged to a second set. Both birds were present and showed considerable anxiety when I looked at the nest.

All the Bluebirds in Bermuda do not build nests in this manner, for I saw one which was discovered by Mr. A. H. Clark in the capstan of an old wreck (that was about July 10, and the nest contained three nearly fledged young).

Major Wedderburn in Jones's 'Naturalist in Bermuda' states that the Yellow-bellied Woodpecker (*Sphyrapicus varius*) bred in Bermuda occasionally and that many palmetto trees were bored by them, but I saw no woodpecker holes, and there were very few palmettos in the neighborhood of the nest at Hungary Bay. The lack, or scarcity of woodpecker holes is probably what induced the birds to build a nest placed on a branch of the only common tree.

I have looked up the nesting habits of the Bluebird in a number of

books and have seen no reference to its building a nest such as I have described.—OWEN BRYANT, *Cambridge, Mass.*

Dates of Nesting of Bermuda Birds.—As little has been published in regard to nesting habits of Bermuda birds the following observations may prove interesting. I was not there to find birds' eggs and only an insignificant part of my time was spent at it, so the data are few.

ENGLISH SPARROW (*Passer domesticus*). June 27, 1903. Flatts. Two nests with young; 1 nest with 5 eggs, incubated; 2 nests with 4 eggs, incubated.

CAT BIRD (*Galeoscoptes carolinensis*). June 28, 1903. Hungary Bay. One nest with 3 eggs, incubated.

July 8, 1903. Flatts. One nest with three fresh eggs. All the nests I found were in bushes 3-10 feet from ground. (Nests the same as in New England.)

YELLOW-BILLED TROPIC BIRD (*Phaethon flavirostris*). June 30, 1903, Castle Island. One nest with fresh egg; several nests with downy young, about 6 in. long.

June 10. Harrington Sound. One nest with incubated egg; several nests with half grown young. All were in holes in rock. One was a mere depression in a flat rock; others 2 to 4 feet deep.

CARDINAL BIRD. (*Cardinalis cardinalis*). July 8. Flatts. One nest with three eggs, nearly hatched. In the top of a rather small cedar tree about 20 feet up. It was high enough to be quite conspicuous. The bird called my attention to it by squeaking.

EUROPEAN GOLDFINCH (*Carduelis carduelis*). June 29. Trunk Island. Saw one of the old birds fly on to the nest, which was empty but apparently finished.

July 6. The same nest contained 4 fresh eggs. It was in a cedar tree, about 25 feet up, on a horizontal branch 6 or 7 feet from the trunk. It was made mostly of yellow down and looked very much like the nest of our Yellow-bird.—OWEN BRYANT, *Cambridge, Mass.*

Unusual Records near Boston, Mass.—During the last winter and spring a number of uncommon birds have come under our notice, and although none of them are rare, they may be worthy of record.

Larus philadelphia. One was seen flying over the Charles River near the Harvard Bridge, May 14, 1904.

Sula bassana. A single bird was observed April 8, 1904, off Lynn Beach.

Mareca americana. One spent April 17, 1904, on the Chestnut Hill Reservoir, Brighton, in company with two Black Ducks.

Aythya marila. A flock estimated to number about six hundred wintered about Moon Island. We have not found them wintering at any other point in Boston Bay.

Chairtonetta albeola. A small flock remained at Moon Island, Boston Bay, during the winter.

Gallinago delicata. A pair spent the past severe winter along a small brook in the Arnold Arboretum, Jamaica Plain, Mass.

Ægialitis vocifera. Two were observed in the Middlesex Fells, Mass., on April 6, 1904.

Nyctea nyctea. One was seen March 5, 1904, at Squantum, Mass.

Acanthis linaria. A flock of ten Redpolls and one Goldfinch was observed in the Arnold Arboretum, Jamaica Plain, Mass., February 13, 1904. On March 2, 1904, a flock containing one Redpoll and thirteen Pine Finches was recorded in Brookline, Mass.

Mimus polyglottos. One passed the winter in Jamaica Plain, Mass. We last recorded it on April 6, 1904.

Hylocichla guttata pallasii. Observed on January 1, 1904, in Brookline, Mass., and January 8, 1904, at Chestnut Hill, Mass. (Auk, Vol. XXI, p. 283).—FRANCIS G. AND MAURICE C. BLAKE, *Brookline, Mass.*

Scott Oriole, Gray Vireo, and Phœbe in Northeastern New Mexico.—*Icterus parisorum* was found during the breeding season last summer on both sides of the thirty-fifth parallel, a little west of the one hundred and fourth meridian, which is an extension of its range from southern New Mexico. On May 26 one was seen in some box elders on the Pecos River a few miles from Santa Rosa, south of the thirty-fifth parallel, and on May 28 another was noted in a cañon in the same locality. Near Montoya, at the base of the northernmost point of the Staked Plains, north of the thirty-fifth parallel, in the middle of June a pair of the birds were going about among the junipers, and the song of the male was heard continually.

Vireo vicinior was also found in the junipers at Montoya, which is an extension of range from Western Texas. Only one specimen was taken but vireos, apparently of the same species, were abundant in the junipers, singing loudly throughout the day. A vireo nest with three newly hatched young was found on June 15. The nest was made principally of shreds of bark, apparently the soft juniper bark, and, unlike ordinary vireo nests, was unadorned.

Sayornis phæbe is hardly a bird that one would look for in the arid plains region of New Mexico, but in the cañons breaking down from the plains to the Pecos River exist conditions that are far from those of arid plains. Near Santa Rosa, from our juniper and cactus-covered camp ground, we climbed down into one of these box cañons that boasted numerous water pools, fresh green cottonwoods, willows, woodbine, grapevines, and one patch of cat-tails, in which a warbler that we took for a female Yellowthroat hid away at our approach. Here, in a niche of rock over a water pool we found a pair of phœbes feeding young in the nest on May 29, and the brooding bird was so tame that she let us photograph her at a distance of ten feet, so that her light chin shows to advantage. Her mate

meanwhile called *pha'-be* from a tree near by, dishing his tail and sweeping out after insects.

Other phæbes were seen about the same time in the vicinity. One, which was apparently catching insects for its young, was seen around one of the deep pools on the outskirts of Santa Rosa. The conditions in these places are so favorable that it would indeed seem strange if wanderers through the region were not occasionally tempted to stop.—
FLORENCE MERRIAM BAILEY, *Washington, D. C.*

RECENT LITERATURE.

Hoffmann's 'Guide to the Birds of New England and Eastern New York.'¹—Happy the beginner into whose hands this little volume falls! for his first impressions of bird life, whatever else may betide, will never have to be unlearned. Here is a refreshing book that sets a new standard for similar guides while putting to shame many of greater pretensions. Mr. Hoffmann's long experience as a field observer and his ready grasp of the needs of the beginner have enabled him to season his pages with much that is not only crisply original but, at the same time, is of very practical application in identifying birds afield. We are told in a few words what open eyes may see out-of-doors. The preliminary chapters are concise, the keys, entirely for field identification, are arranged for every month in the year, and the bulk of the volume is devoted to snapshot pen pictures of over two hundred and fifty familiar species of New England birds. The rarities are omitted, but so true to life are these snapshots that I am sure many of us can almost hear the songs and notes familiar to our ears and see the characteristic markings and motions so faithfully portrayed. One of the chief charms of the book is its uniformity. No species is slighted, and the care with which the author dwells upon diagnostic details of plumages, actions, and songs has perhaps never

¹ A Guide to the | Birds of New England | and | Eastern New York | Containing a Key for each Season and short | Descriptions of over two hundred and | fifty Species with particular Refer- | ence to their Appearance | in the Field | By | Ralph Hoffmann | Member of the American Ornithologists' Union | With four full-page plates by Louis | Agassiz Fuertes and nearly | one hundred cuts in | the text | [vignette] | Boston and New York | Houghton, Mifflin and Company | The Riverside Press, Cambridge | 1904. — 12mo, pp. i-xiii, + 1-357, pll. iv, cuts in text. \$1.50.

been equalled. We cannot but feel regret that so much has been compressed into so little space, for this part of his work will appeal strongly to many besides the novice. The latter will revel, or very likely flounder in the keys which are certainly extremely ingenious; still the inherent disregard of birds for classification is not entirely overcome. It will strike some that the measurements have been given with a superfluous minuteness that will only tend to confuse the beginner. Why not tell him the Phœbe is 7 inches long rather than '6.99'? and the added or subtracted hundredths of an inch here and there would have made the keys look less like time-tables. Otherwise, the descriptive details, as far as they go, are admirable and it is a pleasure to turn pages which are so filled with morsels of useful information that we could wish for bigger bites. Four illustrations by Mr. Fuertes and numerous appropriate woodcuts add life to the pages, which are neatly and clearly printed. Even the cover is attractive and no one will begrudge the sooty Chimney Swift his gilded body, for ever since in 'Citizen Bird' Dr. Coues and Mrs. Wright perched him on the telegraph wires, we must expect some conventional liberties to be taken with this 'spruce cone with wings.' It is to be hoped Mr. Hoffmann's book will have the warm reception of which it is so deserving, and he himself is to be congratulated on having employed his pen to such good purpose.—J. D., JR.

Hornaday's 'The American Natural History.'¹—This very useful work is intended to bridge the "chasm that is wide and deep" between "the 'scientific' zoölogy, suitable only for students in the higher colleges and universities" and "the 'nature-study' books of the grammar schools." It is not a manual of the vertebrate zoölogy of North America, as it attempts to treat only "about three hundred important and well chosen species of animals," of which a number are exotic, selected to fill in important gaps in the general system of vertebrate life. It is systematic in arrangement, beginning with the highest class, or mammals, and ending with the lampreys and lancelets. There is a general introduction of about eight pages (pp. xix-xxv), explanatory of classification, nomenclature, and other technicalities, all very useful and pertinent, and including a timely warning notice against the present tendency "to idealize the higher animals, to ascribe to them intelligence and reasoning

¹The American | Natural History | A Foundation of useful Knowledge of | the Higher Animals of North America | By | William T. Hornaday | Director of the New York Zoölogical Park; Author of | "Two Years in the Jungle," etc. | Illustrated by 227 original drawings by Beard, Rungius, | Sawyer, and others, 116 photographs, chiefly by Sanborn, | Keller, and Underwood, and numerous charts and maps | Charles Scribner's Sons | New York, MCMIV—8vo, pp. xv + 449, numerous full-page half-tones and text cuts, including maps and charts. \$3.50, postage extra.

powers which they do not possess, and in some instances to 'observe' wonderful manifestations that take place chiefly in the imagination of the beholder." To mammals are assigned 170 pages, to birds 140, to reptiles 43, to amphibians, 12, to fishes 75. The information given is well chosen and well apportioned, the more important or more interesting groups being selected for fuller treatment in comparison with those of less popular interest. The nomenclature, particularly of the mammals, is well up to date, for which the author acknowledges his indebtedness to the influence and kind assistance of Dr. T. S. Palmer. In general only a few prominent species are mentioned, as examples of their kin, but in this way a large amount of very useful information is attractively presented. The illustrations are abundant, and for the most part excellent for their purpose. The work has a characteristic personality, and an off-hand and emphatic way of putting things that will prove attractive to many readers and less pleasing to others. There is a tendency to sweeping declarations that a little more care or thoughtfulness on the author's part would have rendered less open to criticism, as the statement regarding the pouch for the young in marsupials, the reader being left to infer that it is characteristic of all members of the order. Neither are his confessions respecting his lack of knowledge of the vocal powers of the Ruby-crowned Kinglet and Rose-breasted Grosbeak creditable to his powers of observation as an ornithologist; and what shall we say of the lapsus whereby he tells his readers that "The Order *Machirochires* means literally 'odd ones.'"

But notwithstanding an occasional indiscretion Mr. Hornaday's 'The American Natural History' is a valuable and helpful book that well fills a hitherto serious gap in our popular natural history literature, treating as it does, in a general and very helpful way, the vertebrates of North America in the compass of a single volume.—J. A. A.

The 'Baby Pathfinder to the Birds.'—"This little guide¹ has been prepared primarily," the authors state, "for New England, but should be of service in New York, New Jersey and Pennsylvania." It is restricted to land birds, and mostly to the Passeres, and gives in a few lines the "general appearance of adult birds as seen in the field," and a few words about the song, nest, and breeding range of each of the 110 species treated. Its small size renders it a convenient booklet for the pocket, and it should prove a convenient and helpful vade mecum for the student when afield, —J. A. A.

¹ *Baby Pathfinder to the Birds | Illustrated | A Pocket Guide to One Hundred and Ten Land Birds of New England | with blank pages for Notes | By Harriet E. Richards and Emma G. Cummings | Members of American Ornithologists' Union | — | W. A. Butterfield, Publisher, 59 Bromfield St., Boston, Mass. | 1904 — 125 leaves, printed on one side; type-bed 1¼ × 3½ in.*

Proceedings of the Delaware Valley Ornithological Club.—The present number of 'Cassinia'¹ forms volume VII of the Proceedings of the Delaware Valley Ornithological Club, and consists as usual of papers relating to the ornithology of Pennsylvania and New Jersey and an abstract of the proceedings of the Club, published under the editorship of Mr. Witmer Stone. The first article is an appreciative biographical sketch of John Kirk Townsend, by Mr. Stone, with a portrait. Other papers are: 'The Red-headed Woodpecker as a Pennsylvania and New Jersey Bird,' by Spencer Trotter; 'Notes on the Summer Birds of Lehigh Gap, Pennsylvania,' by James A. G. Rehn, an annotated list of 50 species; 'Exit the Dickcissel—a Remarkable Case of Local Extinction,' by Samuel N. Rhoads (noticed below, p. 401); 'Crow Roosts and Flight Lines in Southeastern Pennsylvania and New Jersey,' by Herbert L. Coggins (with map); 'Water Birds of the Middle Delaware Valley,' by Henry W. Fowler (notes on about 60 species); 'A Remarkable Night Migration at Mt. Pocono, Pa.,' by William L. Baily; 'Report on the Spring Migration of 1903,' compiled by Witmer Stone; also 'Abstract of the Proceedings' of the Club for 1903; 'City Ornithology,' 'Bird Club Notes,' and list of officers and members.—J. A. A.

Oddi's 'Manuale d'Ornitologia Italiana.'²—In a compact volume (5×3½ in.) of about 1100 pages Count Oddi has presented us with a most excellent manual of Italian ornithology, fully up to the modern standard of ornithological handbooks. It is profusely illustrated, some 400 text cuts being from original designs made expressly for the work. About 125 pages treat of the generalities of the subject, as the external structure, molt, migration, geographical distribution, nidification, classification, etc., and form Part I; Part II, consisting of about 900 pages, and forming the systematic part, gives descriptions and short biographies of the 473 species and subspecies constituting the Italian avifauna. The classification is not modern, beginning with the 'Accipitres' and ending with the 'Pygopodes,' but the work appears to have been prepared with care, and must place Italian bird students under a debt of gratitude to its talented author.—J. A. A.

¹ Cassinia, A Bird Annual. Proceedings of the Delaware Valley Ornithological Club of Philadelphia, 1903. Roy. 8vo. pp. 88, frontispiece, and several half-tone plates and maps. 50 cents.

² Manuali Hoepli | — | Manuale | di | Ornitologia Italiana | — | Elenco descrittivo | degli | Uccelli stazionari o di passaggio | finora osservati in Italia | Del | Conte Dott. E. Arrigona Degli Oddi | Libero Docente di Zoologia nella Regia Università di Padova, | Membro del Comitato Ornitologico Internazionale, etc. | Con 36 tavole | e 401 incisioni nel testo da disegni originali | [vignette] Ulrico Hoepli | Editore-Librario della Real Casa | Milano | 1904 — 5×3½ in., pp. 1-160, i-viii, 1 + 908, 36 half-tone plates and 401 text cuts. Lire 15.

Boardman's 'The Naturalist of the Saint Croix.'¹—'The Auk' for April, 1901 (XVIII, p. 219), contained a brief notice of the late Mr. George A. Boardman, for many years an Associate Member of the American Ornithologists' Union, having been elected in 1883, at the founding of the Union. In the present volume we have a detailed memoir, including extracts from his correspondence, with letters from several prominent ornithologists to him. The memoir gives first an account of the Boardman ancestry, followed by a description of the valley of the St. Croix River, the business interests of which he did so much to develop, and which was the principal scene of his natural history work. Then follows, in separate chapters, an account of his business and domestic life, his work as a naturalist, the closing years at his home at Calais, a description of the Boardman collection, some of the scientific results of his life work, and further chapters on his personal characteristics, testimonials of appreciation from prominent naturalists, and extracts from his correspondence. The book concludes with lists of the vertebrates of the St. Croix valley, and short extracts from Mr. Boardman's natural history writings, in illustration of their character.

Mr. Boardman was "one of the pioneer field naturalists of the United States," an intimate friend of Baird, Brewer, Lawrence, and other ornithologists who have "passed on," and of others who still remain, to whom collectively this memoir "is respectfully and lovingly dedicated." Between the Baird and Boardman families there was close intimacy for many years, which terminated only with the death of Professor Baird.

Mr. Boardman had very scanty school advantages, but became a very successful business man, and possessed personal traits that endeared him to a wide circle of friends. As a lumber merchant and lumber manufacturer he quite early in life acquired a competence, and was thus able to devote his later years to field work in natural history and to travel. He visited California, spent seventeen winters in Florida, and several seasons in Minnesota. The history of his life is here judiciously and simply told, and forms a narrative so replete with personal incident as to be little short of fascinating, especially to those who knew Mr. Boardman personally and his naturalist friends here mentioned; and also to all those of kindred tastes and sympathies. It is a record of personal history well worthy of the permanent form here given, containing, as it does, much of special interest relating to the natural history, and especially the ornithology, of Maine and Florida in times now long past. There are a

¹ The | Naturalist | of the Saint Croix | Memoir of | George A. Boardman | A selection from his correspondence | and published writings, notices of friends | and contemporaries with his | List of the Birds of Maine and New Brunswick | By | Samuel Lane Boardman, M. S. | University of Maine, Honorary, 1899 | Bangor | Privately printed | 1903—8vo, pp. xv+311, and 25 pll. (Edition, 500 copies, for private distribution.)

few errors in the rendering of personal names, as Dr. Heemann for Dr. Heermann, and Dr. Holden for Dr. Holder, due doubtless to obscure manuscripts; and the lists of mammals, fishes and reptiles are marred by serious typographical errors. But these are slight defects in a work otherwise exceedingly creditable. The twenty-five plates give facsimiles of letters from Baird, Sclater and Dresser; several portraits of the subject of the memoir, of his wife, of Baird, Dr. William Wood, Henry E. Dresser, and Charles Hallock; views of the Boardman residences at Milltown and Calais, interior views of his Bird Museum at Calais, etc. Boardman's list of 'St. Croix Birds,' originally published in 1862, and thus forming one of the earliest local bird lists of the United States, was republished and brought down to date in the Calais 'Weekly Times' in 1899 and 1900; this revised list is here republished (pp. 300-316), "without change" except to substitute the A. O. U. nomenclature for the obsolete nomenclature of forty years ago, previously employed on both occasions. It numbers 274 species, briefly annotated. The 'Natural History Sketches' would have increased interest had the date and place of publication been added, as has been done in the case of the 'Minor Notes on Natural History.'—J. A. A.

Pearson's 'Three Summers among the Birds of Russian Lapland.'—This is a narrative of three¹ ornithological expeditions to Russian Lapland, made respectively in 1899, 1901, and 1903. Various points along the coast were visited, considerable time being spent near the mouth of the Ukanskæ River, and a trip was made southward from Kola into the interior. The preface gives a brief notice of previous ornithological explorations of the region and of published accounts of them, including his own journey in 1895, recounted in 'Beyond Petsora Eastward.' The observations made during the three journeys take the form of a daily record of the author's experiences and thus have a setting and a freshness that would be lost in a more formal method of presentation; there being, however, only the briefest summary by species (Appendix I), recourse must be had to the index to find all that has been recorded of any particular bird. But the narrative is not lacking in interest, aside from its ornithological bearings, while the conditions of bird life in this dreary region are thus brought graphically before the reader. Thus, under date of June 2, 1899, at Devkin Bay, we read: "Near the house were fifteen to twenty Shore-Larks (*Otocorys alpestris*), feeding on a small piece of uncovered ground; while two White Wagtails flitted about from doorstep

¹Three Summers among | the Birds of | Russian Lapland | By | Henry J. Pearson | author of "Beyond Petsora Eastward" | With History of | Saint Triphon's Monastery | and Appendices | London | R. H. Porter | 7 Princes Street, Cavendish Square, W. | 1904—8vo, pp. i-xvi+1-216, 68 half-tone plates, and map.

to water-trough as tame as London sparrows. The first Merganser (*Mergus serrator*) we had seen this year rose near the shore as we rowed in from the ship. Except these and a stray Herring-Gull the place was a desert to-day as far as bird-life was concerned. We could hardly expect it to be otherwise when the whole country, except the Shore-Larks' patch, was buried under two or three feet of snow! And this on the 2nd of June."

The first three chapters (pp. 1-169) contain the narrative of the three expeditions; the fourth (pp. 170-192) gives a history of Saint Triphon's Monastery, founded about 1532; Appendix I (pp. 192-201) is a tabular list of 182 species of birds observed by the author and others, the table giving twelve different stations. A second appendix (pp. 202-209) relates to food and equipment, giving not only lists of foods, clothing, implements, etc., required, but much practical advice as to outfit and camp arrangements. Of the 68 excellent half-tone plates, about one third are ornithological, the rest being views of the country and its Lapp inhabitants and their mode of life.—J. A. A.

Jacobs's 'The Haunts of the Golden-winged Warbler.'—In this small brochure¹ Mr. Jacobs gives the results of his studies of the Golden-winged Warbler (*Helminthophila chrysoptera*), which he has found to be a common breeding bird at Wainsburg, Pa., where he has made it the subject of special observation for the last dozen years or more. He describes in detail and illustrates its favorite haunts, and its nest and eggs. Its nesting habits and eggs are very fully described; in nineteen nests the number of eggs ranged from three to six, the prevailing number being four. The period of incubation appears to be about ten days, and in ten days more the young are able to leave the nest.—J. A. A.

Scott on the Rearing of Wild Finches by Foster-parents of other Species.²—Experiments were made by placing the eggs of Song Sparrows (*Melospiza melodia*), Field Sparrows (*Spizella pusilla*), Yellow-winged Sparrows (*Coturniculus savannarum passerinus*), Cowbirds (*Molothrus ater*), and Bobolinks (*Dolichonyx oryzivorus*) under canaries, by which they were hatched and the young carefully nursed. In the case of the young Song Sparrows, though solicitously attended by the hen canary,

¹Gleanings No. III. The Haunts of the Golden-winged Warbler. (*Helminthophila chrysoptera*.) With Notes on Migration, Nest-building, Song, Food, Young, Eggs, etc. Illustrated. By J. Warren Jacobs, Waynesburg, Pa., Independent Printing Company. 1904. Svo. pp. 30, 5 half-tone plates and a color chart.

²An Account of Some Experiments in Rearing Wild Finches by Foster-parent Birds. By W. E. D. Scott, Science, N. S., Vol. XIX, No. 483, pp. 551-554, April 1, 1904.

they soon began to weaken and died when about six days old, when they "were just beginning to show feathers." Young Field Sparrows and two Cowbirds hatched and tended in the same way, lived for only a few days; similar experiments with Bobolinks and Yellow-winged Sparrows had a similar ending. In each case the foster-parents were faithful to their charges. "To briefly summarize the work I have described in some detail," says Mr. Scott, "forty-one different eggs of wild birds, representing six species, and three young birds already hatched, form the aggregate of individuals dealt with. All of the forty-one eggs were fertile, and were hatched by the foster-parents. This is suggestive in regard to the propagating powers of wild birds, and though not conclusive, indicates a much higher percentage of fertility in the eggs laid by them than obtains in song birds when caged, or semi-domesticated. None of the young which were hatched from these eggs reached a greater age than seven days which would seem to indicate that the food supplied by the foster-parents, which was the same on which they raised their own offspring, was of a kind so different from that used by wild birds in rearing their young, that it proved inadequate, I also believe that the nest lining was of a character so unlike that of the nests natural to the foster-chicks, that it prejudiced their development and growth."

Evidently canary-bird food is not a good substitute for the large proportion of insect food our wild passerine birds are known to furnish for the sustenance of their nestlings.—J. A. A.

Scott on 'The Inheritance of Song in Passerine Birds.'—In a recent paper in 'Science,' Mr. W. E. D. Scott presents some interesting observations on the inheritance of song in hand-reared Bobolinks and Red-winged Blackbirds.¹ The birds were kept where it was believed they could not hear the song of their own species, but were allowed to hear the songs of many other birds. In the case of the Bobolinks, there was no resemblance, either in the call-notes or the song, to any sounds uttered by wild bobolinks; the call-notes of the Redwings resemble those of the wild birds, but the song "seems to be made up of a composite jumble wherein robin and thrush-like notes of great clearness and volume predominate." This is rather surprising when we consider how persistent are the call-notes and the general character of songs in wild birds, both in time and space, as exemplified throughout large genera, and even among species of allied genera, as in certain genera of Thrushes, Flycatchers, Bobwhites, etc.—J. A. A.

¹ The Inheritance of Song in Passerine Birds. Remarks and Observations on the Song of hand-reared Bobolinks and Red-winged Blackbirds (*Dolichonyx oryzivorus* and *Agelaius phœniceus*). By W. E. D. Scott. Science, N. S., Vol. XIX, No. 473, p. 154, Jan. 22, 1904.

Rhoads on the Extinction of the Dickcissel East of the Alleghanies.¹—The Black-throated Bunting, or Dickcissel (*Euspiza americana*), formerly ranged along the Atlantic coast, at least in small numbers, from South Carolina to Maine, and at many points within the area was locally common. Mr. Rhoads here gives good reason for now proclaiming it "a bird of the past," throughout this extensive area. Altogether there is little or nothing to suggest a satisfactory explanation of this decadence. Mr. Rhoads inclines to the belief that the birds have been induced to change their range and join the Mississippi Valley stock, and that they were not exterminated in their former haunts. Whatever the cause, they have certainly gradually and almost wholly disappeared in the East within the last fifty years,—from Massachusetts, Connecticut and eastern New York prior to or soon after 1880, and there appears to be no record of their occurrence in New Jersey or eastern Pennsylvania since 1890. Mr. Rhoads has thus done well to gather up and place collectively on record the history of its decline and disappearance from the Atlantic seaboard, especially as much of the evidence he has here presented was previously unpublished.—J. A. A.

Silloway's Additional Notes on the Summer Birds of Flathead Lake.²—As stated in the introduction, the present notes relate to the birds observed at Swan Lake during the first three weeks of June, 1902, and serve as a supplement to his former paper entitled 'The Summer Birds of Flathead Lake' (see *Auk*, XIX, 1902, p. 216). The paper is divided into three parts, entitled, respectively, 'Oölogical Notes' (pp. 295-300), 'Notes on New Birds' (pp. 301-333), and 'List of Birds' (pp. 304-308). Under the first heading interesting notes are given on the breeding habits of about twenty species; under the second about a dozen species are added to the previous list; the third division is a briefly annotated list of the summer birds of the Flathead Lake region, numbering one hundred and thirty-seven species, and including all the species thus far noted. The five half-tone plates illustrate the physical features surrounding Swan Lake.—J. A. A.

Swarth on the Birds of the Huachuca Mountains, Arizona.³—The

¹Exit the Dickcissel—a remarkable Case of Local Extinction. By Samuel N. Rhoads. 8vo. pp 12. Reprinted from *Cassinia*, 1903, pp. 17-28, *repaged*, and without indication of its original place of publication.

²Additional Notes to Summer Birds of Flathead Lake, with special reference to Swan Lake. By Perley Milton Silloway. With introduction by Morton J. Elrod. Bulletin University of Montana, Biol. Series No. 6, 8vo, pp. 289-308, pll. liii-lvii, 1903.

³Birds of the Huachuca Mountains, Arizona. By Harry S. Swarth. Pacific Coast Avifauna No. 4. Cooper Ornithological Club of California. Los Angeles, California. Published by the Club, April 15, 1904.—Large 8vo, pp. 70.

Huachuca Mountains form a well-wooded range, extending for about forty miles in a northeast-southwest direction, in the southeastern corner of Arizona, their southern extremity extending across the boundary into Mexico. The base level is about 4500 feet, and the higher central peaks rise to an altitude of about 10,000 feet. These mountains have often been visited by collectors, but hitherto little has been published on the birds of the region. The results here recorded are based on three trips made by Mr. Swarth, respectively, in 1896 (April 25 to July 20), in 1902 (March 29 to September 5), and in 1903 (February 17 to May 30). On the first expedition he was accompanied by Messrs. W. B. Judson, H. G. Rising, and O. W. Howard, and the season was spent in Ramsey Cañon; in 1902 he was again accompanied by Mr. Howard, but in 1903 he was unaccompanied. "Almost all the collecting was done on the east side of the mountains, in the seven canyons from Tanner to Ash Canyon, by far the best part of the range, ornithologically considered." The basis of the present paper is a collection of about 2500 skins, collected personally by Mr. Swarth, and the field notes made therewith. An introduction of three pages, descriptive of the physical features of the region, is followed by a systematic list of the species, one hundred and ninety-five in number. The annotations range from a few lines to a couple of pages for each species, according to their interest, amounting in some cases to quite full biographies.

Mr. Swarth believes that *Melanerpes formicivorus aculeatus* Mearns is entitled to recognition as a subspecies, and that *Phalacroptilus nuttalli nitidus* is probably only a color phase of *nuttalli*.—J. A. A.

Bartsch on the Herons of the District of Columbia.¹—Nine species of Herons have been recorded from within the District of Columbia, eight of which are of regular occurrence. The Black-crowned Night Heron is the most abundant, of which there are three breeding colonies within the District and another just outside its borders. A detailed and very interesting account of these colonies occupies the greater part of the paper. Two of them were carefully investigated in 1902, and an estimate made of their population, from which it appears that probably eighty-eight young were raised that season in the smaller colony and very nearly four hundred in the other. The Little Blue Heron is also numerous, in company with which may often be seen the Snowy Heron and the American Egret. Next to the Night Heron, the Little Green Heron is the most abundant breeder. Four of the seven half-tone plates illustrate the nesting haunts, eggs, and young of the Night Heron, one shows different stages of the young of the Green Heron, and one (with six figures) the

¹Notes on the Herons of the District of Columbia. By Paul Bartsch. Smithsonian Misc. Collections, Vol. XLV, pp. 104-111, pl. xxxiii-xxxviii. (Dated "Dec. 9, 1903," but published two months or more later.)

roosting and feeding places of the Little Blue Heron and American Egret, etc.—J. A. A.

Nelson on New Birds from Mexico.—Ten of the thirteen species and subspecies here described¹ were obtained by Mr. Nelson and his assistant Mr. Goldman during their expedition to southwestern Mexico in the winter of 1902-03, mostly in the States of Guerrero and Michoacan. In most cases the new forms are based on good series of specimens, and several of them seem quite strongly differentiated from their nearest known allies.—J. A. A.

Nelson's 'Revision of the North American Mainland Species of Myiarchus.'²—The present paper covers the species of the genus *Myiarchus* occurring north of the Isthmus of Panama, including those of Cozumel Island and the Tres Marias Islands. Nine species are recognized, with ten additional subspecies, of which three of the latter, belonging to the *lawrencei* group, are described as new. In his introductory remarks Mr. Nelson calls attention to the evanescent character of the brighter or more intense colors of the freshly acquired plumage. "This extreme intensity of coloration [of the fresh plumage] quickly passes into a duller condition which continues with but little change through the winter months. In spring the colors gradually fade or become bleached by the sun until in the breeding season the original shades of greenish, olive and gray of the back and the yellow of the under parts are almost lost in the dingy browns and yellows of the frayed plumage." He also calls attention to the wide range of variation in the extent of the dusky pattern of the tail feathers, the non-recognition of which has led to the recording of *M. nuttingi* as a bird of southern Arizona, the supposed Arizona specimens of *nuttingi* proving to be merely females of *M. cinerascens*. Mr. Nelson, however, adds to the United States list *Myiarchus crinitus residuus* Howe, based on Florida specimens, on the ground of a slight average difference in the length of the bill. This separation had previously been made, on exactly the same basis, by Mr. Bangs and rejected by the A. O. U. Committee as too unimportant for recognition in nomenclature.

Mr. Nelson discusses at some length the old case of *Tyrannula mexicana* Kaup vs. *Myiarchus cooperi* Baird, without reaching a positive conclusion, but gives his reasons for believing that *Tyrannula mexicana* = *Tyrannula cinerascens* Lawrence, and that the present *Myiarchus mexi-*

¹ Descriptions of New Birds from Southern Mexico. By E. W. Nelson. Proc. Biol. Soc. Washington, Vol. XVI, pp. 151-160, Nov. 30, 1903.

² Revision of the North American Mainland Species of *Myiarchus*. By E. W. Nelson. Proc. Biol. Soc. Washington, Vol. XVII, pp. 21-30, March 10, 1904.

canus of the A. O. U. Check-List should stand as *Myiarchus cooperi* Baird.—J. A. A.

Bangs on Birds from Honduras.—This is a report on a collection of birds and mammals made by W. W. Brown, Jr., on the coast of Honduras, at Ceiba and Yaruca, in January and February, 1902. The list of birds numbers 126 species and subspecies, of which four are described as new. The annotations consist of a statement of the number of specimens of each and the localities. About one fifth of the species recorded are North American migrants.—J. A. A.

McGregor on Philippine Birds.²—This is the second paper (see Auk, XX, 319) in the series of reports on the zoölogical collections made for the Philippine Museum, and contains a list of all the identified species collected or observed on a number of expeditions to Benguet Province, Luzon, and to the islands of Lubang, Mindoro, Verde, Cuyo, Aguataya, and Cagayucillo. The islands and their faunal relationships are briefly described, followed by notes on the rarer species and descriptions of previously unknown plumages, forming an annotated list of about 40 species, and about 270 species are recorded from new localities. *Pericrocotus novus* Wardlaw Ramsey, previously almost unknown, is described at length, including old and young of both sexes.—J. A. A.

Code of Botanical Nomenclature.—The May number of the 'Bulletin of the Torrey Botanical Club' (Vol. XXXI, No. 5, May, 1904, pp. 249-290) contains a new 'Code of Botanical Nomenclature,' prepared by the 'Members and Alternates of the Nomenclature Commission,' appointed by the Botanical Club of the American Association for the Advancement of Science at a meeting held in Washington, D. C., January 2, 1903. This commission consists of twenty-three members, all prominent American botanists. It appears to have accomplished the task assigned it in a most satisfactory manner, the Code now presented being concise, comprehensive, and explicit. The Commission "has carefully considered all the principles involved, and has tested the application of the principles to all kinds of cases." It is published in English, French, and German, the English version occupying only 13 pages (pp. 249-261). It has been prepared as a substitute for the Paris Code of 1867, which was found not satisfactorily adaptable to present conditions. It thus bears much the same relation to this code that the A. O. U. Code does to the Stricklandian

¹ Birds and Mammals from Honduras. By Outram Bangs. Bull. Mus. Comp. Zoöl., Vol. XXXIX, No. 6, pp. 141-159, July, 1903.

² Birds from Benguet Province, Luzon, and from the Islands of Lubang, Mindoro, Cuyo, and Cagayucillo. By Richard C. McGregor. Bulletin of the Philippine Museum, No. 3, Jan. 30, 1904, pp. 16.

Code of the British Association, published in 1865. An effort will be made to secure the adoption of this new Botanical Code by the International Botanical Congress to be held in Vienna in 1905.

The Code consists of three parts, 'Principles,' 'Canons,' 'Orthography and Citation.' Part II, Canons, is divided into five 'sections,' as follows: I, Categories of Classification; II, Formation of Names; III, Publication of Names; IV, Application of Names; V, Rejection of Names. This Code does not depart essentially in any way from the A. O. U. Code, but it is on some points fuller and more explicit, and at the same time more concise. But the A. O. U. Code was a pioneer in innovations which have now become very generally accepted, but which then required argument and extended illustration.

Under 'Rejection of Names' (under Canon 16) it is stated: "Similar names are to be treated as homonyms only when they are mere variations in the spelling of the same word"; thus implying the converse, that of mere variants of a name, only the form having priority is tenable.

In Part III, under 'Orthography,' is the following: "The original orthography of names is to be maintained, except in the following cases; the change not to affect priority. (a) Manifest typographical errors may be corrected. *Examples.*—*Scoria* Raf. is a misprint for *Hicoria*; *Rumhora* Raddi is a misprint for *Rumohra*, named for K. von Rumohr." Other provisions require specific and subspecific names to agree in gender with their generic names; generic names derived from persons should take the feminine form, and should be changed, if formed otherwise; as, *Lippius*, *Kantius*, etc., to be changed to *Lippia*, *Kantia*, etc. Also names proposed in works in which *v* and *j* were used as vowels, or *u* and *i* as consonants, should be corrected to agree with modern usage, as "*Euony. mus*, not *Evonymus*," "*Jungia*, not *Iungia*," etc.

Provision is made for a few points not covered by the A. O. U. Code; but the principles and spirit of this Code are so closely followed that it is exceedingly gratifying to see the work of the A. O. U. Committee, published twenty years ago, so fully endorsed by an able commission of American botanists.—J. A. A.

CORRESPONDENCE.

A Method of Obtaining a Temporary Stability of Names.

TO THE EDITORS OF 'THE AUK':

Dear Sirs:—It is within the power of the A. O. U. Committee on Nomenclature to mitigate, temporarily at least, the inconvenience of frequent changing of names and by a simple method to which the most hardened nomenclatural sinner can hardly object. It is by issuing a Check-List once every ten years without the intervening supplements which now so soon make it a thing of shreds and patches even for those who find time to post up their copies. The Check-List mirrors the Committee's approval of certain names and there are many earnest workers who have use for them, but workmen obliged to change their tools too often are not likely to do the best work, especially when the new tools are no better than the old. The latest name is a matter of concern to a very few, an available name is of great use to many. The proposed periods of quiet with distinct times of changes are not incompatible with advance, for facts do not alter with the years and too much change only creates confusion and clogs advance. If, then, a species has for fifty years rested in one genus nobody except the disturber of its rest need be in a hurry to put it in another, nor does a name buried a hundred years in an old volume suffer impairment if allowed to slumber a few years longer, more or less. So to, in the matter of new races, prompt ruling seems undesirable, for it makes them neither better nor worse, and time alone, with further investigation, is required to bring out their real value.

This is no reflection on the good work the Committee has done, but I believe all its judicial thunder might better be saved up for big periodical explosions rather than for small frequent ones. A Check-List in 1910 and at the end of each succeeding decade would disturb no vital principle and such a course might add further dignity and force to the decisions. It seems to me that this is often enough to furnish a new set of tools and I think that there would be less complaint of the instability of nomenclature if the Committee would not rule out or adopt a Check-List name except at stated intervals.

I remain,

Yours very truly,

JONATHAN DWIGHT, JR.

NOTES AND NEWS.

EDWIN SHEPPARD, for a number of years an Associate of the American Ornithologists' Union, died at Philadelphia, April 7, 1904, at an advanced age. Mr. Sheppard was an artist and worked for many years at the Academy of Natural Sciences making illustrations for various scientific works. Birds were his special delight and many familiar cuts are the results of his labors, as for instance the text figures in Baird, Brewer and Ridgway's 'History of North American Birds,' Mr. D. G. Elliot's volumes on 'Shore Birds,' "Ducks, Geese," etc. Dr. Coues once said of him that he had drawn "more and better figures of American birds than any living artist," which was doubtless true at the time, but his drawing, while accurate in detail, will not compare with the work of the modern school, who study the live bird rather than the stuffed specimen.

Mr. Sheppard was a native of Richmond, Va., and came north in early life to study art. At the outbreak of the Rebellion he enlisted in the Confederate army and at the close of the war returned to Philadelphia where he resided for the rest of his life.

He was a true type of the southern gentleman and a warm friend of both the bird and the ornithologist.—W. S.

FROM the Report of the Chief of the Division of the Biological Survey, Dr. C. Hart Merriam, for the year 1903 (Ann. Rep. Dept. of Agriculture, 1903, pp. 483-495) we learn that field work in connection with the study of the geographic distribution of mammals, birds, and plants was carried on in 1903 along the western slopes and foothills of the Sierra Nevada and in the Coast Ranges in California, under the immediate supervision of Dr. Merriam; in various parts of Texas and New Mexico, under Mr. Vernon Baily; in southern Mexico, by Messrs. Nelson and Goldman; in Alaska, under Mr. W. H. Osgood, and in the Barren Grounds near the Arctic coast by Mr. E. A. Preble. In most of these regions field work will be continued during 1904. Investigations in Economic Ornithology were continued as usual by Prof. Beal and Dr. Judd; and the work of game protection, under Dr. Palmer, has been successfully carried on, with most important results. The completion of "a bibliography of works relating to the occurrence of North American birds south of the United States" has been completed, and "all of the migration material collected in the past nineteen years has been overhauled, rearranged, and catalogued to date, so that it is now readily accessible." It is also announced that bulletins will be published during 1904 on 'Migration of North American Warblers,' and on 'Migration and Protection of Shore Birds.' A report on a biological survey of Texas is well advanced toward publication.

THROUGH the generosity of Mr. John E. Thayer, of Lancaster, Mass.,

Mr. W. W. Brown, Jr., has been sent on an expedition to Central America, mainly in the interest of the Museum of Comparative Zoölogy at Harvard College, the expedition to be known as 'The John E. Thayer Expedition of 1904-1905.' Mr. Brown, already so well known for his excellent work in tropical America for the Messrs. O. and E. A. Bangs, will make collections in all departments of natural history, as circumstances may favor, but will give special attention to vertebrates, and primarily to birds and mammals. With the exception of a portion of the birds, the material will all be presented to the Museum of Comparative Zoölogy, and will form the basis of a series of papers to be published in its 'Bulletin.' Mr. Brown started for his new field of labor in February, going first to the Pearl Islands in the Bay of Panama, which are great breeding resorts for various sea birds. He has thus far been very successful, having already sent to Cambridge ten large cases as the result of his work at the Pearl Islands.

Such munificence in the interest of science is worthy of the highest recognition, and it is to be hoped that Mr. Thayer's excellent example will be frequently emulated by other men amply provided with means for the promotion of scientific investigation, but who too often fail to appreciate the opportunities thus offered for not only advancing science but for raising an enviable and long-enduring monument to themselves.

FRIENDS of the American Museum of Natural History having generously provided means for the construction of additional groups of characteristic North American birds, a number of such groups are now under construction at the Museum or have recently been installed, the latter including three California groups, representing the Yellow-billed Magpie, the newly described Sierra Dusky Grouse, and the California Partridge. A large California group is under way, which will later call for detailed mention. In order to secure groups representing species now rapidly approaching extinction, Mr. Chapman was sent to Florida early in March last to secure, if possible, materials for Carolina Paroquet and Ivory-billed Woodpecker groups. Although a few birds were found no nests were discovered, and the attempt to secure satisfactory materials for these groups proved a failure. From Florida Mr. Chapman went to the Bahamas in search of Flamingoes, and after some discouraging experiences succeeded in locating the rookeries; and the latest reports from him indicate that he has been successful in securing the necessary material for a fine group of these beautiful birds.

In this connection it may be stated that during the past year the ornithological collection at the American Museum has been increased by the addition, by purchase and through Museum expeditions, of about 13,000 birds, including the well-known Sennett Collection, which for many years has, through deposit, formed a part of the Museum's resources. Recently Dr. Dwight has transferred his collection, numbering about 8000 specimens, to the Museum for storage and use, thus still further increasing the ornithological resources of the Museum.

THE writing of so-called 'nature books' by a certain class of romancers has of late attracted the serious attention of naturalists who deplore the rapid development of this class of light literature, for the reason that many otherwise intelligent people who happen to know little of natural history are misled into taking such books as those recently put forth by William J. Long and Mason A. Walton at their face value and as veritable records of bona fide observations by competent naturalists, even school superintendents and school teachers of good standing innocently giving them their endorsement as proper 'nature books' for school use.

Several writers in 'Science' have recently taken up the matter, with especial reference to the writings of William J. Long. In 'Science' for Feb. 26, 1904, Prof. William Morton Wheeler, under the title 'Woodcock Surgery,' gave a critical and rather sarcastic analysis of Mr. Long's now famous article 'Animal Surgery' published in 'The Outlook' for September 12, 1903 (see *Auk*, Jan, 1904, pp. 88-90); and in 'Science' for March 4, 1904, Mr. Frank M. Chapman published a paper entitled 'The Case of William J. Long,' in which he quoted at length from a defense of Mr. Long published some time previously in the 'Evening Transcript' of Boston, and also some of Mr. Long's own 'confessions' as to his methods and aims as given in some of his books,—his "efforts to reveal 'a vast realm of nature outside of the realm of science' in 'ideas above and beyond the world of facts!'"

In 'Science' for April 22, 1904, Mr. William Harper Davis, a comparative psychologist of Columbia University, reviewed the discussion from the psychologist's standpoint, dwelling with some particularity upon "Mr. Long's gullibility," to whom he refers, after citing passages from his books, as "a confessed intellectual anarchist." The discussion is continued at still greater length by Mr. Long's rejoinder to his critics in 'Science' for May 13, 1904, in which, through the intervention of the editor, Mr. Long has the last word. Under the title 'Science, Nature and Criticism' Mr. Long makes the best of sundry indiscretions of his critics, and with an injured innocence air proceeds to produce various affidavits in proof of statements in his 'Animal Surgery' article, which show that there is "certainly warrant for believing that the woodcock sets his own broken leg," and also "that the habit is more common and widespread than [he] supposed possible when [he] published [his] own observations." Through good tact and skill he has made the best of his opportunities for defense and may be able to convince incompetent judges that he is an innocent victim of persecution, and that his statements have been met with "dogmatic denials mixed with considerable error and misrepresentation" rather than by candid objections and some knowledge on the part of his critics.

AN important work entitled 'The Geese of the Old World' is announced for early issue by subscription by Mr. Rowland Ward (166 Piccadilly, London). The work will be prepared by Sergius Alphéraky, Correspond-

ing Member of the Imperial Academy of Science of St. Petersburg, and illustrated with 24 colored plates by F. W. Frohawk, and a frontispiece by Dr. Suschkin depicting a Goose scene in Siberia. The subject will be treated both from a scientific and the sportsman's standpoint, and will treat fully of the habits, nesting, and geographical distribution of the species and subspecies. Subscription price, £2 12 6 net.

AT THE Annual Meeting of the Michigan Ornithological Club, held at Ann Arbor April 2, the following officers were elected for the ensuing year: President, Prof. Walter B. Barrows, Agricultural College; First Vice-President, Prof. A. H. Griffith, Detroit Museum of Art; Vice-Presidents, Norman A. Wood, Ann Arbor, and Jas. B. Purdy, Plymouth; Secretary, Bradshaw H. Swales, Detroit; Treasurer, Chas. E. Wisner, Detroit; Editor-in-chief, Alex. W. Blain, Detroit; Associates, Prof. Walter B. Barrows and J. Claire Wood.

WITH a view to obtaining positive evidence of the return of birds to the place of their birth, or otherwise, as the case may be, Mr. P. A. Taverner, of 95 North Grand Boulevard, W., Detroit, Michigan, proposes to attach small aluminum bands to the tarsus of young birds, in the hope that some of the birds thus tagged may afterward fall into the hands of ornithologists and be reported. The tag, for the sake of brevity of address, will be inscribed "Notify The Auk, N. Y.," to which any such discoveries should be reported for publication.

A NATIONAL association of wild animal photographers is being formed for the purpose of promoting the new form popularly known as "camera hunting." It is hoped that this organization will be an effective means of discouraging the unnecessary slaughter of American birds and other wild animals. All interested should write to Mr. Leroy Melville Tufts, Field Station, Biological Survey, U. S. Dept. of Agriculture, Farmington, Maine.

THIRTEENTH SUPPLEMENT TO THE AMERICAN
ORNITHOLOGISTS' UNION CHECK-LIST OF
NORTH AMERICAN BIRDS.¹

AT A session of the A. O. U. Committee on Nomenclature held in Washington in April, 1904, the following rulings were adopted. Departures from the nomenclature of the Check-List due to the adoption by authors of the 12th instead of the 10th edition of Linnæus's 'Systema Naturæ,' and those which are merely expressive of personal preference or opinion, without the presentation of new evidence, were not considered as requiring the formal reaffirmation of the Committee's previous rulings in such cases.

Owing to the limited time at the Committee's disposal, and the absence of the requisite material, many cases were deferred for later action. In view of the present large number of these it was decided to refer as many of them as possible to subcommittees for investigation, with instructions to report thereon to the full Committee at its next session, which it is hoped can be so planned that both time and material will be available to enable the Committee to dispose of practically all of the cases then awaiting action.

In preparing the present Supplement it has been deemed advisable to omit the secondary references to species and subspecies, together with the concordance and geographical ranges, and also the list of deferred cases.

Committee.	{	J. A. ALLEN, <i>Chairman.</i>
		CHARLES W. RICHMOND, <i>Secretary.</i>
		WILLIAM BREWSTER.
		JONATHAN DWIGHT, JR.
		C. HART MERRIAM.
		ROBERT RIDGWAY.
		WITMER STONE.

¹ Five Supplements have been issued since the publication of the Second Edition of the Check-List in 1895, as follows :

Eighth Supplement, *Auk*, XIV, Jan., 1897, pp. 117-135.

Ninth Supplement, *Auk*, XVI, Jan., 1899, pp. 97-133.

Tenth Supplement, *Auk*, XVIII, July, 1901, pp. 295-320.

Eleventh Supplement, *Auk*, XIX, July, 1902, pp. 315-342.

Twelfth Supplement, *Auk*, XX, July, 1903, pp. 331-368.

I. ADDITIONS TO THE CHECK-LIST AND ACCEPTED
CHANGES IN NOMENCLATURE.¹

GENUS **ENICONETTA** GRAY. This becomes

GENUS **POLYSTICTA** EYTON.

Polysticta EYTON, Catal. Brit. Birds, 1836, 58. Type, *Anas stelleri* PALLAS.

Eniconetta was proposed by Gray, to replace *Polysticta* EYTON, on the ground that the latter name was preoccupied by *Polysticta* SMITH (1836). Eyton's *Polysticta* has, however, two or three months' priority over *Polysticta* SMITH (cf. RICHMOND, Proc. Biol. Soc. Wash., XVI, 1903, 128). Steller's Duck thus becomes

157. **Polysticta stelleri** (PALLAS).

243a. **Pelidna alpina pacifica** (COUES). An earlier name is found in

243a. **Pelidna alpina sakhalina** (VIEILLOT).

Scolopax sakhalina VIEILLOT, Nouv. Dict. d'Hist. Nat., III, 1816, 359 (cf. BUTURLIN, Auk, 1904, 53).

297c. **Dendragapus obscurus sierræ** CHAPMAN.

Sierra Grouse.

Dendragapus obscurus sierræ CHAPMAN, Bull. Am. Mus. N. H., XX, April 25, 1904, 159.

GEOG. DIST. — California (forested portions of Transition and Boreal zones), north to Fort Klamath, Oregon.

GENUS **NYCTALA** BREHM. This becomes

GENUS **CRYPTOGLAUX** RICHMOND.

¹ Including also eliminations from the Check-List.

Cryptoglaux RICHMOND, Auk, XVIII, April, 1901, 193.
Type, *Strix tengmalmi* GMELIN.

Nos. 371, 372, and 372*a* will thus stand as

371. ***Cryptoglaux tengmalmi richardsoni*** (BONAPARTE).

372. ***Cryptoglaux acadica*** (GMELIN).

372*a*. ***Cryptoglaux acadica scotæa*** (OSGOOD).

454*a*. ***Myiarchus cinerascens nuttingi*** (RIDGWAY). The specimens recorded from Arizona, on the basis of which this species was introduced into the Check-List, are found to be female examples of *M. cinerascens* (*cf.* NELSON, Proc. Biol. Soc. Wash., XVII, 1904, 35). No. 454*a* is therefore to be eliminated from the list.

458*a*. ***Sayornis nigricans semiatra*** (VIGORS). This proves to be indistinguishable from *S. nigricans* (SWAINSON) (*cf.* BREWSTER, Bull. Mus. Comp. Zoöl., XLI, 1902, 119), and is to be removed from the list.

469.1. ***Empidonax griseus*** BREWSTER. This is found to be equivalent to *E. canescens* SALVIN & GODMAN, which has priority (*cf.* NELSON, Auk, 1904, 80). Hence:

469.1. ***Empidonax canescens*** SALVIN & GODMAN.

Empidonax canescens SALVIN & GODMAN, Biol. Centr.-Amer., Aves, II, Feb., 1889, 79.

488. ***Corvus americanus*** AUDUBON. An earlier name for the American Crow is found in

488. ***Corvus brachyrhynchus*** C. L. BREHM.

Corvus brachyrhynchus C. L. BREHM, Beitr. zur Vögelkunde, II, 1822, 56 (*cf.* RICHMOND, Proc. Biol. Soc. Wash., XVI, 1903, 125).

The Florida Crow thus becomes:

488a. **Corvus brachyrhynchos pascuus** (COUES).

498g. **Agelaius phœniceus richmondi** NELSON.

Vera Cruz Red-wing.

Agelaius phœniceus richmondi NELSON, Auk, XIV, Jan., 1897,
58.

GEOG. DIST. — Coast region and lower Rio Grande Valley of Texas, south through eastern Mexico to Yucatan, eastern Nicaragua and eastern Costa Rica.

503. **Icterus audubonii** GIRAUD. This becomes a subspecies of *Icterus melanocephalus* (WAGLER), and will stand as

503. **Icterus melanocephalus audubonii** (GIRAUD). (Cf. RIDGWAY, Bull. U. S. Nat. Mus., No. 50, pt. II, 1902, 282.)

GENUS **SCOLECOPHAGUS** SWAINSON. This name is pre-occupied, and must give place to

GENUS **EUPHAGUS** CASSIN.

Euphagus CASSIN, Proc. Acad. Nat. Sci. Phila. (for 1866), 1867, 413. Type, *Psarocolius cyanocephalus* WAGLER. (Cf. RICHMOND, Proc. Biol. Soc. Wash., XVI, 1903, 128.)

The following alterations become necessary in Nos. 509 and 510:

509. **Euphagus carolinus** (MÜLLER).

510. **Euphagus cyanocephalus** (WAGLER).

530a. **Astragalinus psaltria hesperophilus** OBERHOLSER.

Green-backed Goldfinch.

Astragalinus psaltria hesperophilus OBERHOLSER, Proc. Biol. Soc. Wash., XVI, Sept. 30, 1903, 116.

GEOG. DIST.—Southwestern United States and northwestern Mexico, from California and Lower California to Utah, Arizona, and extreme southwestern New Mexico.

530*b*. ***Astragalinus psaltria mexicanus*** (SWAINSON). This is found to be equivalent to *A. psaltria* (*cf.* OBERHOLSER, Proc. Biol. Soc. Wash., XVI, 1903, 115), and should be expunged from the Check-List.

544*b*. ***Passerculus rostratus halophilus*** (MCGREGOR). This is to be eliminated from the Check-List as equivalent to *P. rostratus guttatus*, in summer plumage. (*Cf.* BREWSTER, Bull. Mus. Comp. Zoöl., XLI, 1902, 139.)

591*d*. ***Pipilo fuscus carolæ*** MCGREGOR. This alleged form is to be eliminated, as indistinguishable from *P. fuscus crissalis* (*cf.* editorial note, Condor, 1901, 108; and MCGREGOR, Pac. Coast Avifauna, No. 2, 1901, 15).

612*a*. ***Petrochelidon lunifrons tachina*** OBERHOLSER.

Lesser Cliff Swallow.

Petrochelidon lunifrons tachina OBERHOLSER, Proc. Biol. Soc. Wash., XVI, Feb. 21, 1903, 15.

GEOG. DIST.—Southwestern Texas, south into eastern Mexico to Vera Cruz.

612.2. ***Petrochelidon melanogastra*** (SWAINSON). Found to be only subspecifically distinct from *P. lunifrons*, hence:

612*b*. ***Petrochelidon lunifrons melanogastra*** (SWAINSON). (*Cf.* RIDGWAY, Bull. U. S. Nat. Mus., No. 50, pt. III, 51, in press.)

SUBFAMILY **PTILIOGONATINÆ**. This becomes

FAMILY **PTILIOGONATIDÆ**. SILKY FLYCATCHERS. (*Cf.* RIDGWAY, Bull. U. S. Nat. Mus., No. 50, pt. I, 1901, 21.)

622d. **Lanius ludovicianus mearnsi** RIDGWAY.

San Clemente Shrike.

Lanius ludovicianus mearnsi RIDGWAY, Proc. Biol. Soc. Wash., XVI, 1903, 108.

GEOG. DIST.—San Clemente Island, California.

622e. **Lanius ludovicianus migrans** W. PALMER.

Migrant Shrike.

Lanius ludovicianus migrans W. PALMER, Auk, XV, July, 1898, 248.

GEOG. DIST.—Eastern Canada and eastern United States, west to Minnesota; south to the Carolinas, Tennessee, and lower Mississippi valley. Breeds chiefly in the northern parts of its range, migrating south in winter.

649. **Compsothlypis nigrilora** (COUES). This becomes a subspecies of *C. pitaiayumi* (VIEILLOT). (Cf. RIDGWAY, Bull. U. S. Nat. Mus., No. 50, pt. II, 1902, 490), viz.:649. **Compsothlypis pitaiayumi nigrilora** (COUES).658. **Dendroica rara** (WILSON). This becomes658. **Dendroica cerulea** (WILSON).*Sylvia cerulea* WILSON, Amer. Orn., II, 1810, 141, pl. xvii, fig. 5.

The name *rara* was originally adopted in the Check-List on the assumption that *Sylvia cerulea* Latham was a primary reference; it, however, proves to be merely *Motacilla cerulea* Linnæus, placed in the genus *Sylvia*. As the spirit of the 'Code' (Canon XXXIII) is to ignore cases of this character (cf. ALLEN, Auk, 1903, 216), and previous rulings of the Committee have been on these lines, it follows that the name *cerulea* must be restored.

[692.] **Basileuterus culicivorus** (LICHTENSTEIN). Becomes

[692.] **Basileuterus culicivorus brasherii** (GIRAUD).

Brasher's Warbler.

Muscicapa brasierii (err. typ.) GIRAUD, Sixteen Species
Texan Birds, 1841, 25, pl. vi, fig. 2.

GEOG. DIST.—Northeastern Mexico. Texas?

B. culicivorus occurs from southern Mexico to Costa Rica. (Cf.
RIDGWAY, Bull. U. S. Nat. Mus., No. 50, pt. II, 1902, 755.)

696. **Budytes flavus leucostriatus** (HOMER). This
becomes

696. **Budytes flavus alascensis** RIDGWAY.

Alaskan Yellow Wagtail.

Budytes flavus alascensis RIDGWAY, Proc. Biol. Soc. Wash.,
XVI, Sept. 30, 1903, 105.

GEOG. DIST.—Western Alaska, in summer, south in winter into
eastern Asia.

The true *B. flavus leucostriatus* is confined to the Old World.

SUBFAMILY **MIMINÆ**. THRASHERS, etc. This becomes

FAMILY **MIMIDÆ**. THRASHERS, MOCKINGBIRDS, etc. (Cf.
RIDGWAY, Bull. U. S. Nat. Mus., No. 50, pt. I, 1901, 23.)

713. **Heleodytes brunneicapillus** (LAFR.). This is replaced
by

713. **Heleodytes brunneicapillus couesi** (SHARPE).

Campylorhynchus couesi SHARPE, Catal. Birds Brit. Mus., VI,
1881, 196.

H. brunneicapillus (LAFR.) is restricted to western Mexico
(cf. MEARNS, Auk, 1902, 142).

725*d*. **Telmatodytes palustris iliacus** RIDGWAY.

Telmatodytes palustris iliacus RIDGWAY, Proc. Biol. Soc. Wash., XVI, Sept. 30, 1903, 110.

GEOG. DIST.—Mississippi Valley and Great Plains region, north to Alberta, east to Indiana, south in migration over the greater part of Mexico (except northwestern portion), and along Gulf coast to western Florida; occasionally to middle and southern Atlantic coast.

725.1. **Telmatodytes marianæ** (SCOTT). Reduction to the rank of a subspecies becomes necessary through intergradation with *T. palustris*:

725*e*. **Telmatodytes palustris marianæ** (SCOTT). (Cf. OBERHOLSER, Proc. Biol. Soc. Wash., XVI, 1903, 149.)

SUBFAMILY **SITTINÆ**. NUTHATCHES. This is raised to family rank:

FAMILY **SITTIDÆ**. NUTHATCHES. (Cf. RIDGWAY, Bull. U. S. Nat. Mus., No. 50, pt. I, 1901, 22.)

733*c*. **Bæolophus inornatus restrictus** RIDGWAY.

San Francisco Titmouse.

Bæolophus inornatus restrictus RIDGWAY, Proc. Biol. Soc. Wash., XVI, Sept. 30, 1903, 109.

GEOG. DIST.—Vicinity of San Francisco Bay, California.

735*c*. **Parus atricapillus turneri** RIDGWAY.

Turner's Chickadee.

Parus atricapillus turneri RIDGWAY, Proc. Biol. Soc. Wash., II, April 10, 1884, 89.

GEOG. DIST.—Alaska, north and west of Cook Inlet. (Cf. HELLMAYR, Tierreich, Lief. 18, 1903, 56.)

SUBFAMILY **CHAMÆINÆ**. This is raised to family rank, to include the single genus *Chamœa* (cf. COUES, Key, 1903, 266), and should stand after No. 746a, as:

FAMILY **CHAMÆIDÆ**. WREN-TITS.

744.1. **Psaltriparus santaritæ** RIDGWAY. This is found to be equivalent to *P. melanotis lloydi*, and should be eliminated from the Check-List. (Cf. OBERHOLSER, Auk, 1903, 199.)

745. **Psaltriparus lloydi** SENNETT. Intergradation has been shown to occur between *lloydi* and *melanotis*, hence the following change becomes necessary:

745. **Psaltriparus melanotis lloydi** (SENNETT).

GENUS **PHYLLOPSEUSTES** MEYER. Becomes

GENUS **ACANTHOPNEUSTE** J. H. BLASIUS.

Acanthopneuste J. H. BLASIUS, Naumannia, 1858, 313. Type, *Phyllopneuste borealis* J. H. BLASIUS. (Cf. SHARPE, Hand-List, IV, 1903, 216; OBERHOLSER, Auk, XXI, 1904, 390.) No. 747 thus becomes

747. **Acanthopneuste borealis** (J. H. BLASIUS).

750. **Regulus obscurus** (RIDGWAY). This becomes

749b. **Regulus calendula obscurus** RIDGWAY. (Cf. HELLMAYR, Tierreich, Lief. 18, 1903, 15.)

II. PROPOSED CHANGES IN NOMENCLATURE AND SPECIES AND SUBSPECIES REJECTED.

9. **Gavia arctica** (LINNÆUS) vs. *G. pacifica* (cf. GRANT, Catal. Birds Brit. Mus., XXVI, 1898, 495). Mr. Grant's

inference, from negative evidence, that *G. arctica* does not occur in North America is erroneous, and there is hence no necessity for eliminating No. 9 from the Check-List.

Aythya vs. *Nyroca* (cf. HOWE, Suppl. Birds Rhode Island, 1903, 9). No change is necessary here; the reasons offered for the proposed change are insufficient. (Cf. 11th Suppl., Auk, XIX, 1902, 332.)

224. **Steganopus tricolor** VIEILLOT vs. *S. glacialis* (cf. COUES, Key, 1903, 795). No change is thought to be advisable, as the name *glacialis* is of doubtful application.

GENUS **PHILOHELA** GRAY vs. *Microptera* (cf. POCHE, Ornith. Monatsb., 1904, 23). *Microptera* of NUTTALL (1834) is pre-occupied by *Micropterus* LESSON (1831), leaving *Philohela* as the earliest available generic name for the American Woodcock.

310. **Meleagris gallopavo merriami** NELSON vs. *M. g. intermedia* (cf. GRANT, Ibis, 1902, 235). The Committee has again examined series of Turkeys from Texas, Arizona, and Mexico, and finds no reason for reversing its former decision.

318. **Leptotila fulviventris brachyptera** (SALVADORI) vs. *L. brachyptera* (cf. GODMAN, Biologia Centr.-Am., Aves, III, 1902, 259). The two forms are found to intergrade, and no change is required.

328. **Elanus leucurus** (VIEILLOT) vs. *E. glaucus* (BARTON) (cf. COUES, Key, 1903, 656). No changes is necessary, as *Falco glaucus* BARTON probably refers to the Marsh Hawk, but is not with certainty identifiable. (Cf. 9th Suppl., Auk, XIX, 1899, 131.)

407a. **Melanerpes formicivorus angustifrons** BAIRD vs. *M. angustifrons* (cf. BREWSTER, Bull. Mus. Comp. Zoöl., XLI,

1902, 105). A trinomial appears best to express the status of this form, although actual intergradation is difficult to prove. No change is deemed desirable at this time.

425. **Aëronautes melanoleucus** vs. *A. saxatilis* (cf. COUES, Key, 1903, 557).

The name *saxatilis* was originally rejected on account of insufficiency of description; no change appears to be necessary.

Myiarchus crinitus residuus HOWE, Contr. Amer. Orn., I, 1902, 30. (Cf. NELSON, Proc. Biol. Soc. Wash., XVII, 30, March 10, 1994.)

Rejected, as being too close to *M. crinitus*.

Subgenus *Empidias* CABANIS (cf. COUES, Key, 1903, 522).

Not considered worthy of recognition.

456. **Sayornis phœbe** (LATHAM) vs. *Empidias phœbe* (cf. COUES, Key, 1903, 525). No change is required.

Subgenus *Mitrephanes* COUES (cf. COUES, Key, 1903, 532).

Mitrephanes was originally applied to a group of extra-limital species, and Nos. 470 and 470a of the Check-List have been erroneously referred to it.

491. **Nucifraga columbiana** (WILSON) vs. *Picicorvus columbianus* (cf. COUES, Key, 1903, 490). This case was decided at a former meeting of the Committee, and no further action is considered necessary.

SUBFAMILIES *Sturnellinæ*, *Ageleinæ*, *Icterinæ*, and *Quiscalinæ* (cf. COUES, Key, 1903, 464). These proposed subfamilies of the Icteridæ adopted in the 'Key,' seem distinct enough when North American members of the family alone are considered, but they merge into each other through the many intermediate links in tropical America.

Icterus spurius affinis (LAWRENCE) (cf. COUES, Key, 1903, 477).

This is considered inseparable from *I. spurius* and not worthy of recognition.

GENUS **ASTRAGALINUS** CABANIS vs. *Acanthis* (cf. HARTERT, Vög. Pal. Fauna, 1903, 66). In the opinion of the Committee *Astragalinus* is sufficiently distinct generically from *Acanthis*.

Centronyx, subgenus of *Coturniculus*, vs. *Centronyx*, subgenus of *Passerculus* (cf. COUES, Key, 1903, 403). The question of the status of *Centronyx* was carefully considered by the Committee last year (cf. Twelfth Supplement, Auk, 1903, 349), and no change appears to be necessary.

GENUS **COTURNICULUS** BONAPARTE vs. *Coturniculus*, subgenus of *Ammodramus* (cf. COUES, Key, 1903, 403, 408). The status of *Coturniculus* was also decided at a recent meeting of the Committee (cf. Twelfth Supplement, Auk, 1903, 349).

GENUS **OREOSPIZA** RIDGWAY vs. *Chlorura* (cf. POCHE, Ornith. Monatsb., 1904, 25-26). There is no necessity for a change, as *Chlorura* Sclater is preoccupied by *Chlorurus* Swainson.

588*d*. **Pipilo maculatus atratus** RIDGWAY vs. *P. m. megalonyx* (cf. GRINNELL, Condor, 1902, 23). No change is deemed advisable in this case.

Subgenus *Kieneria* BONAPARTE (cf. COUES, Key, 1903, 460). This is used by the late Dr. Coues as a subgenus for the Brown Towhees, but is properly a synonym of the extralimital genus *Melozone*, and as such does not require consideration here.

Genus *Chrysocantor* MAYNARD (cf. BANGS, Bull. Mus. Comp. Zoöl., XXXIX, 1903, 153). This is rejected as being based upon color characters alone.

Dendroica aestiva brewsteri GRINNELL, Condor, 1903, 72.
Not accepted, the characters ascribed being too slight for recognition in the Check-List.

Heleodytes brunneicapillus anthonyi MEARNS (Auk, 1902, 143).
This is considered to be the same as *H. b. couesi* (cf. SWARTH, Condor, 1904, 17-19), and is therefore rejected.

Catherpes mexicanus polioptilus OBERHOLSER, Auk, 1903, 197.
Rejected, as not sufficiently distinct from *C. mexicanus albifrons*.

GENUS **TROGLODYTES** VIEILLOT vs. *Paulomagus* HOWE (cf. HOWE, Suppl. Birds R. I., 1903, 22). *Paulomagus* is proposed as a new generic name for the House Wrens. The Committee has already decided that *Troglodytes* refers to the House Wrens; hence *Paulomagus* is superfluous.

GENUS **OLBIORCHILUS** OBERHOLSER vs. *Anorthura* RENNIE (cf. SHARPE, Hand-List, IV, 1903, 91). *Anorthura* is an exact equivalent of *Troglodytes*, embracing the House Wrens only, leaving *Olbiorchilus* as the first name applicable to the Winter Wrens.

Cistothorus palustris dissaëptus BANGS, Auk, 1902, 352. This is rejected as being equivalent to *Telmatodytes palustris*. Mr. Bangs distinguished two forms, but through inadvertence renamed *T. palustris*; the other has since been described as *T. p. iliacus*.

Sitta pusilla caniceps BANGS (cf. HELLMAYR, Tierreich, Lief. 18, 1903, 190). This was rejected at an earlier meeting of the Committee (cf. Ninth Supplement, Auk, 1899, 131).

GENUS **PSALTRIPARUS** BONAPARTE vs. *Ægithalos* HERMANN (cf. HELLMAYR, Tierreich, Lief. 18, 1903, 108). These two genera are held by the Committee to be perfectly distinct.

Auriparus vs. *Anthoscopus* (cf. HELLMAYR, Tierreich, Lief. 18, 1903, 125). No change seems warranted.

Subgenus *Phyllobasileus* CABANIS (cf. COUES, Key, 1903, 262).

This is not considered sufficiently distinct from *Regulus* to be recognized in the Check-List.

GENUS ***Ixoreus*** BONAPARTE vs. *Hesperocichla* BAIRD (cf. SCLATER, Ibis, 1903, 142). No change in this case is considered necessary. While Bonaparte may have mistaken a South American species of *Tenioptera* for *Turdus naevius* Gmelin, he distinctly states his new genus *Ixoreus* to be based upon "*Turdus naevius*, Gm."



THE FARALLONES (EXCEPT SADDLE ROCK), FROM THE EAST.

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A FORTNIGHT ON THE FARALLONES.

BY MILTON S. RAY.

A DUSKY group of naked, stony peaks on the horizon, set in a summer sea against a cloud-strewn sky, was our first view of the Farallon Islands, near noon on May 27, 1904. Charles A. Love, Oluf J. Heinemann and the writer had left San Francisco at seven o'clock in the morning on the trim little seventeen-ton gasoline schooner 'Jennie Griffin,' which makes bi-weekly trips. As we neared the islands birds became more and more numerous; bands of cormorants, strung out in Indian file, passed us, and flocks of murrelets dove or splattered over the water from the ship's side. With a retinue of cackling gulls above us or trailing in our wake, we entered, at half past one, the picturesque harbor, walled in by towering cliffs, rocky arches and jagged islets, prosaically named Fisherman's Bay. Amid the rising clouds of bird life, startled by our whistle, we dropped anchor, and after a short row ashore and a flat-car ride of half a mile, drawn by the famous island mule, 'Patti,' we arrived at Stone House, a comfortable two-story structure of spotless white, of which we were given possession. With all the eagerness that characterizes the naturalist in new territory we partook of a hasty lunch and set forth to explore the greatest of western bird rookeries.

After the discovery of gold in 1849 the fast increasing commerce of the 'Bay City' necessitated the installation of a lighthouse on these islands, as they lie due off the harbor. The

light is of the first order and the most important on the coast, and is zealously tended by the four keepers from sunset to sunrise, in three-hour watches. The light tower is perched on the summit of the islands and is reached by a winding path that zigzags along the steep bluffs. When the heavy gales blow the keepers are often forced to crawl on hands and knees in the unsheltered places. Their homes, two two-story frame buildings, are on the level tract on the south side, and with Stone House, numerous outbuildings and the fog-station, have the appearance of a small hamlet. The wireless telegraphy station and Weather Bureau observatory, with its varied appliances for registering the atmospheric conditions, are situated on the Jordan, a third of a mile distant. Mr. E. C. Hobbs, the head official, very kindly allowed us the use of his dark room at will.

The resident population at present numbers twenty, more or less increased by visitors, and the register shows a strange assemblage of names — Greek fishermen, pilots, government inspectors, artists who have ventured out here to portray on canvas the wild beauty of these strange islands, and hosts of photographers whose views innumerable lie on the head-keeper's parlor table. Among these, in a class by themselves, were some by the late Chester Barlow, and, likewise distinctive, a number of inimitable bird-sketches by Louis A. Fuertes, who made a recent visit.

The islands lie about thirty miles west of San Francisco, and are divided into two groups. The North Farallones, or North Rocks as the islanders term them, lie seven miles to the northwest and, compared with the main group, are small and unimportant. Midway between lies lonely little 'Four Mile Rock,' also known by the misleading title of the 'Middle Farallon.' The southern cluster comprises South Farallon, the main island, Sea Lion Islet, Finger and Arch Rocks, easily reached by planks, and Saddle Rock and Sugar Loaf by boat, besides a number of minor islets. (Plates XXIII and XXIV.)

South Farallon, or Southeast Farallon as it is also called, is a mile long, from a quarter to a half a mile or more wide, and three and a half miles in circumference. A rocky backbone runs the entire length, more or less broken by gorges and by a narrow sea-stream, the 'Jordan,' which separates a portion known as West



FINGER ROCK.

End, and which has been recently spanned by a substantial bridge. The highest points are Light Tower Peak, 345 feet elevation, on the east, and Main Top, 225 feet, on the west. The slope from the ridge to the water's edge is in places so precipitous as to preclude foothold, in others running out into broad rocky or grass covered flats, with now and then a sandy beach. The tireless waves have hewn all manner of curious caves, arches, fjords and basins in the rocky shore. There are caves inland as well, one extending far under Light Tower Peak. The base rock of the islands is a dark, rather soft granite, except Sugar Loaf, which is a mass of conglomerate. The soil, in some places of considerable depth, though confined to the more level slopes, is guano mixed more or less with granite sand, which latter, with broken shells, forms the beaches.

Rain is the only potable water, and is caught in a broad cement shed and stored in cool reservoirs and tanks. A spring of amber colored mineral water bubbles up within a few feet of the breakers, which has the remarkable flavor of unsweetened lemonade. A superficial examination showed the principal mineral ingredients to be sulphates of alumina and iron.

With the exception of a grove of twenty Monterey cypress trees in a protected situation the vegetation is limited to several varieties of clinging weeds, viscid rock-flowers, moss and the hardy grass which clothes some of the flats and slopes. The surrounding islets are all precipitous with little or no plant life.

The climate is rather cool, with frequent high winds. The first seven days of our stay the weather varied from clear to cloudy, with little wind and a calm sea, in fact perfect weather. June 3 a strong northwest wind sprung up, with a maximum velocity of fifty-two miles an hour on the level and close to seventy on the peak. During the next two days we again had pleasant weather, and then on June 6 and 7 the wind blew from twenty-eight to forty-two miles an hour, but moderated more or less the last four days of our stay. We had fog but one night, June 1, when five hundredths of an inch of moisture fell, and our sleep was punctuated by the fierce blasts of the steam fog-whistle. Except on the lee side, the high winds prevented good results with the camera, but as these were only occasional we had but little difficulty in taking our six dozen pictures.

Mammal life is not unrepresented on these sea islands. Great bellowing herds of ponderous sea lions make their home on Saddle Rock and Sugar Loaf, and whether floundering clumsily up and down the rocky slopes or moving quietly along the shore line, these huge amphibians were a continual study. According to the residents the young sea lions have a strong aversion to water and frequently wander far inland on the main island. Rabbits, said to be of Australian breed, abound on South Farallon. They inhabit burrows on the hillsides and when surprised often scamper, in their hurried efforts to hide, into some small nook or crevice from where they can be pulled out by the hand.

The following is a list of the breeding birds observed :

I. *Lunda cirrhata*. TUFTED PUFFIN.

To see that most curious bird, the puffin, with its massive bill and the yellow curls that adorn its head, in its summer home is alone well worth the island trip. We first encountered this brownish, short-tailed species of bat-like flight on the day of our arrival, just off the harbor, and from its striking features we were able to identify it at a glance. We found them nesting abundantly over nearly the entire island, from the sea level to the crest, and at Puffin Slope, between North Landing and Tower Point, the hillside is simply honeycombed with their burrows; I have counted as many as forty-three birds sitting on the rocks about the entrances. There is also another large colony on the slope opposite Murre Rocks, on West End. The holes ran in from one to five feet, some being dug in the soil among the rocks while others were natural cavities in the cliffs and ledges or under boulders. A number were unlined, but most of them were scantily lined, and in a few the single egg was partly buried in a heap of weeds. During our visit we found both fresh and partly incubated eggs, the former predominating. The majority were but very faintly marked, and those wreathed with jerky lines of lilac and tan were rare exceptions. All eggs except those just laid were more or less discolored by contact with the damp soil and other surrounding material.

Its white face and light colored bill rendered the puffin easily

distinguishable in the semi-dark burrows. Some birds took flight on our approach, while others left the egg and crawled further back in the tunnel, offering no resistance; but the majority refused to stir and sat quiet and motionless, although that keen-edged tool, their beak, was ever active, and not until I attempted to reach an egg did I fully appreciate its formidableness. If a stick or other object is thrust within its reach it hangs on with the tenacity of a bulldog, only letting go when its mouth is pried open. On West End, one day, I beheld two puffins so vigorously battling that they were oblivious to my presence; and Mr. Cane informed me that he once saw two birds begin fighting in the air, above the light tower, and they continued to fight while descending, and even after they reached the water.

On one occasion I chased a rabbit to a burrow among the rocks, but the animal had scarcely entered when out it quickly jumped. I looked in and there, sentinel-like, stood the puffin on guard with a bill full of 'bunnie's' fur.

The statement that "they are among the most noisy of the sea birds, always screaming while out on the rocks and constantly growling while in their burrows,"¹ I consider erroneous as we found the puffin a very quiet bird. Although the 'sea parrot,' as this species is also called, is a good flier and can rise from the ground with ease, yet when the heavy winds were blowing I noticed scores crouching flat on the rocks. On foot this bird is about as ungainly as most of its tribe and has a ridiculous straddling gait.

2. *Ptychoramphus aleuticus*. CASSIN'S AUKLET.

One might visit the Farallones in the daytime and unless he investigated their nesting haunts or hiding places, would never know that either the trim, white-breasted auklet or the sooty swallow-like petrels existed on the islands. The nest of the auklet was the first nest we found, as they were common about Stone House, whence we sallied forth on our initial trip, as they were almost everywhere. The single white egg, with a faint greenish

¹ Nests and Eggs of North American Birds, p. 9.

cast, is laid in burrows in the guano from one to four feet in depth, or at like distances in nooks and crannies of the rocks and cliffs, with rarely any lining, and at all elevations above the sea. The eggs, like those of the preceding species, become much soiled by their surroundings. On our arrival fresh or nearly fresh eggs were the rule and young the exception, while on our departure it was the reverse.

According to my experience this species, when robbed, does not lay again. When pulled off the nest a sticky reddish substance exudes from the bill of the parent, which is no doubt semi-digested food for the young. When released the auklet would frequently run back to the nest while others would fly rapidly out to sea. The young are covered with black down. During the latter part of our stay I found many of the larger young birds alone in the burrows, both parents being away, evidently foraging.

When the islands are wrapped in the darkness of night, the lofty pinnacles of the ridge rise like towers above a battlement, and from their highest point the strong light from the light tower streams across the sky and far out to sea. And now, when all the other birds have retired to roost and the great rookeries are silent, in from the sea and out from their burrows the auklets come by thousands, and with the petrels begin their nightly labor. By the light of a lantern the air and ground seem black with swift moving figures, and their strange yet not unmusical cries mingle into a mighty chorus which, coming out from the darkness, has a weird effect.

3. *Cephus columba*. PIGEON GUILLEMOT.

The guillemot is a trim little bird, resembling a pigeon in size, form and plumage, but it lacks the latter's grace on land, moving over the rocks in a clumsy, flat-footed fashion. These birds became more abundant every day during our stay, but they did not begin to lay until the end of the first week in June. We found well incubated single eggs as well as pairs; hence incubation must really have begun although the majority of all the eggs we found were fresh. The nests, merely pebble-lined slight hollows, were located under projecting ledges, boulders, or in spaces

between piles of rocks where they could be seen not infrequently from above. I also noticed a number of pairs nesting under the wooden platform that overhangs the rocks at North Landing. It is usually several days after laying the first egg before the bird lays the second.

Although more wary than most other island species, on several occasions we caught sitting birds on the nest. In fact, firearms are seldom necessary to secure specimens on the Farallones, and then only a rifle should be used, for, according to the head light-keeper, Mr. Cane, nothing frightens the birds on the island like the report of a shotgun, and when it is discharged in a rookery creates a panic. The cry of the guillemot is a peculiar feeble hiss-like whistle, almost inaudible amid the roar of the mighty breakers that come tearing up against the flat, low-lying shore rocks where these birds congregate in numbers.

4. *Uria troile californica*. CALIFORNIA MURRE.

The murre not only outnumbers all other species on the islands, but all of them combined. On May 28 we found what the head keeper said was the first egg of the season, and he also stated that the birds commenced laying about ten days later than usual this year. Later on eggs became more and more numerous, and during the last week of our stay we noted them everywhere.

The largest rookeries on the main island are in Great Murre Cave and at Tower Point, on East End, on the rocky shelves and terraces below Main Top Peak, and on the dizzy sides, from sea to summit, of the Great Arch, the natural bridge par excellence, on West End. The birds also breed abundantly all along the ridge and in the numberless grottoes along the seashore, while the surrounding islets are covered with them in countless thousands. Great Murre Cave, which runs in from the ocean on Shubrick Point, with its vast bird population, is a wonder to behold. All ledges and projections, as well as the cave floor, were murre-covered, and on our approach the great colony became a scene of animation, with a vast nodding of dusky heads and a ringing concert of gurgling cries. The birds, at first in tens and then in twenties, flew out, or by sprawling and flapping over the rocks and

into the foaming surf, thus gained the open sea (see Plate XXV). Some were terribly thrown about in the breakers but apparently received little injury. On our entrance the main body took flight, with a mighty roar of wings, and so close did they fill the cave that it behooved us to get behind boulders to prevent being struck by them. Many birds still remained in the cave, retreating deep into the branching recesses or, sheep-like, huddled into the corners, where they could be picked up by the hand. The multitudes which took wing would wait, scattered over the water about a quarter of a mile from shore, until the commotion was over and would then come trooping back to the cave.

The murre when caught is by no means a peaceable captive, as anyone who has come in range of its strong, sharp-pointed bill will testify. The closeness of the tiny feathers on the head and neck have the appearance of, and feel to the touch like, a piece of satin. It is a most ungainly bird on land; if put to flight when on some abrupt eminence they can usually gain sufficient momentum to continue; otherwise they scramble, with the aid of their wings, clumsily over the land and boulders, and in their endeavor to hurry frequently strike with force against the rocks.

From my own observations I do not think that in a battle royal the gull with its hooked bill has any advantage over the murre with its stiletto-like weapon, but succeeds in its high-handed robbery by better control of wing and foot and overwhelming numbers. The gulls swoop down when the murres have been flushed from their eggs and secure the booty, or a number by harassing a single bird simultaneously from all sides finally start the egg a rolling. It is amusing to see a bob-tailed, erect, soldier-like murre with an egg between its legs and a single swaggering gull endeavoring to secure it. Every time the gull cranes its neck forward for the egg the murre also bends with a vicious snap of its bill, which the gull is wise to dodge; and thus the birds will keep salaaming, like two polite Japanese, until another gull comes to aid its fellow or, unaided, the bird gives up the attempt. The cave colonies are the only ones where the murres are secure from persecution by these bird-pirates.

The murre's egg is admirably adapted for the situations in which it is laid, as its pear-shaped form prevents its rolling except





GREAT MURRE CAVE.

in a circle, and the extremely hard shell permits of much rough usage. We found eggs almost everywhere — in inland caves, along the rocky ridges, in damp sea grottoes and on low-lying shore rocks — with no sign of a nest, and in places where one would marvel at their perilous position. On the islands where an unlimited series can be seen, with an endless variation in colors and markings, some very grotesque looking specimens can be found, and on some the strange scrawls have a remarkably close resemblance to figures and other designs. The two most easily separable types, those of white and greenish ground color, seem about equal in abundance. Cinnamon colored eggs were rather scarce, and those of pure spotless white were but very rarely seen.

Mr. Cane states that the birds depart in September, leaving with the young at night, returning to the islands in December.

Although the day of professional egging has passed, the islands still ring with accounts of the egg-carrying feats and hair-raising exploits in which, latterly, the light-house crew took the principal part, and which netted them a neat income. An egger's outfit consisted of a blouse-like 'egg shirt,' which, drawn tightly around the waist, held the eggs, often as many as eighteen dozen or more; a pair of 'egging shoes,' with soles made of braided rope and tops of canvas, which are still used by the islanders for climbing steep rocks; and lastly a long coil of stout rope for use in the more dangerous places. Two lives have been lost in this risky trade and minor accidents were common. One egger fell off Saddle Rock with a shirt full of eggs and would have sunk with the weight had he not had the presence of mind to begin breaking them on striking the water. When the season started the main and adjacent islands, including Sugar Loaf and Saddle Rock, were gone over and all the murre's eggs in reach destroyed, thus insuring only fresh ones. This and the regular egging days, when the great colonies were flushed, were red-letter days for the rapacious gulls who followed the eggers about in noisy flocks. Mr. Cane stated that on mornings when a late start was made the gulls would become impatient and start a reign of terror in the murre rookeries by themselves. The available territory was divided into two sections, each being worked every other day. There still remain on the island stone sheds where the eggs were stored,

secure from the pillaging gulls, and from which they were shoveled out into the hold of small schooners or fishing boats without packing. Although the great Farallon supply is now cut off, the eggs still find their way, in limited quantities, to the city markets from the rookery at Point Pedro, in the adjacent county of San Mateo.

5. *Larus occidentalis*. WESTERN GULL.

The gulls are the virtual rulers of bird-dom on the Farallones, and that they live on the best the islands afford those suffering subjects, the murres, cormorants and rabbits, will testify. I felt but little compunction when taking their eggs, for it seemed but just retribution. When a nest was disturbed in the main breeding grounds the parents would set up a loud cry in which the surrounding flocks would join until it became almost universal and continuous. Some of the more pugnacious birds would dart down at our heads, swerving upward at the last moment.

While this bird builds in colonies, so to speak, they are not like those of the cormorant or murre. There is always fighting room between the nests and only the aggregations near Shell Beach, Indian Head, and at Guano Slope on West End, and about Tower Point on East End, could well deserve this term. Besides these places we found them breeding in scattered congregations all along the rocky terrace west of the Jordan, from the shore to the highest points. On the east, in addition to the rookery at Tower Point, we observed a dozen isolated nests at Bull Head Point, near Arch Rock, and about half that number right at the Weather Bureau observatory, where, rewarded for their confidence in man, they brooded unmolested. The great mass of driftwood, thrown up by winter storms, was a favorite spot in the Shell Beach Rookery. We did not, however, observe any of these birds nesting off the main island. (Plate XXVI.)

While they are somewhat wary, many allowed us to come quite close before rising from their nests. The latter are placed in natural basin-like hollows among the rocks, by which they are partially sheltered, although some were in the most open and windy situations. The nest is a bulky structure, composed of various dry



GULLS ON WEST END.

island weeds and grasses, and has about as much claim to ingenuity as those of most sea birds. They vary little in size, averaging thirteen inches across, the cavity being eight inches by four deep. About many of them I noticed small heaps of ejected fish bones. When we arrived nearly all the nests held fresh eggs, and on our departure many young were pipping the shell and several had emerged. We found the eggs, when boiled, to be indistinguishable in flavor from those of the chicken, and they usually formed some part of the daily fare during our two weeks' stay. There being four keepers with their families on the island, the gull colonies have been divided into four routes, visited every other day. These routes are all on the flats or gradual slopes, those on the rugged ridges being left undisturbed. Only single eggs are taken, nests containing more being left, and the average yield of a route is seventy-five eggs. After being repeatedly robbed the birds continue laying until finally they become content to hatch a pair or a single egg, although three is the full set, and in this way the laying season gradually comes to a close, which it was nearing when we left, as we found numerous singles in which incubation was far advanced.

But even when the gulls begin to set their troubles are not over, for, later, many of the 'squabs,' which have the fatality to taste like chicken, find their way into various fricassees and potpies to grace the table of the Farallonians. According to the keepers but few gull eggs ever reached the city markets in the old 'egg-times,' and personally I do not remember ever seeing them on sale. The shells, compared with those of the murre, are frail and would not stand shipment 'murre style.'

Mr. Cane found a white and almost unspotted gull's egg the first week in June, and Charles Love of our party collected on June 11 a pair, of which one is light pearl and the other greenish clay, and both are but faintly marked. Runts of various sizes were not uncommon. We found the markings to vary from fine scrawls or small spots to great blotches, some of which covered half the side of the egg. Specimens with light and dark ground colors were frequently found in the same set, as well as those with the different styles of markings. Although the gulls seldom eat the eggs of their own kind, on several occasions I noticed them

doing it, especially when the egg had been knocked out of the nest.

Only three or four gulls in immature mottled dress were seen, and when the great flocks on West End would rise and hover above us in their uniform snowy plumage, in the bright sunlight, it was an inspiring sight.

6. *Oceanodroma leucorhoa*. LEACH'S PETREL.

Although found some years ago on the island by Mr. Leverett M. Loomis, and doubtless breeding there in limited numbers, we failed to find them, although we might have, perhaps, had we come a month later.

7. *Oceanodroma homochroa*. ASHY PETREL.

We saw little of the petrels except at night, when they fluttered about, or on our daily rambles when we spied their dark form in some narrow crevice in the ledges or rock fences. On being lifted in the hand a dark oily fluid would drip from their beaks, and when released these birds, with the form and wavy flight of a swallow, would make for the open sea. We noticed a number of these dainty little birds which had been killed by striking the telephone and telegraph wires on the island.

The petrels were evidently late in breeding this year, for although we made a thorough search and found many roosting birds, we secured no eggs except those of last year, in which the contents had dried.

8. *Phalacrocorax dilophus albociliatus*. FARALLON
CORMORANT.

We first visited the Main Top Rookery, the only one of this species on the Farallones, on the morning of May 29. After a hard climb, about the hardest on the islands, with all our photographic apparatus, we saw the rookery just above us, below the peak. As we came up a strange and never-to-be-forgotten sight greeted our eyes. All about on the weed nests on the jutting rocks



A PORTION OF THE BRANDT'S CORMORANT ROOKERY.

and boulders sat the angered cormorants with open bills, pulsating throats and ruffled feathers, shaking their snake-like necks back and forth and uttering hoarse guttural, wheezy croaks, and only leaving the nests when we were within arm's reach of it. The parents were easily identified by the bright yellow gular sac, and the young, which most of the nests contained, were inky-skinned creatures, with little in their favor, wobbling helplessly about the nests and barking like little puppies. On our last visit most of them were covered with sooty down and looked more presentable. The eggs, three or four in number, were nearly all well advanced in incubation, although we got several fresh sets; they had the appearance of being finely spotted, on account of the numerous fly specks.

The weed nests (Plate XXVII, Fig. 2) were like those of the gull but much larger and shallower, measuring twenty inches across, the cavity being nine in width and three in depth. I counted but forty-seven nests in the colony, which shows that the number of these birds, now the least abundant cormorant on the islands, is continually decreasing. On subsequent visits we noticed the birds did not re-lay in the nests from which we had taken eggs. The gulls did not molest the eggs and young in this rookery, for the reason the old birds did not give them a chance, they settling back on the nest as soon as we passed it. While it was interesting to watch these avian snakes in their summer home, the decaying remains of numerous fish about the colony and the swarms of seal-flies rendered it a pleasant place to be away from.

9. *Phalacrocorax penicillatus*. BRANDT'S CORMORANT.

Brandt's Cormorant is the commonest and biggest species of the island cormorants. Besides the large rookery on the more gradual slopes on the north side below Main Top Ridge, extending from near the water to well up the hillside, there are large colonies nesting on Saddle Rock and Sugar Loaf. We gained our first view of the rookery on West End when we crossed the ridge on the morning of May 30. Right below us, with scarcely foot-space between the nests, was the great city of cormorants. (Plate XXVII.) I counted 156 nests; on June 3 they had increased to 187, and they were still building. The weeds that trail over the

rocks form most of the nest material, and these become more or less dry by the end of May and are easily detached by the birds; in fact a strong wind will frequently rip up a whole mat-like bed. In make and size the nests of this species are like those of the preceding. I noticed considerable sea moss among the nest material, which is undoubtedly uprooted by the birds themselves, but it was not in such variety as I had been led to believe. Quarrels over nest material were of frequent occurrence among the birds of the rookery, but the most arrant robbers came from the settlement on Sugar Loaf, where the weeds do not grow. It was a queer sight to see one of these great lumbering-flighted cormorants come flapping into the colony, and after some opposition succeed and go awkwardly sailing off with a long stringing bunch of weeds.

After our first inspection we did not approach close to the rookery for the reason that the birds were just laying and were easily put to flight, upon which hordes of screaming gulls would settle down and make off with the eggs, some breaking one after another through pure meanness without touching the contents, while others would devour the egg (less the shell) in the nest without taking the trouble to fly, and by the time the cormorants returned not an egg remained. From the nests on the outskirts we took several sets of four eggs. This species, like the other two varieties, is easily recognized, even at a distance, from its nuptial plumage, the most conspicuous adornments being a dark blue gular sac and small bunches of thread-like feathers hanging from the sides of the neck.

All day long the great rookery was a scene of activity; everywhere the ponderous clumsy birds, using to the best of their ability what skill nature had endowed them with, were fashioning their weed-homes, while scores of setting birds ever and anon would rise to stretch their stiffened wings or to greet their mates returning fish-laden from the sea.

10. *Phalacrocorax pelagicus resplendens*. BAIRD'S
CORMORANT.

Baird's Cormorant, by its small size, sleek plumage, and conspicuous white flanks, was easily separated from the other mem-

bers of the family on the isles. These birds are remarkably adept in clinging to the almost perpendicular cliffs, where on some slight projection or hollow they will place their weed nest, some portion of which frequently extends over the edge. Most were in situations that to think of reaching would take one's breath away, and always brought to mind the use of long dangling ropes or gigantic ladders to bring these unwilling specimens to the cabinet. We were, however, able to reach a number of those in the more accessible places. Although a more or less solitary species we found quite a colony, with about twenty nests, along the precipitous rocky divide on the south side of West End. In many places on the main island and adjoining islets groups of several nests together were common, but a large number of them were isolated. The nests were built in the usual cormorant style, a little smaller and deeper than those of the other two species. The day we came the birds were guarding their homes, evidently fearing usurpation by their own kind, for in all that we could see no eggs had yet been laid, and up to the time we left they were still on duty on the eggless nests. Many of the latter were completed, while others were being built, either over the remains of a last year's structure or anew. When constructing a nest one bird would bring the weeds while its sitting mate would place them, although at times both birds would take a hand in the work, which seemed to progress with marvelous slowness.

11. *Lophortyx californicus californicus.* CALIFORNIA
PARTRIDGE.

According to Mr. Cyrus J. Cane, the present head keeper, several of these birds were on the island for a period of seven years and built their nests among the grass on the flats. One in particular struck up a great friendship with one of the hens and would roost by its side in the chicken house.

12. *Corvus corax sinuatus.* AMERICAN RAVEN.

For many years a pair of these birds nested in a trough-like aperture in Raven Cliff, but since these were shot last year, on

account of their depredations on the island hennery, no birds of this species, according to the lighthouse crew, have been seen.

13. *Carpodacus mexicanus frontalis*. HOUSE FINCH.

It was a surprise to us on arising the second day, to hear the loud cheerful whistle of the House Finch perched on the peaked roof of our dwelling, for somehow during the excitement of our first day among the great bird shows we had overlooked the presence of this species, several pairs of which, for the first time, were nesting here and challenging the Rock Wren's long-defended title of being the island's only song bird. Were it not for the grove of friendly evergreens, where these birds would have nested is a puzzle. One nest, which held five eggs in May, was closely made of island grass, with an occasional feather intermixed, and lined with bits of string, cotton and mule hair. We noted another nest with a like complement just before we left.

14. *Salpinctes obsoletus*. ROCK WREN.

The fluffy little Rock Wren, whether rummaging among the boulders or delivering its cheery song from its granite perch, was a constant companion on our daily travels, except west of the Jordan where I noted it as scarce. Had it not been for the telltale shells and stones which lined the pathways to the nests they would have been difficult to find, for the birds usually slip off unseen and make a great fuss at a safe distance to mislead the searcher. Whether the nest was in a niche in the cliffs, beneath a rock fence, or under a granite ledge cropping out above the surface, it was always placed among rocks firmly embedded and never amid the loose rocks that lay scattered about on the top of the ground. We found in all, including those of the year which had been deserted, and those of the previous season, about twenty nests.

On the 3d of June I excavated with a pick a winding cavity that ran to a nest below a solid granite ledge near the Weather Bureau station and which the children had been unable to reach. In nests of this sort considerable care must be taken, as flying bits of stone or falling debris are liable to destroy the eggs.

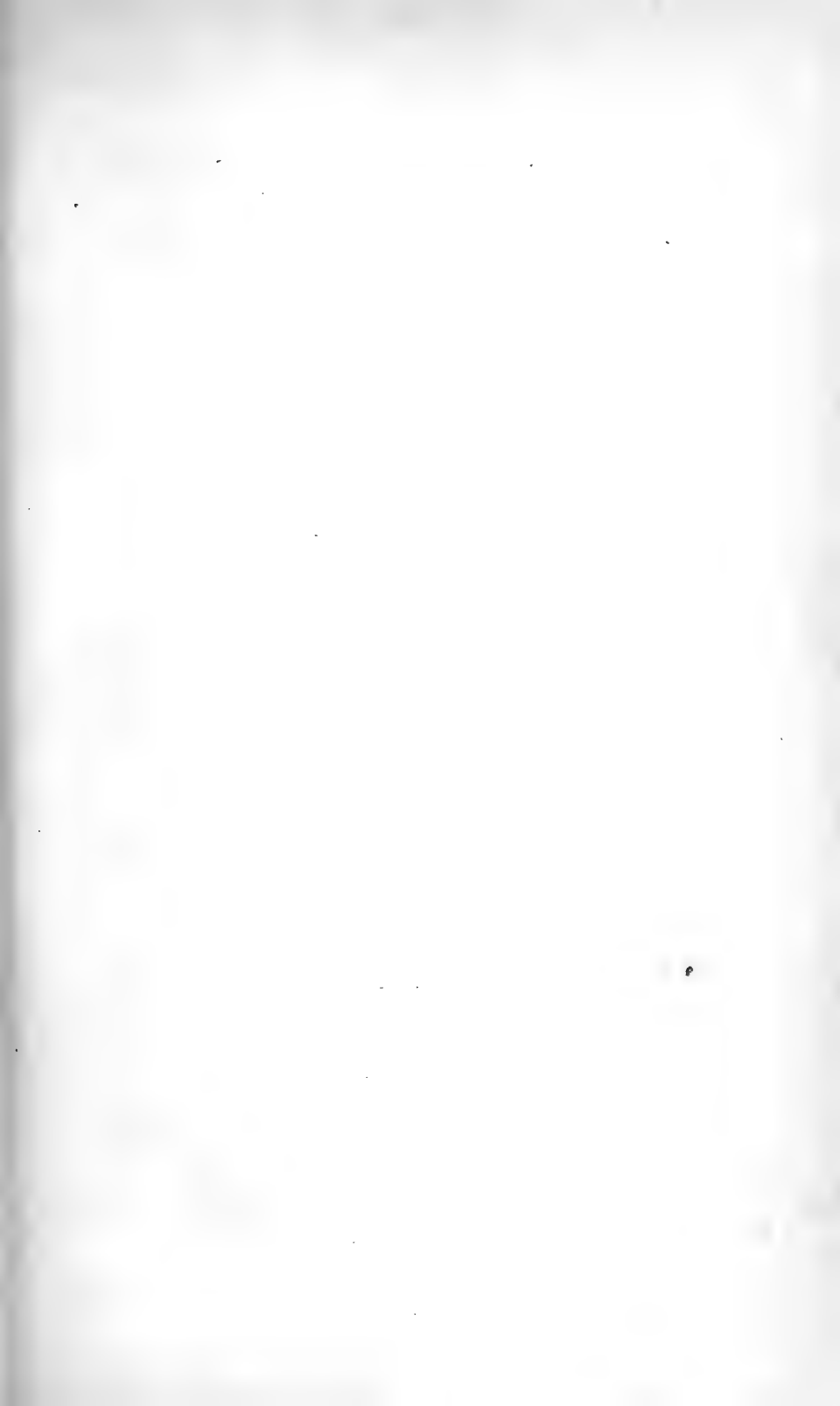




FIG. 1. ROCK WREN.



FIG. 2. FARALLON CORMORANT.

This nest held seven eggs in which incubation had made a slight start. It was made of excelsior packing and lined with thread-like grass and mule hair with small bits of cotton about the brim, and had the usual accumulation of stones and shells leading to it. Mr. Love found a nest the same day under a stone wall near Stone House, with a like complement. Most of the birds, however, had young in or out of the nest, and Ernest Wenthars, a promising young bird student, says they start nest-building early in March, for he has noticed eggs in the latter part, and must raise two if not three broods in a season. As many of the nests, however, are robbed by urchins the breeding season is unnaturally extended, for the birds will not lay in a fresh nest which has been disturbed nor re-lay in one from which the eggs have been taken, but will rebuild in a new situation. On the 10th of June I found two of these late nests in the course of construction. We also found the percentage of infertile eggs to be heavy, for in every nest with young we noted one or two addled eggs. The wrens were very tame and when we were tunneling the home of some auklet they would be at our elbow peering among the upturned rocks for some tasty morsel, and one morning one of these birds entered our kitchen; we caught it, and after we had photographed it we set it at liberty. (Plate XXVIII, Fig. 1.)

Perhaps of all its nesting localities the favorite was under the rock foundation of the railway which flourishes under the presumptuous title of the 'Farallon Midland.' In fact, in their enthusiastic endeavor to unearth Salpinctian dwellings, some recent ornithological visitors threatened to seriously undermine the roadbed until stopped by head-keeper Cane.

By far the most elaborate nest I found was in the rear of Stone House; it ran in the earth among the rocks of a rock fence. A shelf-like stone at the entrance formed a sort of veranda, and this the birds had literally covered, as well as the main corridor leading to the nest. I noticed the pavement was equally deep under the nest, and that all the tiny nooks and crevices on the way were filled. I carefully counted all the stones and other material in this earthen burrow between the bare granite boulders, and as it was situated two feet up in the wall the birds had undoubtedly brought all of them. The strange assortment of

articles would do credit to some fabled jackdaw, and consists as follows:

Safety pins	1	Pieces of plaster (from walls of	
Pieces of wire	2	house)	4
“ “ a pair of scissors	2	Pieces of shingles (some as	
“ “ zinc (from old bat-		large as 2 in. x 3 in.)	12
teries)	10	Bits of abalone shells	9
Fish hooks	2	“ “ mussel “	20
Pieces of glass	2	Rusty nails	106
“ “ leather	1	Bits of flat rusty iron	227
Copper tacks	4	Small granite stones (very reg-	
Pieces of limestone like that in		ular in size)	492
caves	2	Bones (rabbit, fish and bird)	769

Also considerable dislocated nesting material, as weed stems, grass, etc.

The birds in this case had easy access to all the little bits of material that accumulate around dwellings; but even then, what a vast amount of patience and labor, as well as perception, it required to find and transport the 1665 listed objects, to say nothing of building the nest itself! This was composed of the bird's favorite substance, excelsior packing, together with a few weeds and grasses and bits of cotton and rabbit fur tucked in decoratively here and there, and measured $5\frac{1}{4}$ inches over all, while the cavity was 3 inches across by $1\frac{1}{2}$ inches deep.

Of all the nests we noted, in no case did we see one where the birds did not, to a greater or less degree, exercise their strange habit of paving the pathway. While various theories have been advanced to account for it, one cause, which seems to me to more nearly hit the mark is the desire to overcome dampness. Those nests with earthen floors, of varying moistness, have much more pretentious stone walks than cliff-nests which are comparatively dry, although it is true that about the latter there is generally but little space for the wrens to cover. But perhaps the best argument in support of this theory is that the birds before building the nest first line the passage, as I found that stones were equally deep below completed nests, and I also noticed that nests in the first stages of construction had the stone-ways already finished.

ADDITIONS TO MITCHELL'S LIST OF THE SUMMER
BIRDS OF SAN MIGUEL COUNTY, NEW MEXICO.¹

BY FLORENCE MERRIAM BAILEY.²

IN THE course of our Biological Survey work in the summer of 1903, when on our way from the Staked Plains to the southern Rocky Mountains in June, and afterwards in rounding the southern end of the mountains and following up the eastern side of the range in July and August, Mr. Bailey and I spent nearly two months in San Miguel County, crossing a large part of its territory. From the Staked Plains we drove north almost half way across the county to the Canadian River, where we were only about twenty-five miles from the eastern boundary of the county, when we turned west, crossing to the extreme western boundary, between Pecos and Glorieta. Through the northwest corner of the county we made two sections, following north into Mora County on the Pecos River Forest Reserve, and after our return to Pecos making another north and south section, driving from Bernal up through Las Vegas and across the northern line of San Miguel into Mora County.

In this way we worked the most marked types of country that the county affords, crossing the plains, climbing the mesas that, in the breaking down of the Rocky Mountain plateau are left as river-cut blocks on the plains, following along the rich fertile bottoms and narrow cañons of the Pecos River, and exploring the mountains of the county on the way to the head of the Pecos. The plains and mesas of the northeastern part of the county, however, we did not visit at all, and work in that section should be done to complete the county records.

In the breeding season the birds of the treeless plains which we crossed in the south central part of the county were Horned Larks and Meadowlarks, the Meadowlarks being found only in

¹ The Summer Birds of San Miguel County, New Mexico. By Walton I. Mitchell. *Auk*, Vol. XV, 1898, pp. 306-311.

² Published with the permission of Dr. C. Hart Merriam, Chief of Biological Survey.

depressions on the plains where there was moisture. In the higher reaches of the juniper and nut pine—Upper Sonoran—section, some of the characteristic birds were Piñon and Woodhouse Jays, Western Lark Sparrows, Cañon Towhees, Gray Titmice, and Lead-colored Bush-tits. In going from the Staked Plains northwest toward the Rocky Mountains, the mesas rising from the plains grew successively higher, and Transition zone yellow pines were reported to us as far east as Pablo Montoya Grant. The first that we saw were in the central part of the county, on the top of Mesa del Agua de la Yegua, which reaches an altitude of 7000 feet, rising 1000 feet from the juniper plain. With the pines we found many of the birds that usually penetrate the Transition zone, including the Long-crested Jay, Lewis Woodpecker, the Western Wood Pewee, Western Chipping Sparrow, Grace Warbler, and the Rocky Mountain and Pygmy Nuthatches. In the southwestern part of the county the cultivated bottom lands of the Pecos afforded such birds as the Kingbird, San Diego Redwing, Black-headed Grosbeak, Arkansas Goldfinch, Yellow Warbler, and Long-tailed Chat. The extreme northwestern part of the county takes in the southeastern end of the Rocky Mountains and part of the upper Pecos River. This Dr. Mitchell writes me he did not explore, his mountain work being confined to the “eastern drainage of the Vegas ranges.” Most of the mountain birds were found by him, however, on the eastern side of the range. Those which we found on the Pecos within the county included such species as the Dusky Grouse, Band-tailed Pigeon, Merriam Turkey, Clark Crow, Mountain Chickadee, Solitaire, and Chestnut-backed and Mountain Bluebirds. As the San Miguel County line apparently crosses the mountains of the Upper Pecos at about 10,500 feet, I have not listed species such as the Gray-headed Junco, White-crowned Sparrow, Ruby-crowned Kinglet, and Audubon Hermit Thrush, which we found at 11,000 feet, although there are peaks east of the Pecos that we did not visit which reach as high as 11,500 feet, on which these birds probably occur, and all of the species of course belong to San Miguel County as migrants, passing through it on their way to and from the higher parts of the mountains.

As we entered the county too late to find the spring migrants

and left it too early to see most of the fall migrants, we recorded mainly resident birds. To Dr. Mitchell's list of eighty-five species we added fifty-six species from actual records within the county lines, and four others from inference, as they breed five hundred feet above and must descend to migrate. As Dr. Mitchell's work was done, as he explains, "in spare moments and on Sundays," and as our work was done, of necessity, largely in passing, more thorough work in the region, especially during the migrations, would doubtless furnish additional species as well as much interesting material. In going over the following list it should be borne in mind that no work was done, either by Dr. Mitchell or ourselves in the northern part of the county, east of the line between Las Vegas and Mora, and that the high mesas east of Mesa del Agua de la Yegua, if carefully worked, would probably give eastward extensions of range to the mountain birds of the county.

Hydrochelidon nigra surinamensis. BLACK TERN.—Several seen August 31 on a pond near Las Vegas.

Querquedula discors. BLUE-WINGED TEAL.—A pair were seen June 20 on a pond on the plains west of Mesa Rica. Dr. Mitchell says that the Blue-wing while common in migration "does not remain to breed," but several pairs were seen June 2 on a pond at Santa Rosa about forty miles southwest of Mesa Rica, and three full grown young were shot on Black Lake, in Colfax County, September 9.

Ardea herodias. GREAT BLUE HERON.—Seen July 2, along the Pecos at Ribera.

Phalaropus lobatus. NORTHERN PHALAROPE.—One seen August 31 in the gray winter plumage, on a pond near Las Vegas.

Steganopus tricolor. WILSON PHALAROPE.—A flock seen August 31 about a pond near Las Vegas.

Actodromas bairdi. BAIRD SANDPIPER.—Seen August 29 to 30 near Las Vegas along a small creek in a field, and one taken September 2 at a pond on the plains twelve miles north of Las Vegas.

Actodromas minutilla. LEAST SANDPIPER.—Seen August 29 to 31 along the stony bottom of a small creek near Las Vegas.

Totanus flavipes. LESSER YELLOW-LEGS.—Several seen August 31 on a pond near Las Vegas.

Helodromas solitarius cinnamomeus. WESTERN SOLITARY SANDPIPER.—Several found August 29 to 31 along a meadow creek near Las Vegas.

Numenius longirostris. LONG-BILLED CURLEW.—Three pairs were

seen on the plains June 20, one with three half grown whitish downy young. On June 22, two or three pairs were found driving a lobo from their nesting ground.

Callipepla squamata. SCALED PARTRIDGE.—Common in the juniper and piñon pine belt across the southern part of the county as far north as Ribera.

Columba fasciata. BAND-TAILED PIGEON.—A few were seen on the Upper Pecos.¹

Accipiter velox. SHARP-SHINNED HAWK.—One seen August 28 near Las Vegas.

Haliaeetus leucocephalus. BALD EAGLE.—Seen at 8000 feet in the Pecos Mountains.

Bubo virginianus pallescens. WESTERN HORNED OWL.—Heard in the Pecos Mountains, and at Solitario on the eastern foothills.

Asyndesmus torquatus. LEWIS WOODPECKER.—Seen June 25 at about 6500 feet in the yellow pines on the Mesa del Agua de la Yegua, and on September 4, in the pines near Solitario Peak.

Selasphorus rufus. RUFIOUS HUMMINGBIRD.—At Pecos, at the south base of the Rocky Mountains, on August 25, an adult male *rufus* was seen, doubtless on its way down from the mountains. On August 29 another was seen a few miles north of Las Vegas.

Stellula calliope. CALLIOPE HUMMINGBIRD.—On the western border of the county, three miles south of Pecos, a Calliope Hummingbird was taken August 25.

Tyrannus tyrannus. KINGBIRD.—Though apparently unrecorded from New Mexico, Kingbirds were found on the Pecos River in two localities. Between La Cuesta and Sena on June 30 we saw them over the cultivated fields and orchards of the bottom lands. At Ribera on July 2, when we were camped in the junipers above the Mexican corn fields, a Raven (*Corvus sinuatus*) stole into the junipers apparently in search of a brood of nestling robins. The cries of the old robin attracted a kingbird which flew in protesting vociferously, and gave chase so hotly that the raven beat a hasty retreat. While neither the plains, the deserts, nor the mountains offer attractions to kingbirds, this section of the Pecos River, with its rich bottom lands which have been cultivated for centuries by the Mexicans of the old pueblos, affords ideal breeding grounds for the birds, and had it not been for the absence of naturalists their presence would doubtless have been discovered long since.

Tyrannus vociferans. CASSIN KINGBIRD.—Common. Often seen with *T. verticalis*.

Myiarchus cinerascens. ASH-THROATED FLYCATCHER.—*Myiarchus* was a common bird of the junipers in the southern part of the county in

¹ Additional Notes on the Birds of the Upper Pecos. Auk, Vol. XXI, 1904, pp. 349-363.

June. It was also seen, June 25, at about 6500 feet in the yellow pines on top of Mesa del Agua de la Yegua.

Nuttallornis borealis. OLIVE-SIDED FLYCATCHER.—Found in the Pecos Mountains.

Contopus richardsonii. WESTERN WOOD PEWEE.—Near the Canadian River on June 21, *richardsonii* was found brooding eggs in a hackberry. Pewees were also seen June 25, at about 6000 feet on the side of Mesa del Agua de la Yegua, and on August 26 at Ribera on the Pecos.

Otocoris alpestris occidentalis. MONTEZUMA HORNED LARK.—A form of *Otocoris*, identified as *occidentalis* by Mr. Oberholser, was common on the dryest part of the plains in the south central part of the country.

Corvus brachyrhynchos. CROW.—Seen along the Pecos from El Macho to Ribera, at Old Bernal, and near Solitario Peak north of Las Vegas.

Xanthocephalus xanthocephalus. YELLOW-HEADED BLACKBIRD.—Eight were seen on August 29 a mile north of Las Vegas.

Hesperiphona vespertina montana. WESTERN EVENING GROSBEAK.—Flocks and a few pairs were found in the Pecos Mountains.

Carpodacus cassini. CASSIN FINCH.—One seen July 15 in the Pecos Mountains.

Loxia curvirostra bendirei. BENDIRE CROSSBILL.—Common at 11,000 feet in the Pecos Mountains and seen August 21 at 8000 feet.

Spinus pinus. PINE FINCH.—Common in the Pecos Mountains.

Passer domesticus. ENGLISH SPARROW.—Dr. Mitchell states that at Las Vegas "the House Finch takes the place of the English Sparrow, which is conspicuously absent," but in its rapid movement westward the sparrow has now thoroughly established itself in New Mexico, and was found by us not only on the line of the railroad at Santa Rosa, San Miguel, and Las Vegas, but at the remote Mexican adobe towns of Sapello and Taos.

Coturniculus bairdii. BAIRD SPARROW.—One taken September 2 in the tall grass bordering a pond on the plains, twelve miles north of Las Vegas.

Spizella pallida. CLAY-COLORED SPARROW.—Common the last of August in the fields north of Las Vegas.

Spizella breweri. BREWER SPARROW.—Flocks were seen the last of August in the fields and along the fences north of Las Vegas.

Amphispiza bilineata deserticola. DESERT SPARROW.—Seen June 24 in the southern part of the county as far up as Rio Concha. Seen July 7 at Santa Fe. These records help fill out the borderline of the range of the species.

Peucæa cassini. CASSIN SPARROW.—Seen June 28 singing in the mesquite near Cabra Spring, in the south central part of the county.

Aimophila ruficeps scottii. SCOTT SPARROW.—One was taken June 25 in the Upper Sonoran zone at about 6000 feet, on the side of Mesa del Agua de la Yegua. This is a northward extension of range from western Texas.

Pipilo maculatus megalonyx. SPURRED TOWHEE.—Common June 25 in the scrub live oak and pines on the top of Mesa del Agua de la Yegua, and also in the juniper belt west of Pecos.

Guiraca caerulea lazula. WESTERN BLUE GROSBEEK.—Seen July 2 and 11, and August 26, in the junipers between Ribera and Glorieta.

Calamospiza melanocorys. LARK BUNTING.—A male was seen June 24 on the plains between Lopazville and Cabra Springs in the central part of the county. If this was a breeding record it would extend the breeding range southward from Colorado. From August 29 to September 1, a mile north of Las Vegas, small flocks were frequently seen passing over, and numbers were flushed from the fences.

Piranga ludoviciana. WESTERN Tanager.—Found in the yellow pines in the Pecos Mountains and their foothills in the breeding season, and one was found at the foot of Bernal Mesa on August 27.

Piranga hepatica. HEPATIC Tanager.—Found in the yellow pines of mesa tops—on June 25, a pair on Mesa del Agua de la Yegua, and August 27, two males and two or three females on Bernal Mesa. The Mesa del Agua record is a slight extension of range.

Hirundo erythrogaster. BARN SWALLOW.—Seen frequently about Mexican adobes. One was found June 29 nesting under the eaves of a house at Gallinas Springs.

Lanius ludovicianus excubitorides. WHITE-RUMPED SHRIKE.—A shrike was seen on June 20 at its nest in a forestiera tree by the Rio Concha in the central part of the county. On September 1, two were seen on telegraph poles a few miles north of Las Vegas.

Vireo gilvus swainsoni. WESTERN WARBLING VIREO.—Found breeding in the Pecos Mountains.

Helminthophila celata. ORANGE-CROWNED WARBLER.—Taken in the Pecos Mountains in July.

Helminthophila celata lutescens. LUTESCENT WARBLER.—Taken in the Pecos Mountains in August.

Dendroica nigrescens. BLACK-THROATED GRAY WARBLER.—One taken three miles south of Pecos, July 3, when singing among the nut pines and junipers.

Geothlypis tolmiei. MACGILLIVRAY WARBLER.—Taken in the Pecos Mountains July 15.

Icteria virens longicauda. LONG-TAILED CHAT.—Seen June 30 to July 2 in the Pecos bottoms from La Cuesta to Ribera.

Wilsonia pusilla pileolata. PILEOLATED WARBLER.—Found in the Pecos Mountains.

Oroscoptes montanus. SAGE THRASHER.—Two seen August 27 in the junipers near Ribera.

Mimus polyglottus leucopterus. WESTERN MOCKINGBIRD.—Found in the Lower Sonoran zone in the south central part of the county. A nest containing young was found June 26 in a cactus tree (*Opuntia arborescens*) along the Concha.

Bæolophus inornatus griseus. GRAY TITMOUSE.— Common in the juniper and piñon pines of the Upper Sonoran zone.

Parus atricapillus septentrionalis. LONG-TAILED CHICKADEE.— Found in the Pecos Mountains.

Psaltriparus plumbeus. LEAD-COLORED BUSH-TIT.— Fairly common in the junipers. On the side of Mesa del Agua de la Yegua it was found as high as 6500 feet.

A PRELIMINARY LIST OF THE BIRDS OF LEON COUNTY, FLORIDA.

BY R. W. WILLIAMS, JR.

THE present list is the result of spare moments devoted to ornithology since the summer of 1896. I had hoped, ere this, to present a more complete and satisfactory catalogue of the birds of my county, but the extensive field has proved too broad for the limited time I could give to the subject. I intend this as a basis for future work and publish it now in the hope that it may be of some value to workers in geographic distribution.

It will be noticed that many species, particularly of the Mniotiltidæ, which occur in the peninsula are not recorded here and I feel safe in asserting that they do not come to my part of Florida. They may pass over during migration but continue their course uninterruptedly to some other portion of the State. A few ducks which undoubtedly occur have escaped me. Some of the Limicolæ are not recorded, but that they occasionally visit the county there can be no doubt. I have here recorded only those species about which there could arise no question; have carefully eliminated inferences without strong evidence to support them, and where necessary have given the authority upon which I rely. The list has been annotated as briefly as was consistent with accuracy and a fair presentation of the subject.

A word about the topography and climate was considered advisable, and though very general, it is hoped will convey an idea of the country.

Leon County is one of the northern tier of counties, bounded on the north by Georgia. It occupies almost a central position between the eastern and western extremities of the State.

Tallahassee, the county seat and capital of the State, lies almost midway between Jacksonville and Pensacola, being 165 miles west of the former and 210 miles east of the latter. Forty miles south lies the Gulf of Mexico.

We generally have an abundance of rain at all seasons. A drought of about a month's duration may occur at any season. A few sporadic days in winter are apt to be severe, but are soon followed by springlike, balmy weather.

The northern half of the county is fertile and rolling, everywhere dotted with sheets of water of varying size, from Lake Jackson, 12 miles long, to the smallest mud holes. Innumerable streams dissect the county. The lakes and larger ponds provide suitable haunts for large numbers of water-fowl and their marshes are feeding grounds for several species, notably the Snipe (*Gallinago*).

The southern half is flat, sandy, and sterile. Cypress swamps occur throughout this region, furnishing favorite nesting places for Herons and Anhingas.

The vegetation is varied. That of the northern half of the county is rich in variety and luxuriance, presenting some of the most beautiful scenery in the South.

Oaks of several species, draped with Spanish moss, hickories, sweet gums, magnolias, and pines of the more attractive sort, constitute the forest trees, and everywhere interspersed among these are found the dogwood, sassafras and holly, aside from the plethora of minor shrubbery. That of the southern half is very different, the characteristic trees being the ever present pine and a species of scrub oak we call black-jack, just such vegetation as one would expect to find in such soil. Everywhere throughout these great pineries will be found the palmetto in great abundance. All this interminable monotony is, however, now and then relieved by the appearance of a small tract of fairly fertile soil, supporting a vegetation characteristic of the northern part of the county. An occasional pond is met with, around which will be found clusters of sweet gums and water oaks. As might be expected from the foregoing, the greatest abundance of bird life occurs in the northern half of the county.

At some future time I hope to contribute to ornithological literature a complete list of the birds of my county, with a detailed account of the climate and topography. For the present the foregoing brief notice must suffice.

1. *Podilymbus podiceps*. PIED-BILLED GREBE.— Common resident, retiring to smaller and more secluded ponds in spring, where they remain throughout the nesting season.

2. *Anhinga anhinga*. ANHINGA.— Rather common summer resident in suitable localities, nesting in cypress swamps and feeding in the shallow ponds in the vicinity. I have found eggs as early as April 13 and as late as June 16, the latter date indicating disaster to the first set. Have no record of occurrence in winter, though it is probable that it may be found sparingly.

3. *Lophodytes cucullatus*. HOODED MERGANSER.— Rather common winter resident, found in the lakes and larger ponds.

4. *Anas boschas*. MALLARD.— Common winter resident, frequenting the lakes and larger ponds, occasionally met with in smaller bodies of water.

5. *Mareca americana*. BALDPATE.— Winter resident, occurring only in small numbers and chiefly confined to the larger lakes.

6. *Nettion carolinensis*. GREEN-WINGED TEAL.— Common winter resident.

7. *Querquedula discors*. BLUE-WINGED TEAL.— Common winter resident.

8. *Spatula clypeata*. SHOVELLER.— Winter resident, in limited numbers.

9. *Dafila acuta*. PINTAIL.— Winter resident of more or less abundance.

10. *Aix sponsa*. WOOD DUCK.— Resident, but not abundant.

11. *Aythya marila*. AMERICAN SCAUP DUCK.— Common winter resident, found in company with *affinis* and *collaris*.

12. *Aythya affinis*. LESSER SCAUP DUCK.— Common winter resident. One of the most abundant of all ducks.

13. *Aythya collaris*. RING-NECKED DUCK.— Common winter resident. The most abundant of the Anatidæ.

14. *Harelda hyemalis*. OLD-SQUAW.— Rare winter resident. I have one specimen.

15. *Branta canadensis*. CANADA GOOSE.— Rare winter visitant.

16. *Tantalus loculator*. WOOD IBIS.— A summer resident of more or less abundance, frequenting the shores of lakes and ponds. I have no doubt that their nests may be found in some of the remote cypress swamps of the county. They are gregarious.

17. *Botaurus lentiginosus*. AMERICAN BITTERN.— Fairly common winter resident, frequenting the grassy shores and shallow pools of the larger lakes, sometimes found in the vicinity of the smaller ponds.

18. *Ardetta exilis*. LEAST BITTERN. Formerly quite abundant in spring and summer, nesting in bushes and weeds in and around small ponds. From some unaccountable cause they have almost entirely disappeared from the county.

19. *Ardea herodias*. GREAT BLUE HERON.—Rather a common resident, nesting in the cypress swamps. Very wary at all times. I have been unable to determine the status of this heron, as I have failed to take a specimen. It is possible that it should be referred to the subspecies *wardi*.

20. *Herodias egretta*. AMERICAN EGRET.—Rare summer resident. I found a nest and young on April 24, 1901, in a small cypress swamp three miles west of Tallahassee.

21. *Egretta candidissima*. SNOWY HERON.—Common summer resident, nesting in the cypress swamps in conjunction with *F. cærulea*.

22. *Hydranassa tricolor ruficollis*. LOUISIANA HERON.—Summer resident of more or less abundance. Occurs in large numbers on the Gulf coast of the county just south of us.

23. *Florida cærulea*. LITTLE BLUE HERON.—Common summer resident, arriving in the last of February. Becomes common about March 15. Nests in cypress swamps. I have seen no less than one hundred nests in a single group of small cypress trees.

24. *Butorides virescens*. GREEN HERON.—Common summer resident, nesting in almost any locality where a supply of water may be found. Very solitary in its habits.

25. *Nycticorax nycticorax nævius*. BLACK-CROWNED NIGHT HERON.—Summer resident. Nests in cypress swamps, often in the rookeries of Little Blue and Snowy Herons, but usually in higher situations. Have found eggs about to hatch on April 13 (1895).

26. *Rallus elegans*. KING RAIL.—Rather common resident, more often heard than seen. It nests in the tangled masses of aquatic vegetation.

27. *Rallus virginianus*. VIRGINIA RAIL.—An uncommon winter resident.

28. *Porzana carolina*. SORA.—Rather common winter resident; difficult to flush from its haunts of tangled weeds in the marshes of the lakes and ponds.

29. *Ionornis martinica*. PURPLE GALLINULE.—Common resident. Nests in the smaller grassy ponds and bayous of the large lakes.

30. *Gallinula galeata*. FLORIDA GALLINULE.—Common resident. Nests in same localities as the preceding.

31. *Fulica americana*. AMERICAN COOT.—Common winter resident. Occurs in enormous numbers on Lakes Jackson and Iamonia. They are shot by the negroes for food.

32. *Philohela minor*. AMERICAN WOODCOCK.—Occurs throughout the year in limited numbers. Flushed one in a thicket on the marsh, August 30, 1901.

33. *Gallinago delicata*. WILSON'S SNIPE.—Common winter resident, frequenting almost any marshy locality. Occurs in great abundance on the marshes of our lakes and larger ponds during the spring migration. I have even found them feeding on the hillsides in very wet weather. Large numbers are annually shot by hunters. *Gallinago* is easy prey in the south where their flight is less erratic and not so swift as I am informed that it is in the north. A friend of mine killed sixty odd in a single day's shooting on Lake Jackson a few winters ago. They are less abundant than formerly. They leave the State about April 15, and I have an arrival record of October 3 (1901).

34. *Helodromas solitarius*. SOLITARY SANDPIPER.—Occurs sparingly in the early spring, frequenting marshy land wherever it may be found. Shot one and saw a few others on March 25, 1901.

35. *Bartramia longicauda*. BARTRAMIAN SANDPIPER.—An occasional winter visitor in very wet weather; usually occurs in the spring. Shot one and saw about five others on March 25, 1901. They are extremely wary and difficult to approach.

36. *Oxyechus vociferus*. KILLDEER.—Very common winter and early spring resident, occurring sparingly throughout the year. Indifferent in its tastes for locality, for you are as likely to find it on high and dry lands as on the marshes. It is very active during the hours of darkness. Forms an object of sport for the younger nimrods. I have one record of its nesting in the county. A set of four eggs was taken several years ago by a friend.

37. *Colinus virginianus*. BOB-WHITE.—Common resident. Our birds approach more nearly the common form, but are considerably darker, especially in the region of the head. It is quite probable that *floridanus* may be found in the southern part of the county. Some of the finest 'quail' shooting in this country is still to be had in Leon County.

38. *Meleagris gallopavo silvestris*. WILD TURKEY.—Resident; formerly common, now restricted to wilder portions of the county.

39. *Zenaidura macroura*. MOURNING DOVE.—Common resident. Much more abundant in winter. Nests usually in pines. Large numbers are annually killed for sport and food. Its flesh is held in high estimation.

40. *Columbigallina passerina terrestris*. GROUND DOVE.—Resident. Formerly abundant at all times, now, from some unaccountable reason, exceedingly rare at any time. Its total disappearance for the space of twelve months in very recent years is one of the mysteries of Leon County ornithology. Latterly it has returned in very limited numbers.

41. *Cathartes aura*. TURKEY VULTURE.—Common resident. Frequents the city in larger numbers than *Catharista* and is more nearly domesticated. It performs valuable sanitary functions, ridding our yards and streets of much offal and excrementitious substances. It is exempt from even the recklessness of boys and enjoys immunity from danger everywhere. Though as common as the following species, its nests are seldom found.

42. *Catharista urubu*. BLACK VULTURE.—Common resident. Of retiring habits during the nesting season, which begins as early as February 20. Less frequently seen in the city than *Cathartes*, though it will be found in large numbers during winter, roosting in the tall moribund red oaks so abundant in Tallahassee. It is impossible for one to divest himself of the gloomy effect such a sight produces upon his senses. The sable pall stands out in bold relief against the clear, moonlit sky and the assemblage seems one of chief mourners at some august funeral. It is likewise exempt from the devastating hand of man.

43. *Elanoides forficatus*. SWALLOW-TAILED KITE.—Of occasional occurrence in the spring, either singly or in flocks. I have no record of its nesting.

44. *Ictinia mississippiensis*. MISSISSIPPI KITE.—Of irregular occurrence in spring. Never present, so far as I am able to determine, except in 'flights,' lasting usually only long enough to accomplish a leisurely journey across the county. While so travelling they are invariably engaged in most graceful and complex evolutions. Notwithstanding the assertion that they occur only in flights of short duration in spring, I feel obliged to refer to a single egg sent a few years since to the National Museum for identification and pronounced to be the egg of an *Ictinia*. I have not seen the egg recently. It was found in a nest, about 30 feet up in a pine, near a public highway, by my friend Gilman J. Winthrop, and is now in our joint collection at his home in Tallahassee. This establishes a nesting record for the species in Leon County, but it is certain that the bird is a very infrequent summer resident.

45. *Circus hudsonius*. MARSH HAWK.—Rather common winter resident, usually seen flying over old well-weeded fields in pursuit of its humble prey.

46. *Accipiter velox*. SHARP-SHINNED HAWK.—Resident. I have no nesting records.

47. *Accipiter cooperii*. COOPER'S HAWK.—Common resident. Nests usually placed in a pine. Very troublesome around the poultry yard.

48. *Buteo borealis*. RED-TAILED HAWK.—Common resident.

49. *Buteo lineatus alleni*. FLORIDA RED-SHOULDERED HAWK.—Common resident. Have been unable to determine its exact status.

50. *Buteo platypterus*. BROAD-WINGED HAWK.—Common resident. Fresh eggs are found about May 1.

51. *Haliaeetus leucocephalus*. BALD EAGLE.—Resident in limited numbers. One set of two eggs was taken December 22, 1896, by my friend Winthrop.

52. *Falco columbarius*. PIGEON HAWK.—Rare migrant, so far as known. Have taken one, October 12, 1901.

53. *Falco sparverius*. AMERICAN SPARROW HAWK.—Common resident.

54. *Pandion haliaetus carolinensis*. AMERICAN OSPREY.—Found sparingly throughout the year. One nested on an island in Lake Iamonia a few years since.

55. *Strix pratincola*. AMERICAN BARN OWL.—Rather common resident, nesting as early as December 10 (1901). I have found nests in the large red oaks within the city limits.

56. *Syrnium varium alleni*. FLORIDA BARRED OWL.—Resident, in some abundance.

57. *Megascops asio floridanus*. FLORIDA SCREECH OWL.—Common resident. Begins nidification by April 1.

58. *Bubo virginianus*. GREAT HORNED OWL.—Rather common resident.

59. *Coccyzus americanus*. YELLOW-BILLED CUCKOO.—Common summer resident, nesting in diverse situations. Is fond of trees along public highways for nesting sites. Fresh eggs have been taken on August 11 (1900). I have a set of six eggs.

60. *Coccyzus erythrophthalmus*. BLACK-BILLED CUCKOO.—Occurs sparingly in summer. One record of its nesting.

61. *Ceryle alcyon*. BELTED KINGFISHER.—Rather common summer resident and occurs sparingly in winter.

62. *Campephilus principalis*. IVORY-BILLED WOODPECKER.—Formerly a fairly common resident, now restricted to dense forests and cypress swamps, if it occurs at all. A few have been killed in the last 15 years and one of our citizens wore a pair of mandibles as a watch-charm, taken from a bird he shot about seven years ago.

63. *Dryobates villosus audubonii*. SOUTHERN HAIRY WOODPECKER.—Rare resident.

64. *Dryobates pubescens*. DOWNY WOODPECKER.—Common resident.

65. *Sphyrapicus varius*. YELLOW-BELLIED SAPSUCKER.—Rather common winter resident.

66. *Ceophlœus pileatus*. PILEATED WOODPECKER.—Resident; confined to the larger tracts of woodland. More common in southern part of the county.

67. *Melanerpes erythrocephalus*. RED-HEADED WOODPECKER.—Common summer, and less abundant winter, resident. The commonest woodpecker in the county. Found usually in the forests of decaying pines so abundant throughout the county.

68. *Centurus carolinus*. RED-BELLIED WOODPECKER.—Common resident. Shows a preference for dead portions of living trees for nesting site.

69. *Colaptes auratus*. FLICKER.—Common resident. Not so much sought after as an article of food as formerly.

70. *Antrostomus carolinensis*. CHUCK-WILLS-WIDOW.—Common summer resident, arriving about April 1; occasionally seen in winter, but not of constant occurrence. My friend Winthrop saw one December 28, 1903.

71. *Antrostomus vociferus*. WHIP-POOR-WILL.—Rare at any season. The only authentic record of its occurrence, if indeed it is a valid record,

rests upon a set of eggs taken several years ago by one of the numerous juvenile egg collectors in Tallahassee. I saw the eggs then and commented upon their very small size and expressed the belief that they could not be those of *carolinensis*. I am confirmed in my conviction that the set was one of this species. I have never seen the bird nor heard its notes.

72. *Chordeiles virginianus*. NIGHTHAWK. — Common summer resident, though its nest is not frequently found. I have never taken its eggs. During the spring it is retiring and seldom seen, but later in the season it begins to emerge from its seclusion and in large numbers scours the air from 5 o'clock till after nightfall. Often seen early in the morning by those of more energetic habits than the writer. This bird furnishes sport for those persons devoted to the gun and enormous numbers have been slaughtered annually for years past. While they are primarily shot for 'sport,' their flesh is held in high regard, and I can testify to their delightful flavor while I deprecate the sacrifice. As would be expected, they have greatly decreased in numbers in the last five years. Public sentiment has not yet stamped its disapproval on this worse than useless destruction.

73. *Chætura pelagica*. CHIMNEY SWIFT. — Common summer resident. Arrives about March 28. Records for arrival for three years are: 1901, March 26; 1902, March 27; 1903, March 28. They remain long after the bulk of summer residents have gone. Of late years they have suffered reverses in procuring available nesting sites on account of their own bad manners. I have known of some costly carpets almost wholly ruined by them. After the nesting season they collect in enormous numbers every evening, circle over and dive into certain attractive chimneys, loosen the soot in their fluttering and precipitate the black matter into the room below. The result is apparent. This has necessitated the resort to wire netting over the tops of most of our chimneys and the birds must soon return to their ancient custom of nesting in old trees or abandon our county. I deprecate the day when such a cheerful little visitor must avaunt.

74. *Trochilus colubris*. RUBY-THROATED HUMMINGBIRD. — A¹ summer resident, very retiring during the nesting time. Have only one record of its nest and eggs.

75. *Tyrannus tyrannus*. KINGBIRD. — Common summer resident, arriving about April 1; gregarious during late summer and very silent. Records of arrival for four years are: 1900, March 27; 1901, March 25; 1902, March 30; 1903, April 3.

76. *Myiarchus crinitus*. CRESTED FLYCATCHER. — Common summer resident, arriving about April 1. Records of arrival for three years are: 1901, March 31; 1902, March 30; 1903, April 4.

77. *Sayornis phæbe*. PHÆBE. — Common winter resident. Found them common October 11, 1901, and they were still present March 25, 1902. Never occurs in summer.

78. *Contopus virens*. WOOD PEWEE.—Migrant. Never abundant. Took one in my yard September 4, 1901.

79. *Empidonax flaviventris*. YELLOW-BELLIED FLYCATCHER.—Rare migrant in fall. Collected one October 11, 1901.

80. *Empidonax traillii alnorum*. ALDER FLYCATCHER.—Rare migrant. Collected one August 6, 1900.

81. *Pyrocephalus rubineus mexicanus*. VERMILION FLYCATCHER.—On March 25, 1901, I shot an adult ♂, three miles east of Tallahassee. The bird was in excellent condition and seemed perfectly at home on smaller bushes and a wire fence around Lake Lafayette. The specimen is now in the Smithsonian Institution collection of birds. For notice of the capture see Auk, XVIII, 273.

82. *Cyanocitta cristata florincola*. FLORIDA BLUE JAY.—Very common resident; begins nesting by April 1 and continues till late in August.

83. *Corvus brachyrhynchos*. AMERICAN CROW.—Common resident.

84. *Dolichonyx oryzivorus*. BOBOLINK.—Migrant. Very erratic, occurring at irregular intervals during spring. Sometimes lingers several days to feed on the oats and millet. When present they are very numerous.

85. *Molothrus ater*. COWBIRD.—Exists now in vivid recollection only. The bird was common in Leon County up to 1893, since which time I have never seen a single specimen, although I have made every effort to find it. Its disappearance is one of the mysteries of ornithology and a parallel case to the "Disappearance of the Dickcissel from the District of Columbia."

86. *Agelaius phœniceus*. RED-WINGED BLACKBIRD.—Common resident, more numerous in summer. Highly gregarious in winter, feeding in the tall weeds of old cornfields. The male assumes the plumage of the female at this season.

87. *Sturnella magna*. MEADOWLARK.—Common resident. Very retiring in the nesting season.

88. *Icterus spurius*. ORCHARD ORIOLE.—Common summer resident. Record first arrival, a male, of 1902 on March 23. Begins to nest very soon after arrival. Pear groves are favorite nesting places for them. I have seen many nests in a radius of three acres. They are very fond of the long, pendant clusters of Spanish moss hanging in such graceful festoons from our large water and live oaks for nesting sites. Before they leave in late summer or early fall they become very retiring and quiet.

89. *Icterus galbula*. BALTIMORE ORIOLE.—A rare migrant. I shot one, a female, in our yard on March 3, 1902.

90. *Euphagus carolinus*. RUSTY BLACKBIRD.—Migrant in spring. Occasionally seen following the ploughmen, gleaned what food it can from the newly turned soil.

91. *Quiscalus quiscula aglæus*. FLORIDA GRACKLE.—Common summer resident, arriving in February.

92. *Astragalinus tristis*. AMERICAN GOLDFINCH.—Common winter resident, the male arriving in and retaining the plumage of the female.

93. *Poœcetes gramineus*. VESPER SPARROW.—Common winter resident. It is the most abundant sparrow with us, likely to be seen in any locality, but its favorite haunts are the old cotton fields. On January 22, 1902, I shot an albino specimen. This bird was entirely white. They were still with us on April 13, 1902.

94. *Passerculus sandwichensis savanna*. SAVANNA SPARROW.—Of infrequent winter occurrence. I have only one record.

95. *Coturniculus savannarum passerinus*. GRASSHOPPER SPARROW.—Common winter resident; remains in small numbers late in spring. One record as late as April 27 (1902).

96. *Zonotrichia albicollis*. WHITE-THROATED SPARROW.—Very common winter resident. A dooryard bird of fascinating demeanor and confiding habits. They congregate in large flocks in April, preparatory to leaving. The latest record of their presence is May 3 (1903), when I saw two.

97. *Spizella socialis*. CHIPPING SPARROW.—Common winter resident.

98. *Spizella pusilla*. FIELD SPARROW.—Common winter resident.

99. *Peucæa æstivalis bachmanii*. BACHMAN'S SPARROW.—Common winter resident. Usually flushed close to one's foot, from dense broom-sedge undergrowth in pine thickets. As soon as flushed it flies to the higher branches and sits there in a rigid posture with an expression of terrified emotions. It is rather a solitary bird.

100. *Melospiza cinerea melodia*. SONG SPARROW.—Winter resident, of less abundance than several other sparrows. It does not sing with us.

101. *Melospiza georgiana*. SWAMP SPARROW.—Common winter resident, remaining, sometimes, late in spring. It frequents high broom-sedge fields as readily as it does the weedy marsh.

102. *Pipilo erythrophthalmus*. TOWHEE.—Resident. Common in winter, not nearly so abundant in summer.

103. *Pipilo erythrophthalmus alleni*. WHITE-EYED TOWHEE.—Not so abundant as the preceding. Do not believe it occurs in summer.

104. *Cardinalis cardinalis*. CARDINAL.—Common resident.

105. *Zamelodia ludoviciana*. ROSE-BREADED GROSEBEAK.—Of very infrequent occurrence. Recorded once by my friend Winthrop. I have never seen it.

106. *Guiraca cærulea*. BLUE GROSEBEAK.—Summer resident, but not abundant. The only nest I have ever seen was on June 14, 1903. It contained four half-grown young.

107. *Cyanospiza cyanea*. INDIGO BUNTING.—Migrant. Passes through the county irregularly in spring. Never abundant.

108. *Cyanospiza ciris*. PAINTED BUNTING.—The appearance of this bird in Tallahassee in the latter part of April, 1901, is very little less remarkable than the disappearance of the Cowbird about 1893. So far as

I have observed or learned, the bird has made its appearance in my county but once. On the 23rd of April, 1901, I was summoned to the home of a lady friend to identify for her certain little birds which had lately made her back yard a temporary home. Arriving there late in the evening I found a number of these birds quietly feeding in the grass of her lawn. Though I had not before seen the species, it was no difficult task to identify them. She said they had been there for four days. I did not find them elsewhere, and they disappeared in a few days as mysteriously as they had come. I was told by reliable citizens of Apalachicola that the birds were such a pest there at this time that the people of the city were obliged, in their opinion, to protect their gardens by resort to the gun. I can account for this unusual occurrence of the bird in northern Florida upon one hypothesis only. Just at this time a fearful storm raged on the Gulf coast just to the south of Tallahassee. Many vessels were wrecked, and houses destroyed in one of the seacoast towns. Much of the wind and some of the rain reached my county. This may have driven the birds inland during their migration.

109. *Piranga erythromelas*. SCARLET Tanager.—I have but one record of its occurrence in the county.

110. *Piranga rubra*. SUMMER Tanager.—A common summer resident; nests abundantly. Arrives about March 30. After the nesting season and before leaving in the fall they become very reclusive.

111. *Progne subis*. PURPLE MARTIN.—Common summer resident, arriving in some numbers by February 15. Records for arrival for three years: 1901, Feb. 20, 2 males; 1902, Feb. 14, 3, 2 males, 1 female; 1903, Feb. 8, 2. Those that come first remain. They are well established in their summer quarters by the middle of March. I always erect for them a house in our backyard and one of the pleasantest features of the long summer is the cheerful note of this bird. They begin to quit their nesting places about the middle of June, when they betake themselves and their young to the topmost branches of the tallest oaks, there to remain till the young are able to shift for themselves. They leave the county about the middle of July, but occasionally large flocks may be seen passing over till the middle of September. My latest record is September 27 (1901).

112. *Iridoprocne bicolor*. TREE SWALLOW.—Migrant, occurring at irregular intervals, remaining only a few days. My records are: 1900, April 29 and May 5; 1902, March 30; 1903, March 26.

113. *Riparia riparia*. BANK SWALLOW.—So far as I can learn it is a migrant only, visiting the county in spring and late summer. I have seen it in numbers on April 16 (1900) and August 28 (1901). It is said to nest abundantly at St. Marks.

114. *Ampelis cedrorum*. CEDAR WAXWING.—Common winter resident, prolonging its stay late into the spring. Arrives very irregularly, sometimes in October and again not until a month and a half later. My earliest record of appearance is October 19 (1901), the latest May 8 (1903).

They feed extensively on the berries of mistletoe, wild olive (*Prunus*) and China tree. Sometimes found in company with bluebirds and often feeds with robins.

115. *Lanius ludovicianus*. **LOGGERHEAD SHRIKE.**—Common resident.

116. *Vireo olivaceus*. **RED-EYED VIREO.**—I cannot regard this bird as anything else than a rare resident. I have never found its eggs, but have seen an old nest. It probably passes further south in winter, my latest record being October 10.

117. *Vireo flavifrons*. **YELLOW-THROATED VIREO.**—Rare migrant; one record only, October 15, 1900.

118. *Vireo noveboracensis*. **WHITE-EYED VIREO.**—Perhaps resident, though I have no summer record for the county. I found it in Franklin County, near the Gulf coast, in July and August, 1901. It is not a common bird in winter.

119. *Mniotilta varia*. **BLACK AND WHITE WARBLER.**—Winter resident, but not common. Arrives in August, remains till April. My earliest and latest records are August 5 (1896) and March 31 (1901).

120. *Protonotaria citrea*. **PROTHONOTARY WARBLER.**—Summer resident, but not common. I have taken two sets of eggs, the last April 29, 1899. In both cases the nest was in a cypress swamp.

121. *Helminthophila bachmanii*. **BACHMAN'S WARBLER.**—Only one record. I took this specimen on August 4, 1900.

122. *Compsothlypis americana*. **PARULA WARBLER.**—So far as I have been able to discover, this is a migrant only. I found it quite abundant on August 6, 1896, and in March, 1903. I have no records for any other month, though it is probable that it occurs in September and April.¹

123. *Dendroica æstiva*. **YELLOW WARBLER.**—I believe this is a migrant only, although I found it rather common in Franklin County between July 20 and August 1, 1901. It is not resident with us in winter.

124. *Dendroica coronata*. **MYRTLE WARBLER.**—Common winter resident; one of the commonest birds we have. Spends much of its time on the ground; almost a terrestrial bird in Leon County. It moults before leaving for the north in spring.

125. *Dendroica dominica*. **YELLOW-THROATED WARBLER.**—Common summer resident; nests early. As I have a record for January 3 (1901), it is probable that the bird is a resident.

126. *Dendroica vigosii*. **PINE WARBLER.**—Resident; more abundant in winter.

127. *Dendroica palmarum*. **PALM WARBLER.**—Winter resident, spending most of its time on the ground.

¹ Since writing the above I have discovered evidence that quite conclusively proves that this species nests in the county. I collected two specimens, one undoubtedly young of the year, on July 23, 1904.

128. *Dendroica palmarum hypochrysea*. YELLOW PALM WARBLER.— Winter resident; rather common; found associated with the preceding.
129. *Dendroica discolor*. PRAIRIE WARBLER.— Migrant. I have no record except for August. Found it rather common on James Island, in Franklin County, between July 20 and August 1, 1901.
130. *Seiurus aurocapillus*. OVEN-BIRD.— Rare migrant. Have seen but one, March 2, 1902.
131. *Geothlypis trichas*. MARYLAND YELLOW-THROAT.— Common resident, nesting around marshes and ponds, retiring to high land in winter; it is a common hedge-row bird at this season.
132. *Icteria virens*. YELLOW-BREASTED CHAT.— Summer resident; not common. A few nests have been found.
133. *Wilsonia mitrata*. HOODED WARBLER.— Migrant; never abundant. I have no record of its occurrence between April 13 and July 16, and no winter record.
134. *Setophaga ruticilla*. AMERICAN REDSTART.— Migrant; lingers a short time in fall. My earliest record is August 28, 1901, when I saw two males. Saw another in Franklin County on September 21, 1901.
135. *Anthus pensilvanicus*. AMERICAN PIPIT.— Probably a winter resident in small numbers. I have never seen it. It has been taken once and seen several times by Winthrop.
136. *Mimus polyglottos*. MOCKINGBIRD.— Common resident.
137. *Galeoscoptes carolinensis*. CATBIRD.— Winter resident, but not common. Remains as late in spring as April 27 (1901).
138. *Toxostoma rufum*. BROWN THRASHER.— Common resident.
139. *Thryothorus ludovicianus*. CAROLINA WREN.— Common resident.
140. *Thryomanes bewickii*. BEWICK'S WREN.— Rather common winter resident.
141. *Troglodytes aëdon*. HOUSE WREN.— Common winter resident.
142. *Olbiorchilus hiemalis*. WINTER WREN.— Winter resident, in small numbers.
143. *Cistothorus stellaris*. SHORT-BILLED MARSH WREN.— Rather common winter resident.
144. *Certhia familiaris americanus*. BROWN CREEPER.— Have never seen it. There is one record of its occurrence. This one flew into the house of a friend and was captured.
145. *Sitta pusilla*. BROWN-HEADED NUTHATCH.— Resident, not common. Have taken two sets of eggs.
146. *Bæolophus bicolor*. TUFTED TITMOUSE.— Rather common resident.
147. *Parus carolinensis*. CAROLINA CHICKADEE.— Common resident.
148. *Regulus satrapa*. GOLDEN-CROWNED KINGLET.— Common winter resident; may pass further south for a brief period.
149. *Regulus calendula*. RUBY-CROWNED KINGLET.— Common winter resident.

150. *Poliophtila cærulea*. BLUE-GRAY GNATCATCHER.—Summer resident.

151. *Hylocichla mustelina*. WOOD THRUSH.—Rare migrant in spring.

152. *Hylocichla guttata pallasii*. HERMIT THRUSH.—Common winter resident. They seem to be distributed, two or three to each piece of woodland.

153. *Merula migratoria*. ROBIN.—Common winter resident. Feeds extensively on the berries of China tree, dogwood and olive tree (*Prunus*). Large numbers of them are frequently seen feeding on the recently burned marshes of the large lakes and ponds. The bird's bill has changed to black before it reaches our borders. They reach northern Florida about November 1, and are not common till the 20th. By April 15 they have disappeared. The Legislature has placed them on the game list.

154. *Sialia sialis*. BLUEBIRD.—Common resident. In the past two years its numbers have been appreciably augmented and it seems now on the road to recovery from the disastrous winters of 1894 and 1899.

ADDENDA.

This article was prepared in the spring of 1904 from notes which I then had with me in Washington. Since its completion I have returned to my home and in the brief space of a month, in the midst of other duties, added two species to the list.

155. *Actitis macularia*. SPOTTED SANDPIPER.—One heard during the early part of the night of August 5, 1904. Much rain had fallen for several days and the streets were running with water. The bird was feeding in the street in front of our yard. Its characteristic notes could be plainly heard when it shifted its position from one side of the street to the other.

156. *Seiurus motacilla*. LOUISIANA WATER-THRUSH.—First record of the species was made on July 23, 1904, when I saw one and heard another.

NESTING HABITS OF THE WOODPECKERS AND
THE VULTURES IN MISSISSIPPI.

BY CHARLES R. STOCKARD.

OBSERVATIONS on the nesting and laying of the Woodpeckers (Picidæ) and the Vultures (Cathartidæ) have shown several very interesting phenomena. The following will be an effort to bring out the rather peculiar and often unexpected actions on the part of these birds without any attempt to go into detail or record the many familiar nesting habits that are well known to all ornithologists. The notes are taken entirely from my data that were made while collecting and observing in the field in the east central and southwest portions of Mississippi.

Ceophlœus pileatus. PILEATED WOODPECKER.—This bird has become rare in many parts of Mississippi but is still rather common in certain portions. During three seasons seventeen nests were watched in Adams County. In the vicinity where observations were made every small woods had its pair of these large woodpeckers. The individuals of this species seemed to occupy very small feeding areas. Of the seven nests that were found in 1902 five pairs of the birds were located in their respective woods during the previous December and January. Whenever a pair was once seen feeding in a wood during the winter the same pair could always be found very close to that place. At the beginning of the nesting season they would invariably make their burrow in some dead but sound tree near the edge of the brake. From continued observation it appeared certain that whenever a pair were found in a small wood during the winter they were sure to nest there the following spring.

The burrow is very large and requires in most cases about one month for construction, being commenced in this locality about the latter part of February. But it was found very difficult to note the exact length of time consumed in burrowing, as the birds try so many parts of the same tree before striking one to suit their taste. The nest tree and other dead trees close at hand were often scarred from top to bottom. In two cases they began a nest, then seemed to start one in another place, and then returned

to the former and completed it. Of course it may be that the first attempt was a definite site and they only tapped about in other places to feed. But it is very certain that they did no work on the nest hole for a space of several days after it had been worked for two or three days continuously. It was a rather difficult matter also to decide when the burrow was complete. In some cases this seemed to be when laying began. Again nests were found complete, and one could be certain that it was not worked further, though laying did not begin for an entire week.

The birds were very shy and would usually leave the nest the moment the tree was rapped with the hand or a stick. The birds flew completely out of sight into the woods not to appear again until the intruder was well away from the nest tree. Only one pair was observed that had their nest in a dead tree which stood in an open field at least sixty or seventy yards from the wood. The female in this case flew about the nest tree and lit once on the upper part and again just over the nest hole while a person was in the act of climbing the tree. This was by far the most daring bird seen and, as mentioned above, because of the isolation of the tree, her burrow was unusually exposed for this species.

In the spring of 1901 my first observations were made in Adams County. Four pairs were located in February just as they were selecting nesting sites. It was then expected that they would continue laying after the first set was removed, as most other members of the family will do. It was also thought that some sets would contain five or six eggs, as many writers claim for this bird. The first nest, a burrow twenty-five feet from the ground in an old sycamore stump, contained one egg on March 22; March 26 it contained three, and on April 1, when the set was removed, it consisted of four slightly incubated eggs. The burrow was left undisturbed until May 14, when it was also taken by being sawed off from above and below the cavity. The bird had undoubtedly deserted it as soon as she found her eggs gone. The pair staid in this wood for the remainder of the season but did not attempt to construct a second burrow.

The next set was taken April 7 and contained only three eggs that had been incubated about one week. This nest, being rather

difficult to reach, had not been disturbed previous to this occasion. Again the burrow was deserted, no second one was constructed, and the birds remained for the rest of the season in this same wood where every suitable tree could be watched. Another set of four eggs was taken on April 8, and the conduct of the birds was much the same. The fourth, a set of four eggs, was allowed to hatch, and the parents were as shy after the nest contained young as they had been before. They would disappear whenever the nest was visited and would not return until the intruder was away. When I would leave and conceal myself some distance away the birds would return within less than two minutes, fly to the hole, peer in, and finding all safe, would again fly away. But when the observer after leaving the burrow remained in the open about thirty yards from the nest tree, at least ten or fifteen minutes would pass before the birds would come within sight; then they would immediately turn and fly back without approaching the nest. They had evidently hidden themselves in the wood and watched the actions about the nest and came back only when they felt that danger was past. Later observations showed that this was an unusually shy pair.

In 1902 seven pairs were found. Four of these seven laid sets of four eggs each, two pairs gave sets of three each, and one pair had a set of only two eggs. These are the smallest sets that I have known from a woodpecker. Five is about the usual number of eggs for the family in Mississippi. In the seven cases the nests were all in similar localities, the burrows little different in size and other particulars, and the nesting habits of the birds much as those cited above.

Five pairs were located during December, 1902, and January, 1903. Four of these pairs were birds that had been watched in their respective woods the previous season. They all nested in the same brakes during the spring of 1903. On March 18 another pair was located in the act of preparing the burrow. These six nests had four sets of four eggs each, one set of only three eggs, and one containing five eggs, the only set of five found in seventeen nests. Four of these sets were hatched. The two pairs from which the eggs were taken did not lay a second set nor build another nest, though as usual they remained in the same wood throughout the season.

I was always unable to observe this locality from about the middle of June until the first of October, but feel sure that these birds did not construct new nests during the summer. Further, on careful searches, no additional pileated burrows were to be seen in the fall, though the birds were still present. As mentioned above it was noted that the same pair would nest in its wood of the former year. In four instances, all of which had lost their eggs the year before, the birds built their new burrows in their several woods within a distance of about one quarter of a mile from the previous nest site. These four are the only cases which were watched with special care. As the birds confine themselves so closely to a given district, and as each piece of woodland is more or less distant from another, the birds are rather easy to keep located. The Flicker, Red-headed, and Red-bellied Woodpeckers of this vicinity also have the habit of nesting repeatedly near the same site after it is once chosen.

Centurus carolinus. RED-BELLIED WOODPECKER. — I have found this woodpecker to be a most interesting bird to observe on account of its remarkable ability for persistent laying. In the spring of 1900 a nest of this species was located in a dead cottonwood tree which stood in an open pasture. The nest was a burrow fifteen inches deep with a perfectly circular entrance about forty feet above the ground. A set of five eggs was taken from it on April 24. The entrance being small it was found necessary to cut it larger so as to admit my hand. Twenty-three days later the same nest contained a second set of five eggs, slightly incubated. The enlarging of the entrance evidently had had no ill effect except for the fact that the burrow had been deepened several inches, probably to prevent an extra amount of light on the floor of the nest. These birds seem to gauge the depth of their excavations more by the amount of light admitted than from any instinct to dig a certain distance. For example, burrows that had their entrance just below a limb or were situated in shady woods were noticed, as a rule, to be shallower than those located in exposed fields or on the sunny side of the tree. The second set mentioned above was taken May 17 and on returning nine days later, May 26, a third set of five eggs was in the same nest. The fact that this set followed the second so much closer

than the second did the first may be explained by the fact that no additional deepening of the burrow had taken place this time, and the second set had become slightly incubated before it was observed. The third set was removed, and on my return June 2, only seven days later, the nest contained a fourth set, consisting of only four eggs. This set was allowed to hatch and the four young woodpeckers were seen in the nest on June 24, when they appeared to be several days old. The nest had then contained four sets with a total of nineteen eggs within the one season of 1900. It appears certain from the following considerations that all nineteen eggs were laid by the same female. The nest tree was rather isolated and there was only one pair of Red-bellied Woodpeckers to be seen in the immediate vicinity during that spring. Also I had seen many of these birds nesting for several years and had not seen one using a second-hand burrow, and feel sure that if they should select one a nest with its entrance so mutilated would not be chosen. The most conclusive evidence is that the eggs of the third set had very much thinner shells than those of the other two sets, or than normal eggs of this species. The size and shape of the eggs were about the same in all of these sets, though it might have been expected that the later eggs would have been smaller.

On several occasions two sets have been seen from the same pair during one season, but I have only in the one case followed it out to the extent recorded above. In Mississippi the second set was always placed in the same burrow that had contained the first, though these birds are recorded from different localities by other observers as digging a new burrow for the second set after the first eggs had been removed.

Colaptes auratus. FLICKER. — It is a well known fact that Flickers will continue laying for some time if the eggs are repeatedly removed from the nest. Thirty-four is the largest number that I have been able to secure from one bird. This seems insignificant when compared to the string of eggs obtained from a Flicker by Phillips in 1883 (*Auk*, IV, p. 346). He succeeded in making his bird lay seventy-one eggs in seventy-three days by starting with two and continually removing one, leaving the other as a 'nest egg.'

In 1900 a Flicker's actions under very peculiar conditions were observed. On April 18 a burrow of a Flicker containing only one fresh egg was found. The egg was not disturbed. When visiting the nest again on April 28 a flying squirrel was found in possession. On my arrival the bird was at the entrance of the burrow peering in at the intruder. It was supposed that the squirrel was eating the eggs, but on examining the nest it was found to contain one spoilt egg. The squirrel had then probably been in possession for the ten days since the nest was observed, so the bird had been unable to enter and lay; thus only the one egg was present, and not having been properly cared for had spoilt. The Flicker must then have remained about her nest for this length of time, and as soon as the squirrel was removed she again took charge. On visiting the nest May 5, seven days later, it contained seven fresh eggs and the old one that had been left. Thus she had laid an egg each day since getting back to her burrow. The eggs were removed to see if she would continue laying, but she did not. This was undoubtedly a case of discontinuous laying unless she had dropped her eggs on the ground while the squirrel was occupying the nest. It seems strange that she did not produce the second set, for although she may have laid every day only seventeen eggs could have been dropped, which is far short of the Flicker's ability in many cases. This is the third instance, while watching twenty-eight pairs of these birds, of a failure to lay a second set in the same nest after the first had been removed. The Flicker was found, in this section, to dig a new burrow each season, and was not seen to use an old burrow or a natural cavity for nesting. Several pairs were, however, observed nesting in the roof crevices of attics.

Dryobates pubescens. DOWNY WOODPECKER.—Several nests of this species were observed, the birds being rather common in the State. No observations were made on their second laying, but the nesting sites were found to be very similar. One or two burrows were seen in almost horizontal branches with their entrance on the lower side, so that the cavities were practically parallel to the ground. The earliest complete set was found April 20, 1900; fresh eggs were not found after May 18.

Melanerpes erythrocephalus. RED-HEADED WOODPECKER.

— Many cases were noted of the second set in the same burrow from this woodpecker when the first eggs of the season had been removed. Careful observations were not made to find whether the laying would continue after the second set had been taken. The Red-head was found to begin laying later in the season than any other member of the family. May 12, 1901, was the earliest full set seen, and fresh eggs have been found as late as June 14. This species was also found to excavate a new nest each season, and was not seen to take an old burrow, though many were often to be had in the same tree.

Catharista urubu. BLACK VULTURE.— The Black Vulture was found depositing her egg in more widely different situations than any other bird observed. The favorite site was a large hollow log, or a tree having a huge hollow base with an opening only a few feet up, so that the female might be able to jump out of the nest. Below are the conditions in which this species was found depositing its eggs :

One pair for three seasons nested in a large hollow sycamore log that lay across a small stream and served as a 'foot log' for a little-used path in a swampy wood. At least three people a day must have walked over the log as the Vulture sat calmly on her eggs. After the three years the log was not observed further. This situation was rather noisy for a bird so retiring in its nesting habits. March 16, 1901, a set of two eggs was found lying on the bare ground under a large tree that had been uprooted and had fallen so that its trunk made an angle of about fifteen degrees to the earth. The eggs were placed below this trunk, which was four and one half feet above them, and thus the slanting sun rays could have fallen upon the spot but for the heavy foliage of the wood. March 19, 1902, two sets of two eggs each were found on the naked ground in a dense cane thicket which formed the underbrush on a thickly wooded slope. Many vultures were evidently laying here as large numbers of them were in the trees overhead. But the thicket was so dense that it was next to impossible to get about to find the eggs.

March 23, 1902, a vulture's nest was seen in a very queer location. This was in a cave in the side of a steep clay bank which bordered a creek. The entrance to the cave was about seven feet

wide, it ran back six feet, and the top was two and one half feet above the floor. The two eggs lay in the back of this cave. It was claimed that the place had been occupied by this pair and their young reared in it for many seasons.

March 29, 1902, a Black Vulture's nest was found situated about sixty feet up in a huge poplar tree which stood in a cotton field that had been cleared for five years. In the crotch of this tree there was a large hollow running down about three feet and slightly sheltered above by the inclination of one of the limbs that formed the crotch. The eggs were deposited on the floor of this hollow. This was the only nest of this species that was observed more than a few feet from the ground. It is probable that the birds occupied this tree while it stood in the woods and when the land was cleared in 1897 the tree, being a large one, was deadened and left standing and the birds continued to use it as a nesting site.

I had now seen it well demonstrated that Vultures did use the same nest season after season even though the eggs were taken the previous year. But in the years 1901, 1902 and 1903 very interesting data were obtained relating to this phenomenon. March 16, 1901, I was directed to a hollow gum tree in which a Black Vulture was said to have reared its young for several years. The bird flew from the nest and exposed two eggs, which were taken and found to be in an advanced state of incubation. In December, 1901, and January, 1902, the tree was visited and the hollow was seen to be littered with fresh excrement and possessed a characteristic odor. It was evident that the birds frequented the place, and probably roosted there. March 8, 1902, she laid the first egg of the new set. This must have been two or three weeks later than her first egg of 1901; the much colder winter may have caused the delay. The second egg was laid on the 11th, three days later, and then the set of fresh eggs was taken from the nest. April 19, thirty-nine days after, on visiting the nest the vulture flew off and the hollow was found to contain another set of two eggs, which were taken and proved to be incubated about two weeks. This was the only case actually observed of the Black Vulture's laying a second set in one season. In December and January of the following winter the tree was visited

but appeared deserted; no excrement or other signs of the birds were to be seen. Several trips were made to the nest the following spring, 1903, but it was unoccupied. In March, 1904, the nest was found still vacant. From this action it was concluded that the birds had been rearing a second set each season after the first had been removed, and so were finally successful and continued to use the site the following year; but now when the second attempt was thwarted they deserted the nest entirely.

One may be certain that the same female laid the sets of consecutive years, as the eggs of one nest are always almost exactly alike in size, shape and markings; while the eggs of different nests show most striking varieties and thus make beautiful series for color variation.

Cathartes aura. TURKEY VULTURE.—This species in Mississippi lays much later in the season than the Black Vulture. Fresh eggs were found on April 25, 1902, and March 21, 1898, was the earliest set seen. Its nesting sites have, in only the few cases observed, been found very constant, being confined in three instances to the hollows of fallen logs, and in two others to the hollows in large stumps. Only five of its nests were seen and in four of these the birds nested for consecutive seasons just as the Black Vulture was found to do. In the southern part of the State the Black is much commoner than the Turkey Vulture, but in the east central portion they appear in about equal numbers.

THE BIRDS OF WEST BATON ROUGE PARISH,
LOUISIANA.

BY ANDREW ALLISON.

A FAUNAL or floral list of any locality, based on observations covering a limited space of time, is, after all, liable only to such objections as may be urged against anything finite. Nothing is complete; therefore I need not apologize at too great length for the small size of the list given in this article. The ground is sufficiently well covered by the statement that my observations in West Baton Rouge Parish extended over the period between November 1, 1902, and July 1, 1903; comparing these results with those obtained under similar conditions at New Orleans, some differences of interest were easily discernible, and I now present a synopsis of the notes written during the specified period.

The Parish of West Baton Rouge lies on the right bank of the Mississippi River, about eighty miles northwest of New Orleans, in latitude between 30° and 31° north, longitude between 91° and 92° west. The surface is generally perfectly level, and the soil is largely a black fertile alluvium; where crevasses have more or less recently occurred, a covering of silt, commonly known as river sand, has been deposited; and where this reaches its maximum thickness, a slightly rolling character is given to the surface.

The cultivation of sugar-cane has necessitated the clearing of the forests for some distance back from the river, which, for most of the length of the parish, runs close to the line of levees. In some places, however, a flood plain has been formed outside of the levee, varying in width up to a maximum of three miles; this formation is covered with a thick growth of willow (*Salix longifolia*) and cottonwood (*Populus deltoides*); and even where the plain is but a very few years old, the growth, here of cottonwood, there of willow, is very thick. In the older parts of the plain, honey locust (*Gleditsia triacanthos*), pecan (*Hicoria pecan*), deciduous holly (*Ilex decidua*), and some other species, are mingled with the cottonwoods, and the poison ivy (*Rhus radicans*) clings to almost every tree. The willows disappear as the ground rises.

It would be tedious and useless to enumerate the herbs that

make the margins of the fields and ditches more interesting to the botanist than to the agriculturist; but of the shrubs and trees something further should be said. Beginning at the levee, and going toward the woods, one traverses sugar-cane fields defined by drainage ditches, along which the common elder (*Sambucus canadensis*) is a characteristic shrub, often affording nesting sites to Red-winged Blackbirds. Tall hedges of Osage orange (*Toxylon pomiferum*) often form the boundary lines between one plantation and another, and these are rendered at once more impenetrable to man and more habitable for birds by a growth of blackberry (*Rubus sargutus*) and bamboo or cat-brier (*Smilax bona-nox* et *pseudo china*). Everywhere along the highroads and fences are dense hedges, sometimes of many hundred yards in length, of the Cherokee rose (*Rosa laevigata*); there is no plant more characteristic of the lower Louisiana fertile alluvial regions than is this rose.

There is much undergrowth in many of the small tracts of woodland encountered before one reaches the primeval swamp stretching behind all as interminable as the river running before; this is mainly bamboo, blackberry, switch-cane or cane-reed (*Arundinaria tecta*), *Ampelopsis cordata*, and supple-jack (*Berchemia scandens*). This last, with the bamboos, also climbs high, as do the trumpet-flower (*Tecoma radicans*) and the cross-vine (*Bignonia crucigera*). Poison ivy (*Rhus radicans*) is common everywhere, and its fruit is an important article of avian diet. The smaller trees and shrubs are haw (*Crataegus arborescens*), deciduous holly (*Ilex decidua*), and cornel (*Cornus stricta*); above these rise cottonwood (*Populus deltoides*), water oak (*Quercus nigra*), sweet gum (*Liquidambar styraciflua*), honey locust (*Gleditsia triacanthos*), sycamore (*Platanus occidentalis*), hackberry (*Celtis mississippiensis*), maple (*Acer drummondii*), and ash-leaved maple or box elder (*Acer negundo*).

In the deep swamp, though this is fringed with a heavy undergrowth, shrubs and vines are hardly present; Spanish moss (*Tillandsia usneoides*) hangs abundantly from the trees, of which the principal species are: ash (*Fraxinus lanceolata*), water oak (*Quercus nigra*), red oak (*Quercus rubra*), cypress (*Taxodium distichum*), and tupelo (*Nyssa aquatica*).

Certain parts of the parish, some miles back from the river, present an abruptly undulating surface; these regions are drained by small sluggish streams. The presence of water hickory (*Hicoria aquatica*) along these streams, and the local occurrence of certain dry-ground plants not found in the less well-drained swamps, such as hackberry, and the various shrubs and vines making up a heavy undergrowth, give a more or less definite regional value to the topographical characters.

With this hasty sketch of the parish and its floral characteristics completed, I shall proceed to the main part of this article — the annotated list of its birds.

1. *Larus atricilla*. LAUGHING GULL.

2. *Larus delawarensis*. RING-BILLED GULL.

To both these species, undoubtedly, belonged the few gulls that passed up and down the river between Nov. 14, 1902, and March 7, 1903. I was unable positively to identify these birds in any case, for a gull in mid-channel of a mighty river is an ambiguous object.

3. *Anhinga anhinga*. ANHINGA.—A not uncommon breeder in certain localities. Probably resident; but I saw none until March 20, 1903, when a single male passed over at Lobdell. Early in June I found the species breeding in the swampy wooded end of a lake on the grounds of the Louisiana State University, in East Baton Rouge Parish, and also in the deeper swamps of that vicinity; and later (June 29), I saw a male, evidently of a breeding pair, on a heavily-wooded tract outside of the levee on the right bank of the river.

4. *Aythya collaris*. RING-NECKED DUCK.—The species composing most of the flocks noted passing southward in November, and those commonly seen on the river during the winter. Probably the last of these were reported to me on March 18, 1903; some ducks were reported after this date, but they were probably teal.

5. *Querquedula discors*. BLUE-WINGED TEAL.—Like most of the water birds observed, this species is rather insufficiently authenticated. In the dusk of Nov. 12, 1902, a flock of small ducks passed me that I referred to this species. Owing to the fact that it is usually common in migration in April, I also refer to it a trio reported to me on April 11, 1903. What ducks may have passed besides these two species is indeterminate.

6. *Anser albifrons gambeli*. AMERICAN WHITE-FRONTED GOOSE.—A flock of about fifty, headed toward the north, made a noisy stay of a few minutes in the fog and rain of March 27, 1903. Their clamor was continuous; they settled first in the bare sugar-cane fields, then rose, flew over the levee, and sat for a few minutes on the water.

7. *Ardea herodias*. GREAT BLUE HERON.—It is hard to trace the

connection of this heron with this locality; it was present in November, 1902, its habits being noticeably crepuscular and nocturnal, at the ponds on the *batture*, as all land lying outside the levee is called. On January 29, 1903, I recorded its return; but from that date forward I have no records.

8. *Florida cærulea*. LITTLE BLUE HERON.—The date of arrival of this species was very late; I saw none until April 20, 1903, when about twenty passed up the river. Apparently some heronries are near Lobdell—the base of my operations—for late in June I found many birds, all but one in white plumage, a few miles west of that point. They had probably bred in inaccessible parts of the wide, wooded *batture*.

9. *Butorides virescens*. GREEN HERON.—Locally an uncommon species. I saw the first birds flying northward at dusk on April 2, 1903; I had thought, however, that I recognized the note in night migration on March 29. After this I had no proof of its presence in the vicinity until there came to my ears, on June 23, 1903, the cry of the Green Heron in the extensive swamps across the river from Lobdell.

10. *Nyctanassa violacea*. YELLOW-CROWNED NIGHT HERON.—A common spring migrant after March 22, 1903. According to many reports there are large heronries of the species not many miles west of Lobdell, and it is much too common a practice to despoil these heronries of the 'squabs,' or half-fledged young, to be used as food.

11. *Rallus elegans*. KING RAIL.—An individual of this species was taken alive by a settler in the swamp, and accurately described to me. I was unable to get the date of the capture. I thought I heard the cry of another on the night of June 20, 1903.

12. *Philohela minor*. AMERICAN WOODCOCK.—During the winter I spent in this parish, Woodcock were said to be abundant on the left bank of the river (East Baton Rouge Parish) and it is safe to record the species as a winter resident also in West Baton Rouge Parish.

13. *Gallinago delicata*. WILSON'S SNIPE.—Uncommon; it was the first bird—possibly omitting *Ardea herodias*—to show migrational activity. Two were seen Feb. 3, 1903, and another on Feb. 15; these were the only records.

14. *Actodromas maculata*. PECTORAL SANDPIPER.—A fairly common spring migrant; present in some numbers on March 19, 1903, and seen again on March 22.

15. *Actodromas minutilla*. LEAST SANDPIPER.—A late spring migrant; noted in small numbers from May 12 to May 25, 1903. The river, falling after its spring rise—of almost unprecedented extent in the season of 1903—leaves on the *batture* a deposit of rich silt, and these mud-flats are most favorable to the presence of limicoline birds; here were seen Least, White-rumped, Semipalmated, and Spotted Sandpipers, and Semipalmated and Killdeer Plovers.

16. *Actodromas fuscicollis*. WHITE-RUMPED SANDPIPER.—A flock of about fifty appeared in the mud-flats May 14, 1903, and by May 17, the

last day of their stay, it had decreased to twenty. The sound of the feeding flock was remarkably similar to that made by a larger number of Pipits.

17. *Ereunetes pusillus*. SEMIPALMATED SANDPIPER.— Appeared May 14, 1903, and was present intermittently until May 28. Not in large numbers at any time.

18. *Bartramia longicauda*. BARTRAMIAN SANDPIPER.— A rather common spring migrant, preferring here, as everywhere, the fields to the mud-flats. First seen March 19, 1903; last seen May 15.

19. *Actitis macularia*. SPOTTED SANDPIPER.— This is the only Sandpiper breeding in this locality, and the last to leave in the fall. The first arrived March 31, in 1903, and I saw two on Nov. 5, 1902.

20. *Squatarola squatarola*. BLACK-BELLIED PLOVER.— There seems no doubt that to this species is referable a plover seen with Killdeers on Nov. 2, 1902. Its notes also pointed to this conclusion.

21. *Oxyechus vociferus*. KILLDEER.— A common and most characteristic winter resident; one can hardly get beyond reach of its cries by day, except by going far back from the river; and even at night it often utters querulous, restless notes.

The winter residents left, in 1903, before the middle of March; but the species undoubtedly breeds not far away, probably to the northeast; for its presence was reported to me in the late summer, after my departure. One was present, but did not mix with the other waders, May 14-15, 1903.

22. *Ægialitis semipalmata*. SEMIPALMATED PLOVER.— A few present May 15, 1903, on the mud-flats with the sandpipers.

23. *Colinus virginianus*. BOB-WHITE.— A common resident.

24. *Zenaidura macroura*. MOURNING DOVE.— A common resident. Very gregarious from my arrival on Nov. 1 (and doubtless a month previous to that date), until February. The first record of the song is Feb. 21.

25. *Cathartes aura*. TURKEY VULTURE.— A very common resident.

26. *Catharista urubu*. BLACK VULTURE.— Perhaps three times as abundant as the preceding.

27. *Ictinia mississippiensis*. MISSISSIPPI KITE.— A not uncommon breeder, arriving late. The date of arrival in 1903 was May 9.

28. *Circus hudsonius*. MARSH HAWK.— A fairly common winter resident; last seen Mar. 31, 1903.

[28.1. *Accipiter velox*. SHARP-SHINNED HAWK.— I noted this species in December, 1897, on the campus of the Louisiana State University, in East Baton Rouge Parish; but I have no records from the right bank of the river.]

29. *Accipiter cooperi*. COOPER'S HAWK.— Probably in some degree resident; but I noted it only as a rather infrequent winter resident.

30. *Buteo borealis*. RED-TAILED HAWK.— A fairly common winter resident; last seen March 17, 1903.

31. *Buteo borealis harlani*. HARLAN'S HAWK.—I saw this species only on March 12 and 16, 1903, while on the way to and from New Orleans; on these dates it was not uncommon. But from Port Allen, Lobdell, and the districts west of these points, it was not recorded.

32. *Buteo lineatus*. RED-SHOULDERED HAWK.—Possibly both this form and *B. l. alleni* were present; certainly *B. l. lineatus* was. I found it a common resident, beginning to nest in January.

33. *Archibuteo lagopus sancti-johannis*. AMERICAN ROUGH-LEGGED HAWK.—On two successive days—April 6 and 7, 1903—I saw at some distance, beating over the fields, a large, light brown hawk which could not have been anything but this species.

34. *Falco columbarius*. PIGEON HAWK.—A not uncommon winter resident.

35. *Falco sparverius*. AMERICAN SPARROW HAWK.—A very common winter resident, subsisting very largely on grasshoppers. I saw more after March 30, 1903. In common with certain others, this species regards latitude less than other considerations in its choice of breeding-places; in sandy or clayey regions, wooded with conifers (*Pinus taeda*, *P. australis*, et *P. cubensis*), it remains throughout the year in latitudes lower than that of this parish.

36. *Pandion haliaëtus carolinensis*. AMERICAN OSPREY.—I saw a single one sailing up the river May 15, 1903.

37. *Asio accipitrinus*. SHORT-EARED OWL.—I saw this species only once; this individual I flushed from a grassy ditch in a canefield, on March 26, 1903. Subsequently I found remains of another.

38. *Syrnium varium*. BARRED OWL.—Writing to Dr. Fisher, of the Biological Survey, for definite information as to the distribution of *Buteo lineatus alleni* and *Syrnium varium alleni*, I was informed that it was Mr. Ridgway's opinion that typical specimens could not be found outside of the Florida peninsula. Therefore I refer the owls of this region to *S. v. varium*. This species is resident, and rather common in the deep swamp. The swamps on the left bank of the river being denser, it is more common there.

39. *Megascops asio floridanus*. FLORIDA SCREECH OWL.—A very common resident in suitable localities—copses, and thick hedge-rows containing trees. Very difficult to see, but very often heard.

40. *Coccyzus americanus*. YELLOW-BILLED CUCKOO.—A common summer resident; in 1903 it was very late in arriving in this parish, though not abnormally so at New Orleans. None were present until May 8, but the next day the species was fairly common.

41. *Ceryle alcyon*. BELTED KINGFISHER.—Remarkably uncommon. None present during the winter, and one on March 28, 1903, and another on April 5, were the only individuals I saw.

42. *Dryobates villosus audubonii*. SOUTHERN HAIRY WOODPECKER.—A common resident.

43. *Dryobates pubescens*. DOWNY WOODPECKER.—I have recorded

this bird as common in only one spot,—a thin wood of willow and cottonwood, in a recent deposit of silt on the batture, about six miles above Lobdell.

44. *Sphyrapicus varius*. YELLOW-BELLIED SAPSUCKER.—A rather common winter resident; not observed after March 7, 1903.

45. *Ceophlœus pileatus*. PILEATED WOODPECKER.—Fairly common, and resident, in the deep swamps.

46. *Melanerpes erythrocephalus*. RED-HEADED WOODPECKER.—A common resident in suitable places, such as clearings containing large dead trees, and groves of large trees near houses.

47. *Centurus carolinus*. RED-BELLIED WOODPECKER.—Rather common everywhere in winter; retiring to the deeper swamps to breed.

48. *Colaptes auratus*. FLICKER.—Common in winter, increasing in numbers in March. I saw none after March 28, 1903.

49. *Antrostomus carolinensis*. CHUCK-WILL'S-WIDOW.—Doubtless breeds in the drier parts of the parish; I observed it at intervals after April 18, 1903, but saw none later than May 9.

50. *Chordeiles virginianus*. NIGHTHAWK.—Of this form, undoubtedly, were the transients observed in late April and early May. I first noted the species April 22, 1903. After the middle of May very few nighthawks were observed, though a casual trip showed them to be abundant in East Baton Rouge Parish early in June. Perhaps these breeding birds were *C. v. chapmani*.

51. *Chaetura pelagica*. CHIMNEY SWIFT.—An abundant summer resident; the first were seen March 26, 1903.

52. *Trochilus colubris*. RUBY-THROATED HUMMINGBIRD.—Abundant as a migrant, and common in summer. The first—a male, as usual—was observed April 3.

53. *Tyrannus tyrannus*. KINGBIRD.—Common in spring, much less so in summer. First seen April 4.

54. *Myiarchus crinitus*. CRESTED FLYCATCHER.—A fairly common summer resident, arriving, in 1903, on April 11. This, like very many of my other dates, is very late, according to New Orleans standard, which set the date of arrival at about March 26 (in 1903, March 28).

55. *Sayornis phœbe*. PHÆBE.—A common winter resident; the last left about the middle of March.

56. *Contopus virens*. WOOD PEWEE.—Fairly common as a summer resident; the first was noted April 14.

57. *Empidonax virescens*. GREEN-CRESTED FLYCATCHER.—A common summer resident; the commonest of all the flycatchers observed. First observed April 11.

58. *Cyanocitta cristata*. BLUE JAY.—A common resident.

59. *Corvus brachyrhynchos*. AMERICAN CROW.—A common summer resident.

60. *Corvus ossifragus*. FISH CROW.—Infrequent early in the winter; common, however, in February, and remaining to breed on the wooded battures.

61. *Dolichonyx oryzivorus*. BOBOLINK.—A flock of about fifty was present from April 30 to May 2, 1903. The males were in almost perfect plumage, and in fine voice. I shall quote here from my note-book: "Presently I heard *Chink, chink!* and the Bobolinks began to rise from the weeds, a few at a time; they were of both sexes, and the males were in the beautiful nuptial plumage. . . . Considering the striking character of their coloration, their concealment was admirable. . . . Evidently they were feeding on the ripe seeds of *Senecio lobatus* and *Sonchus asper*, and the stomach I examined contained the seeds of *Charophyllum tainturierii*, I think, besides fragments of beetles. Suddenly one of the males began to sing, and soon the concert was glorious."

62. *Molothrus ater*. COWBIRD.—A common resident.

63. *Agelaius phœniceus*. RED-WINGED BLACKBIRD.—It seems to me probable that to this form are referable the blackbirds of this parish; they are unquestionably larger than breeding birds from the Mississippi coast and the region about New Orleans. They breed in small colonies among the shrubbery and thick weeds on the banks of the cane-field ditches. The species is resident, but a great influx from the southeast began on January 7, 1903; these were mostly transient, however, and the majority probably passed northward, though doubtless many returned to the coast marshes to breed. It therefore appears probable that in winter both *A. p. phœniceus* and *A. p. floridanus* are to be found here.

64. *Sturnella magna argutula*. SOUTHERN MEADOWLARK.—A common resident.

65. *Icterus spurius*. ORCHARD ORIOLE.—The most abundant summer bird of this region. The adult males began to arrive April 1—ten days later than at New Orleans in the same season—and were common by April 5; on April 8 I saw the first females and immature males, and from this time on the birds were very abundant. On a day in May I counted thirty-one nests in a single homestead, where nearly all the trees were recently planted and still small. The song is unfailling all day long, from five in the morning to six, and sometimes later, in the evening.

66. *Icterus galbula*. BALTIMORE ORIOLE.—An uncommon summer resident; indeed, the only proof I have to offer of its being a breeder here is furnished by two nests found during the winter. Both of these were in cottonwoods on the batture; I knocked down one and satisfied myself of its identity. This species is of very local distribution in Louisiana in summer, being known to breed, I believe, only in East and West Feliciana and East and West Baton Rouge Parishes. I noted the first migrant in 1903 on April 20.

67. *Euphagus carolinus*. RUSTY BLACKBIRD.—Very common in the late winter, entering largely into the composition of all the motley flocks of blackbirds. It is late to arrive in the fall; I saw none before November 17. At New Orleans it is usually very late to leave in spring, but here I saw none after March.

68. *Quiscalus quiscula*. PURPLE GRACKLE.—More or less typical of

this form are all the grackles breeding in this locality. Mr. F. M. Chapman pronounced this verdict upon a series which I collected for him. The birds are less frequent in winter; in their breeding habits they are gregarious to a considerable extent.

69. *Quiscalus quiscula æneus*. BRONZED GRACKLE. — Winter resident, or at least it is a regular winter visitor. Some of the breeding specimens closely approach it, but are distinctly referable to the preceding. I took a typical example on January 24, 1903.

70. *Poœcetes gramineus*. VESPER SPARROW. — An uncommon winter resident. The last was seen March 20, 1903.

71. *Passerculus sandwichensis savanna*. SAVANNA SPARROW. — A common winter resident, becoming very abundant in spring. By the middle of April the maximum abundance is reached, and from this time on for nearly two weeks very many are present, singing often from trees and fences. After the last of April, as a rule, few are seen; but in 1903 the species was locally common until May 2, and the last lingered until May 15.

72. *Coturniculus savannarum passerinus*. GRASSHOPPER SPARROW. — Probably an uncommon breeder, though I observed none later than May 2. The first arrived — or was seen, for this may be a winter resident also — on April 4.

73. *Coturniculus leconteii*. LECONTE'S SPARROW. — I saw no birds that I could positively identify as this species until April 7, 1903, when I took one and saw three others; after this I noted them at intervals until April 25.

74. *Zonotrichia albicollis*. WHITE-THROATED SPARROW. — An abundant winter resident; last seen April 26.

75. *Spizella pusilla*. FIELD SPARROW. — Abundant in East Baton Rouge Parish, but of singularly restricted distribution in the parish under consideration. I first heard its song on April 5, 1903 — though it is doubtless resident — and from that time until the end of my stay I was always sure of finding it fairly common — but only in the spot where I first heard it. At no time did I see or hear a single individual four hundred yards from the metropolis of the species, — a cleared pasture grown up again in bushy young plants of honey-locust and bounded by fields and hedges.

76. *Melospiza georgiana*. SWAMP SPARROW. — An abundant winter resident; frequenting mainly thickets and hedge-rows, but spreading also into the grassy fields, where, in the ditches, according to my note-book, "These birds behaved most strangely; I could hear them creeping under the matted grass, squeaking like mice, and often splashing through the water like little musk-rats." The last were seen May 2, 1903.

77. *Pipilo erythrophthalmus*. TOWHEE. — A rather common winter resident; less common in summer.

78. *Cardinalis cardinalis magnirostris*. LOUISIANA CARDINAL. — Mr. Outram Bangs (*Proc. N. Eng. Zoöl. Club*, Vol. IV, pp. 5-7) has founded, on

the basis of twelve specimens collected by me in West Baton Rouge Parish, the subspecies named above. This is in accordance with the opinion expressed by Mr. Ridgway (U. S. Nat. Mus. Bull. No. 50, Part I, p. 641): "The bill is, in fact, decidedly larger in these Louisiana birds than in any other specimens from the United States east of Arizona, and I have little doubt that it will eventually become necessary to separate the Louisiana bird as a different subspecies." The bird is an extremely abundant resident.

79. *Zamelodia ludoviciana*. ROSE-BREADED GROSBILL.—A rare spring migrant; I saw one feeding on the fruit of the wild mulberry (*Morus rubra*) on May 2, 1903.

80. *Guiraca cærulea*. BLUE GROSBILL.—Probably breeds rarely; it is an uncommon spring migrant, and I saw none before May 2, which date is abnormally late for its arrival.

81. *Cyanospiza cyanea*. INDIGO BUNTING.—An abundant spring migrant, a much less common breeder. First seen April 14.

82. *Cyanospiza ciris*. PAINTED BUNTING.—A very common breeder, first seen on April 11. The conditions affecting this species and the preceding are reversed in East Baton Rouge Parish, where the Indigo Bunting is a much more conspicuous summer bird.

83. *Spiza americana*. DICKCISSEL.—A rather common late spring migrant, first seen April 30. It is uncommon as a breeder, and at least in the territory between Lobdell and Port Allen, appears to be confined to the small area occupied by *Spizella pusilla*.

84. *Piranga erythromelas*. SCARLET Tanager.—A rather uncommon spring migrant, present in 1903 from April 25 to May 9.

85. *Piranga rubra*. SUMMER Tanager.—A common breeder; first seen April 11.

86. *Progne subis*. PURPLE MARTIN.—An abundant breeder; here, as everywhere in Louisiana and Mississippi, a very early arrival. The first —males, as usual—were seen Feb. 17. Young and old began to gather into summer flocks about May 15.

87. *Hirundo erythrogaster*. BARN SWALLOW.—Common in spring, but does not remain to breed. First seen April 4; last seen May 27.

88. *Iridoprogne bicolor*. TREE SWALLOW.—This species appears not to be present here in winter, though a trip to New Orleans in late December revealed its presence there. I saw none here after the first of December. The first spring migrants appeared on Feb. 27, and the last left May 2.

89. *Stelgidopteryx serripennis*. ROUGH-WINGED SWALLOW.—A spasmodically abundant summer resident, always appearing to be in migration. First seen March 23, and present in rather small numbers until late in May; after that it was nearly absent until the middle of June, when many began to pass westward; and the majority of those seen after this were moving westward up the river, in straggling flocks.

90. *Ampelis cedrorum*. CEDAR WAXWING.—Perhaps it would be

unsafe to say, after one season's observations on this erratic bird, that it is a very uncommon winter resident. I found it so, however, since I saw it but once during the winter; but a few were present March 7, and May 2-9 they were feeding on mulberries.

91. *Lanius ludovicianus*. **LOGGERHEAD SHRIKE**.—A common winter resident, dwindling almost to rarity in summer.

92. *Vireo olivaceus*. **RED-EYED VIREO**.—A common summer resident; first seen March 28.

93. *Vireo gilvus*. **WARBLING VIREO**.—A rather common summer resident, restricted almost entirely, in its choice of nesting sites, to groves near dwellings. First observed April 9.

94. *Vireo solitarius*. **BLUE-HEADED VIREO**.—Only one record, and that a somewhat doubtful one; the record in question was obtained Dec. 6, 1902. It is a regular winter resident near New Orleans.

[94.1. *Vireo flavifrons*. **YELLOW-THROATED VIREO**.—Early in June Mr. H. H. Kopman and I observed this species on two consecutive days in East Baton Rouge Parish; on the second occasion we found young being fed by the parents.]

95. *Vireo noveboracensis*. **WHITE-EYED VIREO**.—I did not observe this species during the winter, though it is almost invariably noted at least once in each winter at New Orleans. It was first noted March 7, and proved to be a very common summer resident.

96. *Protonotaria citrea*. **PROTHONOTARY WARBLER**.—A common breeder; first seen April 25.

It is in the movements of the warblers that I find most disparity between my records for the spring of 1903, and those of Mr. H. H. Kopman made at New Orleans in the same season. The species now under consideration arrived at the latter station nearly a month in advance of my west Baton Rouge Parish record, and *Wilsonia mitrata* was common at New Orleans by March 20, while it did not appear at my station until April 25! On the other hand, *Icteria virens* appeared here April 11, two days earlier than it had ever been recorded at New Orleans! With such contradictory records as these, and only one season's observations from this parish to go upon, no satisfactory comparison can be made; and a certain amount of emphasis must be laid upon the fact, stated to me by Mr. W. W. Cooke, of the Biological Survey, that the migrations of warblers in the spring of 1903 were remarkably irregular.

97. *Helmitheros vermivorus*. **WORM-EATING WARBLER**.—Seen only once—April 11. Possibly breeds.

98. *Helminthophila bachmanii*. **BACHMAN'S WARBLER**.—I have one record of this rare warbler; I saw one on May 9, in a thick wood with rank undergrowth.

99. *Helminthophila celata*. **ORANGE-CROWNED WARBLER**.—An uncommon winter resident; one taken Jan. 17, 1902, and another seen Jan. 22.

100. *Compsothlypis americana ramalinæ*. **WESTERN PARULA WAR-**

BLER.—A common summer resident; first noted March 7 (at New Orleans March 11). Undoubtedly *C. a. usneæ* is often present in migration, and to distinguish the two forms in recording arrival and departure dates is almost impossible; but I am quite sure that a fine male I saw on March 17 was of the latter form; the large size was very apparent.

101. *Dendroica æstiva*. YELLOW WARBLER.—Not common during the spring of 1903 (first noted at New Orleans April 14, that date being unusually late); I thought often that I heard it, but it eluded me until May 2. After this I saw it occasionally and finally supposed that May 17 had brought the last. But a singing male on June 16 seems sufficient evidence that this warbler breeds in the parish, as it is known to do in St. Tammany Parish (Beyer, Proc. La. Soc. Nat., 1897-99 (rep. 1900) p. 38).

102. *Dendroica coronata*. MYRTLE WARBLER.—An abundant winter resident. The last was seen in the city of Baton Rouge, on the left bank of the river, on April 19 (April 27, New Orleans).

103. *Dendroica virens*. BLACK-THROATED GREEN WARBLER.—Seen only once, May 9 (transient at New Orleans, April 26-27).

104. *Dendroica discolor*. PRAIRIE WARBLER.—I am almost positive that an elusive warbler seen on April 17 was of this species; behavior and appearance alike pointed to this conclusion.

105. *Seiurus aurocapillus*. OVEN-BIRD.—One seen May 9.

106. *Geothlypis formosa*. KENTUCKY WARBLER.—A common summer resident. First seen April 11, and common from that date.

107. *Geothlypis trichas ignota*. SOUTHERN YELLOW-THROAT.—Common and resident.

108. *Icteria virens*. YELLOW-BREADED CHAT.—An abundant summer resident; first seen April 11. Loquacious to an extent that makes its presence known wherever it occurs; this is one of the most characteristic breeding birds of the region.

109. *Wilsonia mitrata*. HOODED WARBLER.—A common summer resident, but not nearly so widespread as about New Orleans. First seen April 25 (common at New Orleans, March 21).

110. *Setophaga ruticilla*. AMERICAN REDSTART.—Only one seen, April 25 (transient at New Orleans, April 26-27).

111. *Anthus pensilvanicus*. AMERICAN PIPIT.—A common winter resident; last seen May 2. It is fond of feeding at the water's edge, and often covers the levee for many yards with busy flocks.

112. *Anthus spragueii*. SPRAGUE'S PIPIT.—I saw three on the batture at Lobdell, Nov. 3, 1902. It is an uncommon, but not irregular, winter resident at New Orleans.

113. *Mimus polyglottos*. MOCKINGBIRD.—A very common resident. I first heard the song on Jan. 17, and singing was general by Feb. 15.

114. *Galeoscoptes carolinensis*. CATBIRD.—A fairly common spring migrant; I noted one, singing a little, on April 25, and some were present at intervals after this until May 11; they fed much on the wild mulberries.

115. *Toxostoma rufum*. BROWN THRASHER.—A fairly common winter resident. It possibly breeds, though I saw none after April 13.

116. *Thryothorus ludovicianus*. CAROLINA WREN.—A very common resident.

117. *Thryomanes bewickii*. BEWICK'S WREN.—A rather common winter resident. In February and early March the song is very frequent and delightful; I saw none after March 9.

118. *Troglodytes ædon*. HOUSE WREN.—A rather uncommon winter resident. Last seen April 18.

119. *Olbiorchilus hiemalis*. WINTER WREN.—Saw one March 7, 1903.

120. *Cistothorus stellaris*. SHORT-BILLED MARSH WREN.—Winter resident; an interesting species, frequenting hedge-rows and heavily grass-clad ditch-banks. In one of the latter situations I took a specimen as late as May 12.

121. *Bæolophus bicolor*. TUFTED TITMOUSE.—Not common, noticeably less so than at New Orleans. Resident.

122. *Parus carolinensis*. CAROLINA CHICKADEE.—Rather uncommon in winter, and even less conspicuous in summer.

123. *Regulus satrapa*. GOLDEN-CROWNED KINGLET.—A common winter resident. Last seen March 7, when it was in song.

124. *Regulus calendula*. RUBY-CROWNED KINGLET.—A common winter resident; much more persistent than the preceding. The last were seen April 25.

125. *Polioptila cærulea*. BLUE-GRAY GNATCATCHER.—Resident; not infrequent in winter, common in summer.

126. *Hylocichla mustelina*. WOOD THRUSH.—A fairly common summer resident; much less so, however, than in East Baton Rouge Parish. First noted April 7.

127. *Hylocichla fuscescens*. WILSON'S THRUSH.—I found this species fairly common on May 9, 1903.

128. *Hylocichla aliciaæ*. GRAY-CHEEKED THRUSH.—Common on May 9.

[128.1. *Hylocichla guttata pallasii*. HERMIT THRUSH.—I am not certain that my records of this species are authentic; I wrote them down without hesitation; but as they were based only on the notes—the familiar *cluck*,—and as I afterwards detected cardinals uttering a similar note, I must question their validity.]

129. *Merula migratoria*. AMERICAN ROBIN.—Uncommon until March 7, the last day on which I saw the species; on that occasion I “found myself in the midst of a great flock of perhaps three hundred all ‘singing and murmuring in their feastful mirth,’ some on the ground, some in trees, and all making as much noise as so many blackbirds” (note-book).

130. *Sialia sialis*. BLUEBIRD.—Resident in the upper (western) parts of the parish; it appears remarkably local in its distribution, and occurs near Lobdell only as a transient. Common where it breeds.

GENERAL NOTES.

Curlew Sandpiper in New Jersey.—On July 29, 1904, a friend shot at Long Beach, Barnegat Bay, N. J., a strange sandpiper. It was forwarded to me, but unfortunately, the weather being exceedingly warm, the bird was spoiled beyond the possibility of skinning when I received it. I recognized it at once as *Erolia ferruginea*, evidently an adult male in full plumage. The rufous color of the breast and throat was very deep and rich. I have never seen any sandpiper, not even of this species, so highly and beautifully colored. I have the specimen preserved in alcohol.—JOHN LEWIS CHILDS, *Floral Park, N. Y.*

Occurrence of the Spotted Sandpiper in Kent, England.—It may be of interest to readers of 'The Auk' to learn that two examples, a male and a female, of the Spotted Sandpiper (*Totanus macularius*), were shot in Romney Marsh, Kent, on May 5, 1904. I had the pleasure of handling them in the flesh while they were still in fresh condition. The birds were exhibited at a meeting of the British Ornithologists' Club on May 18, 1904 (cf. J. L. Bonhote, Bull. B. O. C., Vol. XIV, pp. 84, 85.)—W. RUSKIN BUTTERFIELD, *St. Leonards-on-Sea, England.*

Killdeers at Allen's Harbor, R. I.—From August 16, 1904, until September 11, I stayed at Allen's or Quidnessett Harbor, North Kingston, R. I., five miles east of East Greenwich. There I found in an open closely cattle-cropped field a flock of about a dozen Killdeers (*Oxyechus vociferus*). They inhabited this field where doubtless they bred, making frequent visits to the salt marshes about the harbor. Mourning Doves were common with them, visiting the cornfields instead of the marshes. A trustworthy farmer tells me that they have bred in the pasture for years commonly. He has often seen their young.—REGINALD HEBER HOWE, Jr., *Concord, Mass.*

Note on the Generic Names Bellona, Orthorhynchus, Chrysolampis, and Eulampis.—*Bellona* Mulsant and Verreaux (Mem. Cherb. XII, 1866, 219) is preoccupied by *Bellona* Reichenbach (Natürl. Syst. Vögel, 1852, p. xxx) for a fossil. It may be renamed *Microlyssa*, with *Trochilus exilis* Gmelin as the type. *Orthorhynchus* Lacépède (Tabl. Oiseaux, 1799, 9) which has sometimes been used for the above genus cannot stand, as no type was specified by the author and the diagnosis is not diagnostic. Frieriep (Dumeril's Analyt. Zool. 1806, 47) gives *Trochilus minimus* and *mosquitus* of Linnæus under the genus *Orthorhynchus* and is apparently the first author to include any species under this term, though the name had previously been used by several authors. If we take *Trochilus minimus* Linn. as the type of Brisson's genus *Mellisuga* it would leave *Trochilus mosquitus* Linn. as the type of *Orthorhynchus*.

Boie (Isis, 1831, 546) gave five species under his genus *Chrysolampis*, as follows: 1. *Troch. moschitus* Linn., 2. — *elatus* Gm., 3. — *cyanomelas* Gm., 4. — *guianensis* Gm., 5. — *carbunculus* Gm. Now Nos. 2, 4, and 5 are synonyms of No. 1, and No. 3 is a synonym of *Trochilus jugularis* Linn., and as it has been shown above that *Trochilus moschitus* (or *mosquitos*) Linn. is the type of *Orthorhynchus* it leaves *Trochilus jugularis* Linn. as the type of *Chrysolampis* Boie.

Boie (Isis, 1831, 547) gave four species under his genus *Eulampis*, as follows: 1. *Tr. violaceus* Gm., 2. — *jugularis* Linn., 3. — *auratus* —, 4. — *niger* P. Max. Nos. 1 and 3 are synonyms of No. 2, and as that is already the type of *Chrysolampis* it leaves *Trochilus niger* P. Max. as the type of *Eulampis* Boie. — J. H. RILEY, *Washington, D. C.*

On the Proper Name of the Tody of Jamaica. — Linnæus in the 10th edition of the 'Systema Naturæ,' p. 116, named the Jamaican Tody, [*Alcedo*] *Todus*. In the 12th edition of the same work, p. 178, when he instituted the genus, *Todus*, he renamed it, [*Todus*] *viridis*, the name it has since gone under, but in view of the above fact it should be known in the future as *Todus todus* by those zöologists who regard the 10th edition of the 'Systema Naturæ' as the starting point of zoölogical nomenclature. — J. H. RILEY, *Washington, D. C.*

The Bobolink in Colorado.—In his bulletin on Birds of Colorado Professor Cooke notes five records of the Bobolink (*Dolichonyx oryzivorus*) in the State, including eight birds in all, and in his second supplement gives two more records of one bird each. Other records may now be added. One bird was taken at Boulder about two years ago by Mr. L. C. Bragg, the specimen bearing no date and no record having been made of it. One was seen by the writer east of Boulder on July 9, 1903. One was reported on the University campus at Boulder by Dr. J. R. Brackett, on July 30, 1903. Ten males and several females were seen by the writer and Mr. H. F. Watts in marshy ground just east of Boulder on May 24, 1904, and about the same number on May 30 and 31. I was accompanied on the last trip by Professor C. Juday. I have heard rumors of their occurrence here before, and am inclined to suspect that they may be found in a restricted area every year. — JUNIUS HENDERSON, *Boulder, Colorado.*

Henslow's Sparrow in Munroe County, Pa.—While on a walk with Wm. J. Sewill, between Stroudsburg and Mount Pocono, Monroe Co., Pa., May 29 of this year, I heard the note of Henslow's Sparrow (*Coturniculus henslowii*) and upon investigation at least two pairs were found. They were in a field, well up on the mountain just above Henryville, acting as usual and uttering their *che-ticks* from time to time. — WILLIAM L. BAILY, *Philadelphia, Pa.*

Breeding of the Dickcissel in New Jersey.—On July 3, 1904, while passing along a country road near Plainfield, New Jersey, I heard an unfamiliar and very unmusical song coming across the field. It soon ceased but before I had started on again it suddenly came down from almost over my head with such distinctness that I guessed the singer's name and, looking up, saw a Dickcissel (*Spiza americana*) perched on a telegraph wire above. After singing for a while, during which I had an excellent view of him through my glass, he flew back over the field. As he was evidently at home I decided to make the most of my opportunity, so spent the greater part of the day there. To my great satisfaction I soon found that the Dickcissel had a mate. She was shy and most of the time kept well hidden in the grass. The male sang persistently from three widely separated perches on as many sides of the field, — the lower branches of a large black walnut, the top of an apple tree and the telegraph wires over the road. The field in which the birds were located was a grass field of mixed timothy and red-top with considerable red clover in parts and with a sprinkling of fleabane and black-eyed susans.

On the following day I visited the place with three ornithological friends. We saw both the old birds and in addition were delighted to find two young birds, one of which I secured. This specimen is a female in juvenal plumage with the first feathers of the winter plumage beginning to appear. The wings are not full grown and the tail is less than two-thirds of the full length. There cannot, of course, be the slightest doubt that these young birds were bred in this locality. Neither of the parents were taken, and it is hoped that they will return next year. As I had passed this field many times in the last few years it is unlikely that any Dickcissels nested in it before this season.

Mr. S. N. Rhoads allows me to state that he believes a specimen or two of this species was taken near Philadelphia this spring. As these are the first records for New Jersey or eastern Pennsylvania since 1890, they evidently indicate a tendency of the Dickcissels to return to their old haunts. The breeding record is the first for New Jersey or eastern Pennsylvania since 1879, although a few pairs doubtless bred as late as 1881. It is also apparently the first record for the entire Atlantic coast plain since 1884, when the species is recorded as breeding at Chester, South Carolina. There is little doubt, however, that the bird observed by Dr. J. Dwight, Jr., at Kingston, New York, on June 5, 1896, was breeding.

Mr. Rhoads wishes me to state that he has made a careful comparison of eastern and western Dickcissels without finding the slightest difference between them.—W. DE W. MILLER, *Amer. Mus. Nat. Hist., New York City.*

Another Nest of Kirtland's Warbler.—On June 15, 1904, I found *Dendroica kirtlandi* in full song and breeding in Oscoda County, Northern Michigan. I took both parents, the nest, and four fresh eggs. The nest

was sunk in the ground at the foot of a small oak tree in vicinity of some small jack pines (*Pinus banksiana*). The vegetation was very heavy, and the nest was well concealed by deer-vine grass and other weeds. It was composed of dry grass, weed stems and pine needles. The male visited the nest while I was watching. The eggs have very thin shells, with very little gloss, and are spotted and blotched, mostly at top, with pink and chocolate spots. Average size, .73 X .55 of an inch.

The song of the male as follows: *Trp, trp, terp, terp, terp, ser-wit, er, wer*, all but the first two notes uttered rapidly. Besides this song, the prevalent one, the male has two other shorter song-notes. The female has a chirp like that of a sparrow. The male is a beautiful bird and a fine, incessant singer during the breeding season. The female sits very close on her eggs and can be caught on the nest with the hands. The birds are not wild and will allow close observation. They inhabit the high jack pine ridges, and seem to feed principally on an insect that infests the jack pine, occasionally flying to the ground for other food. The bird is called the Jack Pine Bird in northern Michigan.

As the nests are well concealed, and the female is a close sitter, it is a very difficult matter to find them, as the male will sing a long distance from the nest. This set is, I believe, the first perfect set of this bird's eggs known to science.—EDWARD ARNOLD, *Battle Creek, Mich.*

An Interesting Variation in *Seiurus*.—A diagnostic character of this genus is the absence of white (or other colored) spots from the tail feathers. In all descriptions of *Seiurus*, and in all keys including it, this feature is set forth in practically the same language as in the following extract from Ridgway (1902, p. 429): "Inner webs of the lateral rectrices without white terminal spot." Thus it may be concluded that this character is essential to a definition of the genus, or in other words, is a generic character. It is this fact that lends a greater interest to the following record.

A specimen of *Seiurus noveboracensis notabilis* in the collection of the University of Indiana (No. 128) has distinctly marked, white, terminal spots on the outermost and next to the outermost rectrices of the right side, and indications of similar markings on their fellows of the left side, in the form of correspondingly placed narrow edgings of white. The facts that these markings are paired, and that they are in precisely the position of the blotches on the rectrices of most of our warblers with normally parti-colored tail-feathers, remove them entirely from the category of those irregularly shaped, white patches, which are often found on the primaries or on the tail-feathers, or in fact on any of the feathers of many species of birds.

This change from a character of its own genus to that of another must be considered as having a deeper, a phylogenetic significance. The color arrangement of *Seiurus* tends to the primitive or streaked type. The

only recognition mark thus far developed is the conspicuous superciliary line. The abnormal pattern of the rectrices of the specimen under consideration may be regarded therefore as identical in nature with those variations that must have taken place many generations ago, in the ancestors of species that now have a full complement of well-developed recognition marks.

Probably many, many variations of this kind have occurred, and have failed to be perpetuated, for one reason or another, but who can say at what moment such a variation will be seized upon by natural selection and developed into a new racial character!

The specimen discussed above was collected May 14, 1875, at Indianapolis, Indiana, by Dr. David Starr Jordan.—W. F. McATEE, *Washington, D. C.*

Warblers and Grapes.—At Bloomington, Indiana, during the fall of 1903, from the 24th to the 29th of September, I observed the Tennessee (*Helminthophila peregrina*) and the Cape May (*Dendroica tigrina*) Warblers piercing or 'sucking' grapes. The habit has been frequently recorded for the former, but I believe it is the first time it has been for the latter.

Prof. F. H. King has spoken of the trait in the Tennessee Warbler (*Wis. Geol. Rep.*, 1886), and has protested against condemnation of the bird for this practice which is prevalent for so small a portion of the year. It is this line of argument that I wish to support.

It is evident that the birds can do no harm to grapes in their summer homes. In the parts of their summer range where grapes are found, these are not ripe until the birds have begun their northward movement. Thus it is only during the limited period in which they are present as migrants in a given locality that it is possible for them to injure the grape crop. This period may be as long as six weeks, but in all probability it is generally shorter, and does not include, at the most, more than two weeks during which the species occurs abundantly. If noteworthy harmful, it is only during this very brief period that their depredations would be important.

Careful observations were made at all opportunities during the period mentioned. The behavior of the birds and the condition of the grapes both before and after the birds' visits were noted. Specimens were taken while in the vines and their stomach contents ascertained. Many of the grapes were preserved in alcohol, just as they were left by the warblers.

Both species were constantly busy catching insects on the vines, and on a walnut and some appletrees near by. Frequently, however, they dashed into the vines and thrust their bills quickly into a grape. Sometimes they withdrew them quickly; again they poked around in the interior of the grape a little, and always after these attacks, they lifted their heads as in drinking. This action suggested a reason for piercing the grapes, that I am satisfied is the true one, that is, the obtaining of liquid refreshment.

From an examination of the grapes preserved, as well as from the investigation of the stomach contents, it was seen that no pulp nor seeds were taken. The grapes show simple openings made by the thrusts, or larger rents due to the drying in consequence of the original wounds. No seeds were disturbed and the pulp had dried down around them in a hard mass. Thus it is shown that grapes cannot be included in the *food* of the Cape May or Tennessee Warblers.

Some of the openings, triangular in shape, have a strip of grape-skin extending across near the base, showing that the bird thrust its open beak into the fruit, probably in an effort to quench an impelling thirst. In the present instance, thirst seems plainly to be the motive for attack. This might be averted entirely by the presence of a bountiful supply of water.

In the arbor under observation, which was a small one, scarcely a grape and not a cluster was missed. The damage, however, was considerable as the birds did not commence to use their appropriated share of the crop until the owner had taken all he desired. However, they might not be thus considerate at all times, but the chances are that in the majority of cases the injury, on account of the late time at which it is done, would be very small.

Prof. King found plant-lice and small heteropterous insects in stomachs of the Tennessee Warbler, and Prof. B. H. Warren reports the food of the Cape May to be larvæ, flies, plant-lice and small beetles.

The results of the investigation of the stomach contents of birds taken at the time of the observations noted above, follow: Cape May Warbler (one specimen), 8 *Typhlocyba comes*, an especial pest of the grape, "an exceedingly abundant and destructive" jassid; 3 *Aphodius inquinatus* and one Carabid, kinds which may be considered neutral economically, but, in case of a departure from their ordinary diet, would on account of vegetarian tendencies become injurious; 1 *Drasterias* sp. (click-beetle), 1 tortoise-beetle, 1 flea-beetle (*Haltica chalybea*), all injurious beetles, the last of which is a particular enemy of the grape, which "appears on the vine in early spring and bores into and scoops out the unopened buds, sometimes so completely as to kill the vine to the roots," and later in the season in both larval and adult stages feeds upon the foliage, and if abundant "leaves little but the larger veins"; 1 *Notoxus* sp., a weevil, with all the undesirability characteristic of the creatures bearing that name; 2 ants, harmful, if for no other reason than harboring plant lice; and a vespoidean hymenapteron (wasp) of neutral significance.

Tennessee Warbler (one specimen), *Typhlocyba comes* (1) again, and another jassid or leaf hopper; 6 caterpillars which were doing all in their power to eat up the leaves remaining on the vines; 2 Lycosidæ (spiders); a bug (*Corizus*), another weevil, and one parasitic hymenopter.

This last item is the only portion of the food of these two individuals

that could have served man better outside of a bird, and it constituted only 5% of the contents of one stomach, or only one-fortieth or one-fiftieth of the food of the two. Otherwise the insects eaten were either neutral or potentially or actually harmful. A great per cent of the whole was in the last class, and some of the species eaten are tremendously injurious to grape culture.

The feeding habits of the birds may, from the present knowledge, be declared practically entirely beneficial. In return it seems not too much to expect that we should without complaint furnish, for a few days in the year, the drink to wash the great numbers of our insect enemies down to their destruction; and to consider these two little fellows as among the worthiest as they are among the prettiest of our warbler friends.—W. F. McATEE, *Washington, D. C.*

The Raven in Southern New Hampshire, and Other Notes.—On the afternoon of July 4, 1903, while all the land was dim with fire-cracker smoke, a solitary Raven, coming who-knows-whence and going who-knows-whither, wandered over the rocky ridge of Mount Monadnock, in southwestern New Hampshire. I was sitting outside my camp, midway of the mountain ridge, and several times dimly heard the wanderer's gruff, inarticulate croak, without recognizing it. In Norway or Sardinia, where I have known *Corvus corax* familiarly, this sound would have been instantly intelligible to me; but here, in the Massachusetts hill country of southernmost New Hampshire, unvisited by ravens for many a year, I was slow to grasp its meaning. Two companions were sitting near me, and I credited them with having facetiously uttered the ribald grunts. Nor did these companions at once arouse my interest by exclaiming: "See that crow over there!" I could n't see him without moving, and sat still. But a peculiar and vaguely familiar heavy 'swishing' of wings, coupled with the news that the crow was persistently hovering over our provisions, brought me to my feet to have a look at the bird myself. Stepping around the cabin I beheld, not a crow, but a big, dingy raven, heavy-headed, huge-beaked, and deeply emarginate-winged. He was raspingly beating the air, thirty feet above my outspread provisions and cooking utensils, and scarcely ten paces from where I stood.

Just so I have seen the European Raven flopping about over our vulture-baiting donkey carcass, in the hot fields of Sardinia,—hour-long, day after day. The scene was vividly recalled to me by this strayed carrion-biter of the North American wilderness. He was so strangely unsuspecting that he not only did not veer off when I appeared around the corner, but actually let me walk almost directly under him before he showed symptoms of alarm, and remitted his scrutiny of the victual-strewn ground. Then he started away to the northward along the mountain ridge, flying rather slowly and laboriously, with but little sailing, and presently disappeared behind a rocky knoll, on the northwest side of the mountain.

Later that same afternoon, at Dublin, near Monadnock's northern base, my sister saw some crows persecuting a larger bird, which looked to her somewhat like a hawk, but was entirely black. Probably this was my raven again. Where this raven came from no one can say, but it is certain that he had wandered far, and must wander far again to find country in which he could feel at home.

Strangely enough, he looked like a young bird, in the almost brownish dullness and sheenlessness of his plumage. But it is scarcely possible that he was a bird of the year, considering the date — July 4.

Almost every summer I find Yellow-bellied Flycatchers — one pair at least — breeding in a forest swamp close under the northern base of Monadnock, at an altitude of about 1400 feet. I found them first about six years ago, and my most recent records are 1902 and 1903 (June and July). This year (1904) I have n't looked for them. The morass in which they live extends over fifty or more acres, and is atypical north New England forest bog, wet and cool and mossy; full of sphagnum, pitcher-plants, creeping snowberry (*Chiogenes*), etc. The trees, mainly water-stunted spruces and balsams, are bearded heavily with usnea moss, in which many Northern Parula Warblers build their nests. All the more boreal warblers of the region breed here in unusual abundance, and among them are always one or two pairs of Northern Water-Thrushes.

I believe this is the only positive breeding record for the Yellow-bellied Flycatcher south of the White Mountains, and it is possible that the bird does not summer anywhere in the intervening ninety or a hundred miles. Monadnock is to a noteworthy extent a Canadian or semi-Hudsonian zone 'island.' But there is a narrow ribbon of very similar country straggling northward from it, as is proved by the distribution of certain birds. The Olive-backed Thrush, for instance, which nests commonly in the spruce woods high up on the mountain, occurs also, as a less common summer resident, at its northern base, and at various further points directly northward. The valley-ward extension of this thrush's breeding range here actually overlaps the upward extension of the Wood Thrush, though these species are both rare at their line of meeting, and are probably never to be found actually together, since the Olive-backed sticks to conifers and the Wood Thrush favors deciduous groves.

Birds representing the Hudsonian and birds representing the Carolinian border of the Transition zone breed at almost the same altitude within the limits of a single town (Dublin) at the north side of Monadnock. For the Hudsonian member we have the Yellow-bellied Flycatcher (perhaps as fair a case as Bicknell's Thrush, which Massachusetts bird men delight to call Hudsonian), and for the Carolinio-transitional Henslow's Sparrow and the Short-billed Marsh Wren. The sparrow is very rare in Dublin, though common in the lower and more alluvial meadows eight miles to the northeast (Hancock and Bennington). Mr. Hoffmann finds it a rare breeder in the Alstead Hills, about twenty miles northwest of Dublin. There also, both he and I have found the Yellow winged Sparrow breeding.

As for the Short-billed Marsh Wrens, I have for two successive summers (1902 and 1903), found a single pair in a big, marshy brook-meadow on the eastern side of the Dublin ridge (the western slope of the Peterboro valley water-shed). This marsh lies in the upper border of a large extent of fertile meadow-country, very different from the Canadian belt north of Monadnock, which includes the Yellow-bellies' swamp; although the wrens' breeding place is only about two hundred feet lower than the flycatchers'. Bitterns are common in the Marsh Wrens' swamp, and one or two pairs of Black Ducks and thrice as many Wood Ducks still nest along the stream which feeds it. Owing to the deplorable New Hampshire law which permits the shooting of Wood Ducks and Upland Plovers after August 1, our scanty remnants of these two much-decimated species are in yearly danger of annihilation. I speak for the Monadnock region only. The Upland Plover (*Bartramia*) still breeds here and there near Monadnock, both in meadows and in upland pastures, but its numbers have been grievously reduced.

Northern Pileated Woodpeckers are tolerably common on and near Monadnock, and they seem to be increasing rather than falling off. In 1902 my father and I found a Pileated's nest, seventy feet up in a dead yellow birch stump. The three or four young left the nest about June 12.

The summer avifauna of the Monadnock region is really unusually rich for north-central New England. In one early summer season I have found one hundred and six breeding species on the north side of the mountain, all but two or three of them within the limits of the town of Dublin.

The remarkably bitter winter of 1903-'04 was fully heralded in New England by a copious and early influx of northern birds, as everyone remembers. At Monadnock the warning was exceedingly pronounced. On October 6, I found a Hudson Bay Titmouse low down on the north side of the mountain, in a band of Chickadees. The little fellow, who revealed himself to me by his notes, responded vehemently to my 'squeaking,' and flitted about within a few yards of my head, so that I had a perfect chance to inspect him.

Pine Grosbeaks appeared on October 18, and were at once abundant, continuing so throughout the autumn and early winter (I left the region in December). Snow Buntings appeared on the same day, and large flocks of Redpoll Linnets arrived a few weeks later. Siskins and both kinds of Crossbills were also more or less common through the last half of the autumn.

During a long and heavy northeasterly storm, which ended on October 12 or 13, Dublin Pond was visited by at least eight kinds of sea-birds; namely, the three species of Scoters, a Herring Gull, a Phalarope (probably the Northern,— we did not shoot it), the Red-throated Loon, and the Horned and Holbæll's Grebes. Of the Black Scoters there came at least a hundred, mainly in one big flock; of the White-winged about

twenty; of the Surf not more than ten, and of the Red-throated Loons a single pair. The Grebes were in small scattered companies, numbering in all about twenty Horned and twelve or fifteen Holbæll's, all in dingy winter plumage. We shot a few of the Holbæll's, and found them to vary much in size, and in the length and color of the bill, but scarcely at all in plumage. Both kinds of Grebes lingered on the lake for several days, after the other refugees had gone. On one morning near the end of the storm (Oct. 12), all the Ducks and Grebes and the two Divers were together,— in our little mountain pond-hole barely more than a mile long.

—GERALD H. THAYER, *Monadnock, N. H.*

RECENT LITERATURE.

The International Catalogue of Scientific Literature. — The first annual issue of the International Catalogue of Scientific Literature, comprising the literature of the year 1901, consists of a volume for each of the seventeen branches of Science into which scientific literature is divided for the purposes of the Catalogue. These branches are indicated by the letters A to R, Zoölogy being branch 'N' of the series. A copy of Volume N¹ having been officially sent to 'The Auk' for review, we have endeavored to give it the careful consideration its great importance demands.

The 'International Catalogue of Scientific Literature' is an outgrowth of the well-known 'Catalogue of Scientific Papers' published by the Royal Society of London, which in twelve large quarto volumes covers the period 1800-1883. A Catalogue covering the period 1884-1900 is now in preparation, to be issued under the same auspices. These volumes give only the titles of papers, but a subject index to the first series, "which will serve as a key to these volumes and also form an independent record, is in an advanced state of preparation."

The possibility of preparing a complete index of current scientific literature, to include subject indexes as well as titles of papers, began to be considered by the Royal Society in the year 1893. As it was apparent that the resources of the Society were inadequate for such an undertak-

¹ International Catalogue | of | Scientific Literature | First Annual Issue | N | Zoology | — | Published for the International Council | by the | Royal Society of London | London : | Harrison and Sons, 45, St. Martin's Lane | — France: Gauthier-Villars, Paris | Germany: Gustav Fischer, Jena | — | Vol. XVII: 1904 (February) — 8vo, Pt. I, Authors' Catalogue, pp. xvi + 368; Pt. II, Subject Catalogue, pp. 369-1528.

ing, international coöperation seemed necessary, and was sought. The proposition met with such general approval that steps were soon taken to secure an International Conference of Delegates to be appointed by the different Governments. Such a Conference was held in London, July 14-17, 1896, and was attended by delegates from twenty-one countries. The plan adopted provided for the collecting of the material by local organizations established for the purpose in the various countries, the final editing and publishing of the Catalogue to be entrusted to a Central International Bureau, under the direction of an International Council. It was agreed to establish the Central Bureau in London. Schedules of classification were later prepared by this International Committee, and submitted to a second International Conference held in London October 11-13, 1898. The schedules and principles of classification reported by the Committee were adopted, and the settlement of final details of the schedules was referred to a Provisional International Committee. This Committee met in London August 1-5, 1899. The financial part of the undertaking was also adjusted, and the Royal Society was "requested to organize a Central Bureau, and to do all necessary work, so that the preparation of the Catalogue might be commenced in 1901." A third International Conference was held in London in June, 1900, and the final details for the publication of the Catalogue by the Royal Society were definitely arranged.

The supreme control of the Catalogue is vested in an International Convention, which is to meet "in London in 1905, in 1910, and every tenth year afterwards, to reconsider, and, if necessary, to revise the regulations for carrying out the work of the Catalogue," etc. "The materials out of which the Catalogue is formed are to be furnished by Regional Bureaus." These have been established to the number of thirty. "Each complete annual issue of the Catalogue is to consist of seventeen volumes, the set to be sold to the public for £18"; the price of individual volumes will vary according to their size, "from about ten to thirty-nine shillings."

Having thus given a brief history of the inception and progress of the work, we will proceed to a consideration of Volume N, covering the literature of Zoölogy for the year 1901, premising, however, that the department of ornithology will be taken as a criterion of the work. The volume consists of two parts, which may be bound separately or together, three title-pages being furnished, and the pagination being continuous. Part I consists of about 380 pages, of which the Preface (briefly summarized above) occupies eight (vii-xv), and the explanatory introduction and an index (repeated in four languages) about 80, followed by an 'Authors' Catalogue' of 259 pages (pp. 109-368). This includes about 6000 titles, arranged alphabetically by authors. The titles are each followed by "Registration numbers" in brackets, these varying from one to four or more, according to the nature of the paper.

Part II, consisting of 1151 pages, contains the 'Subject Catalogue,' a

list of the journals cited, with their abbreviated titles (pp. 1485-1512), and the 'Topographical Classification,' the latter in four languages (pp. 1513-1528). All titles given in Part I are here reprinted, classified according to subject matter, and alphabetically arranged by authors under each division. These divisions are grouped under (1) 'Comprehensive Zoölogy,' and (2) 'Special Zoölogy.' Special Zoölogy is divided into 29 sections, with the following 8 subdivisions under each section: Comprehensive and General Works; Structure; Physiology; Development; Ethology; Ætiology; Geography; Taxonomy and Systematic. Each subdivision is designated by a four-figure registration number.

The classification here adopted has been the subject of more or less unfavorable criticism; the principal objection to it, however, seems to be that it is different from any of those previously employed, and is therefore to this extent inconvenient without any obvious advantage in the innovations. To some extent the present Catalogue is a duplication of work already being well done, and the only reason for its existence would seem to be that it should be more nearly complete and more satisfactorily arranged than any of those which occupy the same field.

In order to test its completeness reference was first made to a publication near at hand — the 'Bulletin' of the American Museum of Natural History for the year 1901, which resulted in the surprising discovery that of 22 zoölogical articles contained in that volume the titles of only 16 appear in the zoölogical volume of the International Catalogue, more than one third having been omitted. This is the gravest case of omission thus far noticed, but a small percentage of omission has been found in every case where a test has been made, the omissions often including some of the most important papers in the volumes examined. Only the general articles of 'The Auk' are listed, the scores of (often important) minor articles being omitted, though uniformly entered in the other current bibliographies.

Under Aves we find no reference to the journal 'Aquila,' nor is it listed in the general list of journals at the end of the volume; titles of important papers in the leading ornithological journals are often omitted, while the minor journals are either very imperfectly indexed or wholly ignored. In the case of authors, of 14 papers by R. B. Sharpe listed in the Zoölogical Record only 2 appear in the International Catalogue; even his 'Hand-List of the Genera and Species of Birds,' of which Vol. III appeared in 1901, is not mentioned. Stark's 'The Birds of South Africa,' of which Vol. II appeared in 1901, is omitted, as is Ridgway's 'Birds of North and Middle America,' of which Part I came out in 1901; nor is there any mention of any of Mr. Ridgway's papers for that year. DuBois's 'Synopsis Avium,' of which four fasciculi were issued in 1901, is also absent; and so on through a long list of works and papers by prominent authors, too numerous to be enumerated here.

Turning to the 'List of New Genera and Species,' it is found that the same incompleteness is conspicuous; in the families Fringillidæ, Icteridæ,

and Corvidæ, for example, one fourth to one third of the new genera, new species, and new subspecies are omitted, and the titles of the papers in which they are described are also absent from the general list of titles. As another test, it is found that under Anatidæ there are 39 references in the Zoölogical Record and 52 under Anseres ('special') in Vol. N of the International Catalogue; but of these 24 relate to a single work — Finn's 'How to know the Indian Ducks' — overlooked in making up the Z. R.; excluding this work leaves the comparison as 39 in Z. R. against 28 in I. C. In the latter a titmouse (*Pacile salicaria bianchi*) is included under Anseres and omitted under Paridæ. Further, there are only 3 references in the I. C. under Icteridæ against 16 in Z. R., with the consequent omission in the I. C. of 2 new genera and 12 new species and subspecies.

Turning now to 'Geographical Distribution,' and taking Africa (with Madagascar) for comparison with the 'Ethiopian Region' in the Z. R., we find 16 titles under each, but of these 32 titles 12 of those in the Z. R. are not in the I. C., and 11 of those in the I. C. are not in the Z. R. under 'Ethiopian Region,' but several of them occur in the Z. R. list of titles. Several of the I. C. titles are only remotely pertinent to the subject under which they are ranged. The space occupied by the 16 references under Africa in the I. C. is nearly a full page; in the Z. R. only 4 lines, consisting merely of cross-references to the list of titles.

In the section Aves, as in the other sections, the titles of papers relating to its subject are reprinted from the general list of titles in Part I, and here segregated in alphabetic order. They are again reprinted in full under each of the various subheadings of Aves to which they may relate, necessitating their repetition from three to six or eight times, at great expenditure of both space and funds. The subdivisions under the section Aves are very numerous, as follows:—

Comparative and General Works, divided into: General, Treatises, Economics, Technique, History, Biography, Bibliography, the last three collectively forming one division.

Structure, divided into: General, Comparative Anatomy, Special Anatomy and Histology, Nervous System and Organs of Sense, Osteology, Alimentary System, Circulatory and Respiratory Organs, Urogenital System, Special External Characters, Organs of Uncertain Nature.

Physiology, divided into: General, Production of Caste, Function of Special Structures, Metabolism, Physiological Chemistry, Environmental Effects.

Development, divided into: General, Ogenesis and Ovum, Embryology, Postembryonic Ontogeny, Changes during Life.

Ethology, divided into: General, Habits, Migration, Hibernation, Parental Relations, Sexual Relations, Oviposition, Voice, Luminosity, Pelagic Animals, Instinct, Psychology, Parasitism, Colour and Habits, Defensive Processes, Resemblances, Utility and Harmfulness.

Variation and Ætiology, divided into: General, Substantive, Varia-

tion, Teratological Variation, Bionomic Variation, Statistical Variation, Mathematical Variation, Crosses and Hybrids, Evolution.

Geographical Distribution, divided into: General, The Earth as a Whole, Scandinavia, Russia in Europe, German Empire, Holland, British Islands, France, Portugal, Italy, Switzerland, Austria-Hungary, Balkan Peninsula, Mediterranean and Islands, Baltic and Islands, Asia, Asiatic Russia, China and Dependencies, British India, Malay Peninsula and Archipelago, Baluchistan, Asiatic Turkey and Arabia, Africa, Mediterranean States, N. E. Africa, The Soudan, West Africa, Congo State and Angola, East Africa, South Africa, Madagascar, North America, Alaska, Canadian Dominion West, Canadian Dominion East, United States, N. E. United States, S. E. United States, W. United States, Central and South America, Mexico, West Indian Islands, Venezuela, Colombia and Ecuador, Peru, Argentina and Uruguay and Paraguay, Australasia, New Guinea and Islands from Wallace's Line, Australia, Queensland, New South Wales, Victoria, West Australia, New Zealand, Arctic, Arctic Ocean, Islands North of Europe and Asia, Atlantic, North Atlantic Ocean, Canaries, Azores, Madeira, Cape Verde (these four as one division), Pacific, Behring Sea and Islands, Sandwich Islands, Ladrone, Pelew, Caroline and Marshall Groups, with other Islands N. of Equator and W. of 180°, Galapagos Islands, Antarctic, Islands to Southward and Southeast of New Zealand.

Taxonomy and Systematic, divided into: General, Casuarii, Æpyornithes, Pygopodes, Impennes, Tubinares, Steganopodes, Herodiones, Anseres, Alectorides, Fulicariæ, Limicolæ, Gaviæ, Alcæ, Pterocletes, Columbæ, Accipitres, Crypturi, Galli, Coccyges, Psittaci, Coraciæ, Striges, Anisodactylæ, Caprimulgi, Cypseli, Heterodactylæ, Pici, Passeres. The titles under each of these groups are divided into General and Special, except in the case of Passeres, where the titles are arranged under the headings of families, and again subdivided under General and Special. Under Special the matter is arranged alphabetically by genera, the technical name being the title, followed by the name of the author in heavy type, and the reference. Then follows the 'List of New Genera and Species.'

This system of minute classification is, to a degree, a convenience, at the cost, however, of much space and the multi-reprinting of many of the titles,¹ and renders almost unnecessary the annotation of titles of papers of a mixed or more or less general character. The distribution of titles under these numerous subdivisions is quite open to criticism, and even the utility of many of the subdivisions may be questioned, but lack of space forbids more than a brief illustration of these general state-

¹ Thus the title of Buturlin's paper on the Wild Geese of the Russian Realm is entered in full no less than *seven* times, instead of once, with cross-references under Anseres and the Faunistic divisions.

ments. Under the division 'History, Biography, Bibliography' of 'Comprehensive and General Works' are only five titles, one of which is bibliographical, three are biographical, and the fifth might be placed under both history and biography; while under 'General' of the same division, which has 73 titles, four or five should be assigned to bibliography, or at least repeated there (under the 'system' provided), while a large proportion of them should go exclusively under the various geographic subheadings or under migration, or should at least be repeated there, but are not; while one (the journal 'Psyche') belongs to Entomology and not to Ornithology at all, there being no reference to birds at any of the several pages cited. In the general list of titles (only a small proportion of those that should be listed) are to be found the titles of a considerable number of biographical papers that are not entered under 'Biography.' Furthermore, there is no division for Bird Protection, which has grown to be an important subject the world over, and is surely ornithological. A few titles are included among the 73 under 'General,' but only a very small proportion of the literature of the subject is covered by them. William Dutcher's important report on the Protection of Gulls and Terns is cited in the general list of titles, but not under 'Economics' nor under *Gavia*, under both of which it should be entered; and so on in almost numberless cases.

Our examination of Volume N of the International Catalogue has led to a rather careful examination of current works of a similar character, and therefrom have arisen many surprises. No specialist can make use of any of them without soon becoming aware of their many shortcomings, particularly their many and serious sins of omission. Only the literature of ornithology for the year 1901 was taken into consideration in this connection. The International Catalogue is found to contain about 950 titles, against about 850 in the Zoölogical Record for this period. But fully one half of the former are not contained in the latter, while one fourth of those in the latter are not in the former. The two together contain about 1200 different titles, of which one half are lacking in one or the other, and of which less than one half are found in both works. The Carus and Field 'Bibliographia Zoologica' for the years 1901 and 1902 (Vols. VI and VII) contain about the same number of ornithological titles for the year 1901 as are contained in Vol. N of the International Catalogue, but among them are many not given in either the Zoölogical Record or the International Catalogue. The card system of Field's 'Concilium Bibliographicum,'—based, so far as author's titles go, on the 'Bibliographia Zoologica,'—renders it too difficult to critically compare the ornithological titles for 1901 with the other current bibliographies, but it is evident that the 'Concilium' contains many important titles that are omitted from both the others, and must therefore lack many that the others contain. As, however, the entries relating to any given year extend usually over several years in the gathering and publication, it is quite certain that the number of ornithological titles above assigned to

the Field system is much too small, since it includes a conspicuously large number not in either of the others. As regards the comparative utility of these several bibliographies, it must be conceded that thus far the 'Concilium Bibliographicum' stands—in view of the explanatory annotations on the Concilium cards, and the broader scope and relatively greater completeness of this system,—in the first rank of modern zoölogical bibliographies, and that it has earned, and should receive, sufficient support to guarantee its permanence.

From the examinations made in this connection it is evident that the ornithological literature for the year 1901 consists of not less than 1500 titles that are properly citable in bibliography; and, taking the four formal bibliographies for that year collectively, probably nearly all have been gathered in, but no one of them shows the degree of completeness that should be attained. Doubtless perfection in a field so difficult to entirely compass is beyond the possibility of attainment, owing to the virtual impossibility of bringing together all of the widely scattered and often obscurely published works and papers relating to the subject.

The defective handling of Volume N, so far as its incompleteness is concerned, is apparently not chargeable to any one of the Regional Bureaus, since the defect is widely distributed, and apparently general. Neither is it the fault of the system of the work, but to the carelessness of individual workers to whom the regional work has been assigned. The intended scope of the work seems ample, judging by the character of the publications cited, but probably, in addition to much carelessness, a wide range of individual judgment is exercised on the part of the original gatherers of the material, as regards papers that are considered citable. Doubtless we may safely hope that the character of the Catalogue will improve as the work progresses, and especially as it is stated that "Any portion of the literature of 1901 which may not have been dealt with in the first annual issue will be included in the corresponding volumes of the second annual issue of the Catalogue."

The method of citing the place of publication of the individual papers is so definite and satisfactory that no improvement can be suggested, but some changes might be made that would greatly facilitate the use of the Catalogue. The registration numbers and other arbitrary signs are doubtless indispensable, but it is too much to expect that the casual user of the work can always carry in mind their significance; and even were this practicable some other page headings, in a volume of over a thousand pages, than the sectional numbers, which mean nothing until the system has been mastered, and the specialist has memorized those that relate to his own field, would be of great convenience. The subject matter of each page can easily be indicated in the page heading. Thus if, in *Aves*, instead of simply the numbers 5803, 5807, 5815, etc., at the outer top corner of the first seventy pages there were added *Aves: Titles*; *Aves: General Works*; *Aves: Structure*; *Aves: Physiology*, and so on, it would save the user much time in turning these seventy pages to find some particular

division of the subject matter embraced therein. And then for the next thirty pages, if, instead of merely 5831, there were added the name of the group, as *Aves: Casuarii*; *Aves: Anseres*; *Aves: Passeres*, etc., it would certainly save the average user much vexation of spirit. To further facilitate use there should also be a separate index for each 'branch' under 'Special Zoölogy,'—one for birds, another for mammals, and so on through the 29 sections, giving page references to each of the subdivisions of the subject matter. The indexes should be placed at the end of the sections, so that in this way each section would begin on an odd page instead of in the middle of a column, as now, without any marked break to catch the eye.—J. A. A.

Cooke's 'Some New Facts about the Migration of Birds.'¹—Professor Cooke's 'new facts' are presented under the following subheadings (1) 'Introduction'; (2) 'Causes of Migration'; (3) 'How do Birds find their Way?'; (4) 'Casualties during Migration'; (5) 'Distance of Migration'; (6) 'Routes of Migration'; (7) 'Are Birds Exhausted by a Long Flight?'; (8) 'Relative Position during Migration'; (9) 'Relation of Migration and Temperature'; (10) 'Variation in the Speed of Migration'; (11) 'The Unknown.' The 'Introduction' states briefly the present resources of the Biological Survey for investigations of the migration of North American birds, after nearly twenty years spent in the accumulation of data. As to causes of migration, the author states: "The broad statement can be made that the beginnings of migration ages ago were intimately connected with periodic changes in the food supply, but this motive is at present so intermingled with others unknown, or but imperfectly known, that migration movements seem now to bear little relation to the abundance or absence of food."

Under 'How do Birds find their way?' he admits that "among day migrants sight is probably the principal guide," and that it "undoubtedly plays a part in guiding the night journeys also"; but he believes they also possess a power, whatever its nature, that "may be called a sense of direction," which serves to guide them unerringly over ocean wastes. He further says: "A favorite belief of many American ornithologists is that coast lines, mountain chains, and especially the courses of the larger rivers and their tributaries, form well-marked highways along which birds return to previous nesting sites." That many birds reared in Indiana, Illinois, and elsewhere to the northwestward visit South Carolina and Georgia in their fall migration has, however, long been known. "The truth seems to be," he affirms, "that birds pay little attention to

¹ Some New Facts about the Migration of Birds. By Wells M. Cooke, Assistant Biological Survey. Yearbook U. S. Depart. Agriculture for 1903, pp. 371-386.

natural physical highways, except when large bodies of water force them to deviate from the desired course." It does not follow, however, that because all the birds of a district do not concentrate and move in masses along river valleys and coast lines that they are not guided in their courses by the prominent features of the landscape, even in the case of those species which pass from the upper Mississippi Valley to the coast of South Carolina and Georgia. Nor is it true that river valleys, etc., do not form favorite migration routes for many species of birds. So far as our acquaintance with the literature of the subject goes, it is not the "favorite belief," etc., that the prominent physical features of the continent "form well-marked highways" along which migratory birds travel, but merely constitute the landmarks by which their journeys are guided.

Under 'Routes of Migration' much new information is presented, the direct outcome of the author's investigations. He specifies several routes by which North American birds reach northern South America. The first is by Florida, the Bahamas, and the Greater and Lesser Antilles. Of 50 New England species that pursue this route the greater part do not pass beyond Porto Rico. "Only adventurers out of some 6 species gain the South American mainland by completing the island chain." A more direct route is by Florida, Cuba, and Jamaica, taken by about 60 species, of which about half stop in Cuba, the rest passing on to Jamaica, while only about 10 of these leave Jamaica to cross the 500-mile stretch of open water to reach South America. Of these the Bobolink is so conspicuous by its numbers, in comparison with its fellow travellers, "that the passage across the Caribbean Sea from Cuba to South America may with propriety be called 'bobolink route.'"

The main highway to South America is from northwestern Florida across the Gulf of Mexico over a sea course of 700 miles. The Cuba-Yucatan route, formerly supposed to be a favorite one, involving only a 100-mile sea flight, Mr. Cooke affirms is taken by only "a few swallows, some shore birds, and an occasional land bird storm-driven from its intended course, while over the Gulf route, night after night, for nearly eight months in the year, myriads of hardy migrants wing their way through the darkness toward an unseen destination." Still further west, the birds of the Plains and Rocky Mountains which choose Mexico and Central America for their winter home reach these countries by a leisurely land journey. It would be interesting to know to what extent some of these generalizations rest on negative evidence, for stations along the eastern coast of Mexico, including Yucatan, where observations have been made bearing on the migration of birds are certainly few and far between, and cover only short periods.

An interesting feature of the paper is the account of the migration routes of the Golden Plover, illustrated by a map showing the breeding area of the species and its two very distinct routes of migration—a direct sea course in the autumn, from Nova Scotia to Venezuela, and the interior

spring route, which crosses North America almost centrally from the coast of Texas to the Arctic Barren Grounds.

Most important of the 'new facts' are the statistics given under 'migration and temperature,' and under 'variations in the speed of migration' over different portions of the continent, in accordance with the change in the direction of the isotherms. The explanation given of the increase in the distance of daily travel after passing the northern boundary of the United States of such birds as visit Alaska and that portion of the Dominion of Canada west of the Makenzie Valley, is eminently reasonable and satisfactory. The subject is clearly illustrated by means of a map showing the 'Speed of the Robin in Migration,' which indicates not only the acceleration of the progress of the Robin as it advances northward, but also the position of the isotherm of 35° at monthly periods from January 15 to June 15.

Finally, 'The Unknown'! Among the chief mysteries that await solution are the winter haunts of the Chimney Swifts, which disappear from our ken the moment they leave the northern coast of the Gulf of Mexico in the fall until they reappear there the last week in March; another equally deep mystery is the winter whereabouts of the Bank Swallow. The route of the Cliff Swallow from Brazil to California, and how the Red-eyed Vireo reaches southern British Columbia at the same time it reaches Nebraska, and before they have appeared in any of the intervening country, are among the problems, says Mr. Cooke, "that continually vex and fascinate the investigator." It is certainly encouraging to see the "mystery of mysteries" of the old Gätkean and allied points of view dwindling to such small proportions in the eyes of modern investigators who trust to facts rather than to figments of the imagination in their attempts to elucidate the problems of migration. — J. A. A.

G. M. Allen's 'The Birds of New Hampshire.'¹—In this excellent paper of 200 pages, an attempt has been made, says the author, "to bring together a list of the species of birds known to have occurred within the State of New Hampshire during historic times, together with a general account of their distribution, faunal position, times of migration, and, in the case of the rarer species, a detailed list of the known instances of occurrence." While published records have been utilized, "a considerable body of unpublished facts relative to the birds of the State is here included," partly based on the author's own observations and partly on those of other ornithologists who have made generous contributions from their notes, and for which due acknowledgments are made. "The sequence of names and their spelling," the author states, "are strictly

¹ The Birds of New Hampshire. By Glover Morrill Allen. Proc. Manchester Institute of Arts and Sciences, Vol. IV, Pt. I, 1902 (1903), pp. 23-222. Published about June 15, 1904.

those of the American Ornithologists' Union, instead of those used by Mr. R. H. Howe, Jr., and myself in the 'Birds of Massachusetts' [cf. 'Auk,' XVIII, July, 1901, p. 278], since "it is believed that the use of the order more commonly adopted will make the list more convenient as a working basis for more complete catalogues." The list now given is considered as only a preliminary one, to be further perfected, especially in respect to the water birds.

Ten pages are devoted to a review of the literature of the subject, including a literal reprint of Jeremy Belknap's list of New Hampshire birds, published in 1792, in the third volume of his 'History of New Hampshire,' with pertinent comment and the equivalent modern names of the identifiable species, — all but about seven or eight out of a total of 130 names. A résumé is given of the later contributions to New Hampshire ornithology, together with a bibliography (pp. 194-204), numbering about 150 titles.

A discussion of 'The Faunal Areas of New Hampshire' occupies about eighteen pages (pp. 36-53). This includes a short account of the topography of the State, and an attempt to define in considerable detail the life zones. These include (1) the upper austral (= Carolinian Fauna), which, however, does not really reach New Hampshire, and is only suggested by a few sporadic instances of the occurrence of two or three 'upper austral' species; (2) the transition (= Alleghanian Fauna), which occupies the river valleys up to 600 feet, and under favorable local conditions up to 1500 feet, and the low area along the coast; (3) the Canadian (= Canadian Fauna), which includes a large part of the forested portions of the State; (4) the Hudsonian (= Hudsonian Fauna), limited to a few small isolated areas in the extreme northern part of the State, but, so far as known, not inhabited by any strictly Hudsonian species of birds; (5) the 'arctic-alpine,' restricted to the treeless barren summits of the highest peaks of the White Mountains, and also without any distinctively arctic species of birds. In describing and defining the limits of these several faunal areas the characteristic species of plants, mammals, and reptiles, as well as of birds, inhabiting them are mentioned, and much interesting information is incidentally included respecting the extension of the ranges of a number of birds through the clearing away by man of the heavy primeval forest.

There are also (pp. 54-61) extended remarks on certain phases of bird migration in the State, especially on the periodic incursions of the Red Crossbill and the White-winged Crossbill.

The very fully annotated list (pp. 62-186) includes 283 species, of which 29 are added in a postscript on the basis of a paper by Mr. Ned Dearborn on the 'Birds of Durham and Vicinity,' which appeared while Mr. Allen's paper was passing through the press. The annotations give, in many instances, the distribution of species of local occurrence in the State in considerable detail, in addition to the usual notes on the 'manner of occurrence,' dates of migration, etc. An elaborate index, giving refer-

ences to the plants and animals as well as to the birds, fittingly closes this excellent paper.—J. A. A.

Todd's Birds of Erie, Pa.¹—The field covered by the present list is limited to the 'Peninsula,' or Presque Isle, Presque Isle Bay, and the lake shore plain and its environs within about four miles of the city of Erie, or an area about six miles long and four miles wide. It is based primarily on observations and collections made by Mr. Todd, assisted by Mr. W. W. Worthington, during the periods March 21–May 31, and August 20–November 20, 1900, in the interest of the Carnegie Museum at Pittsburgh, Pa., the collections numbering nearly one thousand specimens, and on notes and collections made by Mr. Todd during several previous and subsequent visits to the locality. The notes of other observers are also used, as those of Mr. Ralph B. Simpson and others, on the birds of Erie, and also the collections made here during a number of years by the late George B. Sennett. There is thus a good basis for the exposition of the bird fauna of this interesting locality, which Mr. Todd appears to have fully utilized. An introduction of nearly twenty pages deals with the geographical position and physical features of the locality, and with the general character of the avifauna, and a summary of the manner of occurrence of the 237 species thus far recorded from this limited area. Then follows a very fully annotated list of the species, numbered consecutively from 1 to 237, with the inclusion, in smaller type and unnumbered, some 50 species that may be considered as of probable occurrence, with references to their nearest records of capture. Of the 237 species of known occurrence, 18 are classed as permanent residents, 88 as summer residents, 25 as winter visitants, 95 as transient visitants, 11 as accidental visitants. There is a map of the locality, and three half-tone plates, giving views of characteristic portions.

The list as a whole shows careful, detailed, and conscientious work, and thus adds another to the number of critical local lists, whose value as an accurate record of present conditions will only increase with the lapse of time.—J. A. A.

Hartert's 'Die Vögel der Paläarktischen Fauna.'—Part II² of this excellent and invaluable work has recently appeared, completing the

¹The Birds of Erie and Presque Isle, Erie County, Pennsylvania. By W. E. Clyde Todd. *Annals of the Carnegie Museum*, Vol. II, 1904, pp. 481–596, pll, xvi–xix. August 1, 1904.

²Die Vögel | der paläarktischen Fauna. | Systematische Uebersicht | der | in Europa, Nord Asien und der Mittelmeerregion | vorkommenden Vögel. | Von | Dr. Ernst Hartert | Heft II. | Seite 113–240. | Mit 22 Abbildungen. | — | Berlin. | Verlag von R. Friedländer und Sohn. | Ausgegeben im Juni 1904.

Fringillidæ and covering part of the Alaudidæ, comprising the species numbered 185 to 394. It well merits the high praise accorded Part I, already noticed,¹ maintaining of course the same characteristics as regards scope and method of treatment. The present brochure includes 80 species and 130 additional subspecies, of which 20 of the latter are described as new, and many others are indicated as new and given consecutive numbers but are not formally named. As the number of forms treated is 210, about ten per cent of the whole are characterized as new. Of the genus *Loxia* three species are recognized, with eight additional subspecies, exclusive of four North American forms mentioned in footnotes, making fifteen recognized forms in all. These include three new subspecies of the *L. curvirostra* group,—one from Spain, one from Scotland, and another from England. In place of *L. curvirostra minor* for the common Red Crossbill of northeastern North America Mr. Hartert adopts *L. curvirostra americana* (Wilson, 1811), *americana* Wilson having forty-two years' priority over *minor* Brehm (1853); but a previous *Loxia americana* (Gmelin 1789) renders Wilson's name untenable.

In the account of the Alaudidæ *Otocoris* is not yet reached, but in some of the other genera of the family there is a striking array of subspecies, *Galerida cristata* having twenty-one (plus three doubtful), and *G. theklae* eight, and a number of other species of the family have each six to eight or more, indicating the unusual plasticity of the family.—J. A. A.

Kirtland's Warbler.—Two papers have recently appeared dealing with this rare warbler, one of which, by Prof. Charles C. Adams,² treats of its migration route, the other, by Mr. Norman A. Wood,³ of its breeding area. As stated by Mr. Adams: "During the past year more has been added to our knowledge of this bird than during all of the preceding fifty-three years which have elapsed since its discovery." Mr. Adams confines his paper to a consideration of the spring migration records, the species wintering in the Bahamas and breeding in northern Michigan. Dr. L. Stejneger is quoted on the importance of determining the route of this warbler, and the light its discovery would throw upon the problem of "the road by which in past ages part of our fauna entered their present habitat" (*Am. Nat.*, Vol. XXXIII, 1899, p. 68, in a review of Butler's 'Birds of Indiana'). Professor Adams considers first, and at some length, the migration routes and breeding area of the Prothonotary Warbler, taking Louck's paper on this species (*Bull. Illinois State Lab. Nat. Hist.*, IV, 1895, pp. 10-38, and *Osprey*, II, 1898, pp. 99, 111, 129,) as the basis of

¹For notice of Part I, see *Auk* XXI, 1904, pp. 94, 95.

²The Migration Route of Kirtland's Warbler. By Chas. C. Adams. *Bull. Michigan Orn. Club*, Vol. V, pp. 14-21, March, 1904.

³Discovery of the Breeding Area of Kirtland's Warbler. By Norman A. Wood. *Bull. Michigan Orn. Club*, Vol. V, pp. 3-13, March, 1904.

comparison, and the map of the breeding area here given is an adaptation of Louck's map. "The map of the breeding area is," he says, "also a map showing the path of the spring migration, and also, in all probability, the path by which the species has found its way to its present breeding area since the Ice Age." He then compares the distribution of Kirtland's Warbler with that of the Prothonotary, presenting a similar map of its migration records, from about the mouth of the Ohio River northward. He finds that the birds on leaving the Bahamas reach Florida and South Carolina during the latter half of April and early part of May, and assumes that they pass west by way of the Pine Barrens to the Mississippi; they occur in the Mississippi and Ohio drainage basins during May, reaching their breeding grounds in Oscoda and Crawford Counties, Michigan, early in June. He is, however, unable to "understand the South Carolina records." As the extreme east and west records are respectively Toronto and Minneapolis, "it suggests that the breeding area may be extensive." He adds a map showing "lines of glacial drainage or shore lines, to show the relations of those topographic features to bird migration routes." If Kirtland's Warbler was one of the "early species to push north, it is but natural that it should follow such highways, as it is along such valleys and shore lines, at that time, that the vegetation would make its most rapid extension northward." The latter part of the paper is thus suggestive, but adds little in the way of positive information.

Mr. Wood relates in detail his experiences in pursuit of the breeding place of this warbler, his discovery of its haunts, and the long and careful search for its nest, finally rewarded by the discovery of two nests, one of which, found July 8, contained a perfect egg and two young birds about ten days old; the other nest, found July 9, contained five young, also about ten days old. An attempt to rear the young naturally failed. Five adult males and three adult females were taken, in addition to the nests, egg, and seven nestlings. The song and the habits of the birds as observed in their breeding haunts are minutely described, and descriptions and half-tone illustrations are given of the egg and nests, of the sites where the nests were found, and of the mounted group of these birds now in the Museum of the University of Michigan, prepared by Mr. Wood from the materials obtained on this expedition. Although preliminary notices of these discoveries have been published, this paper forms the most important contribution thus far made to the history of the species, which is at last removed from the small list of North American birds whose nests and eggs and breeding habits still remain unknown.—J. A. A.

Forbush on the Destruction of Birds by the Elements.¹—After some

¹ The Destruction of Birds by the Elements in 1903-04. Special Report. By Edward Howe Forbush, Ornithologist to the State Board of Agriculture. Fifty-first Ann. Rep. Massachusetts State Board of Agriculture, pp. 457-503.

general statements about the destruction of birds by the elements Mr. Forbush gives the results of his investigations in relation to the effect of the remarkable weather of May and June, 1903, upon bird life in Massachusetts and adjoining States. An almost unprecedented drought prevailed from the middle of April till the 6th of June, followed by three weeks of almost unparalleled rainfall, with periods of excessively low temperature. The scarcity of insects due to the drought appears to have been responsible for the starvation of the young of many insectivorous birds, and apparently also of some of the old birds. But the abnormal and severe weather of June proved far more disastrous. The heavy storms blew down many of the nests, with their eggs or young, of the tree-nesting species, while ground- and bush-nesting species had their nests submerged or so drenched with rain as to cause the complete destruction of their contents or their desertion by the parent birds. The inundation of low-lying lands, and the rise of streams and ponds, drowned out or destroyed not only the nests of marsh-breeding birds, but those of blackbirds and sparrows, of various species, at many localities where their nests became submerged, while the cold rains often destroyed the young birds where the nesting-sites were above the reach of the floods, and in many instances the parent birds seem to have succumbed to the inclemency of the weather. While these conditions were fortunately not general throughout the State, they occurred at so many localities that the effect was disastrous to bird life. The swallows and swifts appear to have been the worst sufferers, the old birds, as well as the young, dying at some localities in vast numbers from cold and starvation, owing to the absence of insect food directly caused by the severe weather conditions. The almost complete extinction of whole colonies of Martins, Tree Swallows, Barn Swallows, and Chimney Swifts is recorded from several localities within the storm areas of heaviest precipitation.

The winter following this unfavorable summer—that of 1903-04—proved of almost unequalled severity in New England. January was one of the severest months on record in eastern Massachusetts, both for lowness of temperature and amount of snowfall, and February was almost equally severe. According to Mr. Forbush's observations at Wareham and elsewhere in the State, the birds suffered greatly from the intense cold, and many evidently perished. While, for obvious reasons, not many dead birds were found, there was gradually a great reduction in their numbers at many localities, and it is believed by Mr. Forbush, and by other observers quoted by him, that the birds died, in some cases from the excessive cold, in others from lack of food. Crows, and perhaps certain individuals of other species, appear to have left the colder portions of New England for more southern points.

Mr. Forbush closes his sadly interesting report with some suggestions as to the measures that may be taken for protecting birds and increasing their numbers, especially through providing them with food and shelter during winter, and in checking their illegal slaughter. The author has

expended a great deal of time and labor in bringing together the facts here presented, which he has secured in large part through the issue of circulars to some two hundred correspondents requesting information on the points at issue. — J. A. A.

Judd's 'The Economic Value of the Bobwhite.' — In a paper of about ten pages Dr. Judd¹ treats of the economic value of the Bobwhite (*Colinus virginianus*) as (1) a weed and insect destroyer, (2) an article of food, (3) an object of sport. The food report is based on field observations and an examination of 801 stomachs, collected in every month of the year and over a wide extent of country — from Canada to Florida and Texas. The Bobwhite is found to be preëminently a seed-eater, over fifty per cent of its food consisting of seeds, of which the seeds of weeds constitute the bulk. On a very conservative basis "the total consumption of weed seed by Bobwhites from September 1 to April 30 in Virginia amounts to 573 tons." From May to August nearly one third of the Bobwhite's food is found to be insects, which is made up largely of such injurious species as the potato beetle, cucumber beetle, squash bugs, chinch bugs, cotton-boll weevils, various kinds of destructive caterpillars, grasshoppers, etc. It eats very little grain, and this is mainly gathered from stubble fields, and it never, apparently, destroys sprouting grain, like the Crow, various Blackbirds, etc., nor is it, like the Ruffed Grouse, destructive to any harmful extent to leaves and buds. The importance of the Bobwhite as an article of food, and also as an object of sport, is dwelt upon at some length, and it is pointed out that it is possible for farmers to derive a considerable revenue from sportsmen by promoting its increase for purposes of sport. "It is believed," he says, "that if suitably managed, some farms of from 500 to 1000 acres would yield a better revenue from Bobwhites than from poultry." More stringent and more uniform legal provision is recommended for its preservation and increase. The paper closes with a list of seeds, fruits, insects, etc., eaten by the Bobwhite, and is illustrated by a colored plate, by Fuertes, of a Bobwhite in a potato field catching potato beetles. The utility of the Bobwhite as a weed destroyer is especially emphasized. — J. A. A.

Elrod on Birds in Relation to Agriculture. — In this paper of some twenty pages, illustrated with several plates of representative birds, Professor Elrod² summarizes some of the results of recent investigations of

¹ The Economic Value of the Bobwhite. By Sylvester D. Judd, Ph. D., Assistant in Ornithology. Yearbook of Depart. of Agriculture for 1903, pp. 193-204, pl. xvi.

² The Relation of Birds to Agriculture. By Morton J. Elrod, University of Montana. Second Ann. Rep. Montana State Board of Farmers' Institutes, pp. 173-190, with 8 pll. University of Montana, Missoula, Mont., 1904.

the food of birds, with special reference to the importance of better protection for birds in the State of Montana. A useful list of the principal recent publications on economic ornithology is appended as a partial bibliography of the subject. This timely paper should be of great interest and service to the farmers and fruit-growers of Montana. — J. A. A.

NOTES AND NEWS.

MR. JOHN FANNIN, a Member of the American Ornithologists' Union, died at his home at Victoria, British Columbia, June 20, 1904. From 'Forest and Stream' (issue of July 9, 1904) we learn that "Mr. Fannin was born in the backwoods of Kempville, Ontario, where he passed his boyhood." In 1862, attracted by the news of the discovery of gold in the Caribou district of British Columbia, he joined a party of miners "which proposed to make on foot the journey across the great plains and the Rocky Mountains to the Pacific Coast." The party set out from Fort Garry (now Winnipeg), then a frontier settlement, and after four months of difficulties and hardships reached the Fraser River. For nearly ten years he prospected and mined in different parts of the Province, finding himself as poor financially at the end of the period as when he begun, but with a wealth of useful experience, and an intimate acquaintance with the country, later utilized in the service of the Canadian Government. About twenty-five years ago he settled on the banks of Burrard Inlet, near the present town of New Westminster. "Mr. Fannin had always had a deep love for nature, and here he settled down and began its systematic study, though at first with little knowledge and almost without books. Here . . . without assistance, he taught himself most of the birds and mammals of the region . . . As time went on, his fame as a naturalist spread throughout British Columbia, and when, about sixteen years ago, the Provincial Museum was established at Victoria, Mr. Fannin was made its curator. . . His services were heartily appreciated by the Government, which in 1895 sent him to Europe and to the United States to study the workings of modern museums." He unselfishly and unceasingly devoted his time and strength to the increase and arrangement of the collections under his charge. His principal contribution to ornithological literature is his 'Check List of British Columbia Birds,' published at Victoria, B. C., in 1891 (*cf.* Auk, IX, 1892, p. 65). He also contributed a few notes on British Columbia birds to 'The Auk,' and was a correspondent of 'Forest and Stream,' and other natural history journals. He was elected an Associate of the A. O. U. in 1888, and a member in 1901.

MR. JAMES MORTIMER SOUTHWICK, an Associate of the American Ornithologists' Union, died at his home in Providence, R. I., June 3, 1904, at the age of 58 years, having been born in Newburyport, Mass., July 10, 1846. He was educated in the public schools of that place, and at the age of sixteen went to Providence, where for many years he was in the dry goods business. In 1883 he started a natural history business, in company with Mr. Fred T. Jencks, under the well-known firm name of Southwick and Jencks, and later, on the retirement of Mr. Jencks, continued the business for some time alone. In connection with the sale of natural history books and specimens, the firm published a monthly journal entitled 'Random Notes on Natural History' (3 vols., 1884-86), which contained many important notes and articles, relating largely to the natural history of Rhode Island, many of them contributed by authors who are now well-known specialists in their respective lines of study. In 1896 he disposed of his natural history business to accept the position of Curator of the Natural History Museum at Roger Williams Park, Providence, R. I., which position he held at the time of his death. As Curator he worked indefatigably, and at times against great discouragements. He succeeded, however, in bringing together a nearly complete collection of the birds of Rhode Island, which in installation and arrangement, including labeling, is a model that may well be followed in other local museums. The results here shown are due to his own untiring efforts and to his earnest solicitations in behalf of the museum. At the time of his death he was Vice-President of the Rhode Island Audubon Society and of the Franklin Society of Providence. He was Bate Entomologist for several years, and was for two years Secretary of the Tree Protection Society, and a member of the Horticultural Society. He was the first to discover the presence of the Gypsy moth in Providence, and did much to aid in the extermination of this and such other destructive insect pests as the elm leaf beetle and the San José scale insect from the city in which he lived.

It was his endeavor to make the museum a means of useful instruction to the public, and he often gave lectures on natural history subjects in his own and neighboring cities, and greatly assisted the teachers of nature study in the public schools. His ornithological publications are not extensive, consisting of various notes on the rarer birds of Rhode Island. From early life his interest in natural history was intense, and he has left in the Roger Williams Park Museum an enduring record of conscientious work.

ARTICLES of incorporation have just been drawn looking to the establishment on a permanent foundation of the 'Worthington Society for the Investigation of Bird Life.' The founder, Mr. Charles C. Worthington, will erect and endow, on his estate at Shawnee, Monroe County, Pennsylvania, the necessary buildings and equipment.

The Worthington Society will have for its purpose the consideration

of bird life as it is found in nature, and will also have many birds under confinement for study and experiment.

The following is a summary of the chief topics that will present an immediate field for experimentation.

I. The study and consideration of a bird as an individual. It is believed that by means of observation carried through the entire life of the individual, with a daily record, brief or elaborate, as exigencies may require, much will be learned regarding matters that are now obscure. Facts, such as growth, habits, health, temper, etc. will be daily reported.

II. The study of the occurrence, extent, nature and cause of variations in different representatives of the same species.

III. Changes in color and appearance correlating with age, sex and season.

IV. Changes in color and appearance due to light, heat, presence or absence of moisture, and to food. How rapid a change in appearance can be affected by a new environment or a new set of conditions?

V. Heredity. What general characteristics are transmitted? Are acquired characteristics transmitted? The consideration of atavism, prepotency and telegony.

VI. Experiments in breeding. Hybridity and the fertility of hybrids. The possibility of establishing a new physiological species.

VII. Experiments in change of color due to moult.

VIII. Adaptability. The plasticity of animals. How great a factor is this in domesticating new kinds of animals?

IX. The leisure of animals. How is this acquired? Being acquired, how is this employed?

X. Instinct, habit, and the development of intelligence.

XI. The possibility of breeding insectivorous and other beneficial kinds of birds to re-stock a given region or to increase native birds, as has been done in the case of fish, by the United States Fish Commission.

A temporary laboratory and aviary is being equipped, and preliminary work will begin with the installment of a large number of native and foreign birds early in September. Mr. Worthington has procured the services of Mr. William E. D. Scott, Curator of the Department of Ornithology at Princeton University, as Director of the proposed work. Mr. Bruce Horsfall has been engaged as chief assistant and artist.

THE TWENTY-SECOND ANNUAL CONGRESS of the American Ornithologists' Union will be held in Cambridge, Mass., beginning on the evening of Monday, November 28, 1904. The evening session will be for the election of officers and members and for the transaction of routine business. Tuesday and the following days the sessions will be for the presentation and discussion of scientific papers, and will be open to the public. Members intending to present communications are requested to forward the titles of their papers to the Secretary, Mr. John H. Sage, Portland, Conn., so as to reach him not later than November 25.

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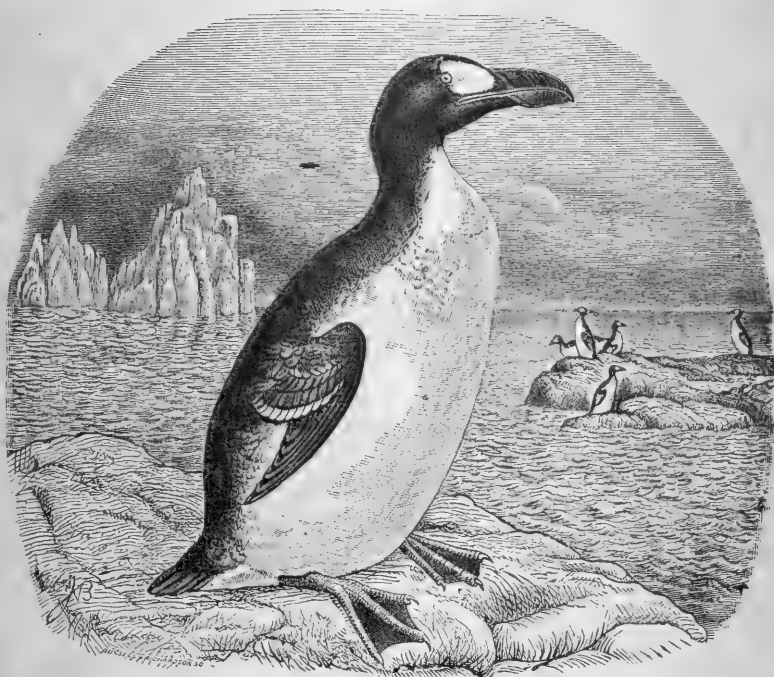
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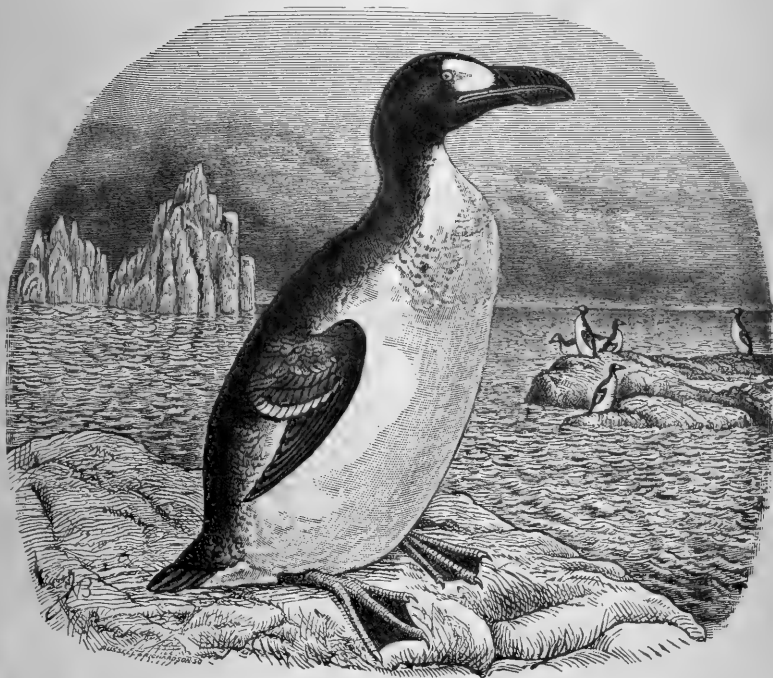
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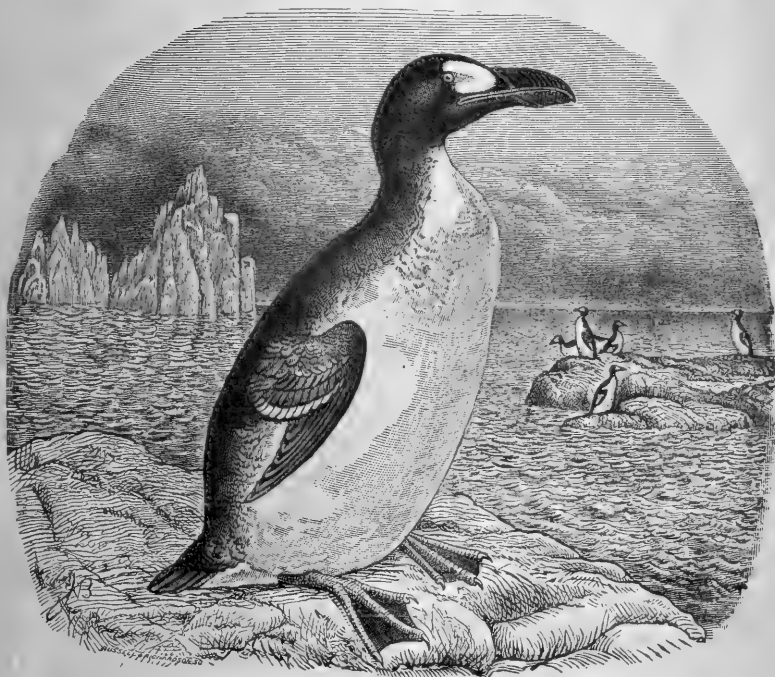
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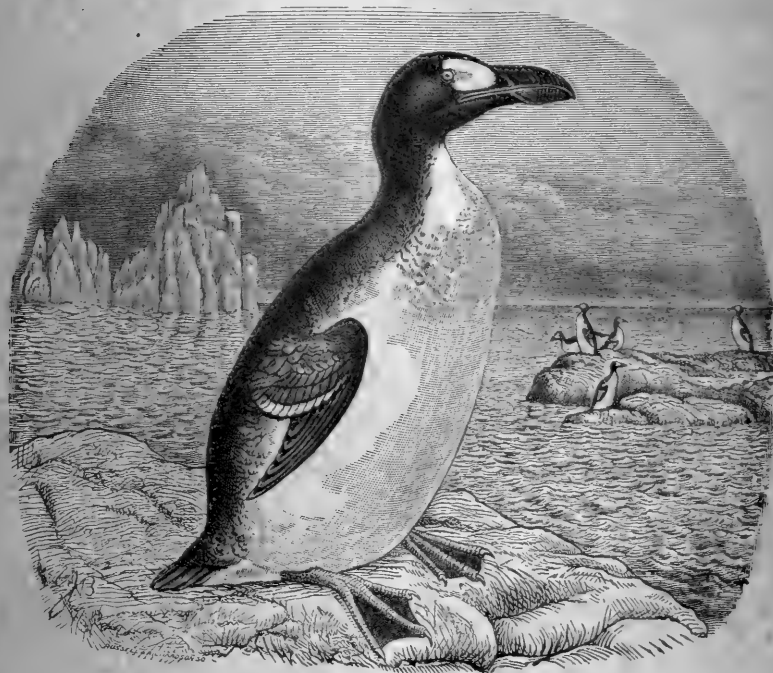
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