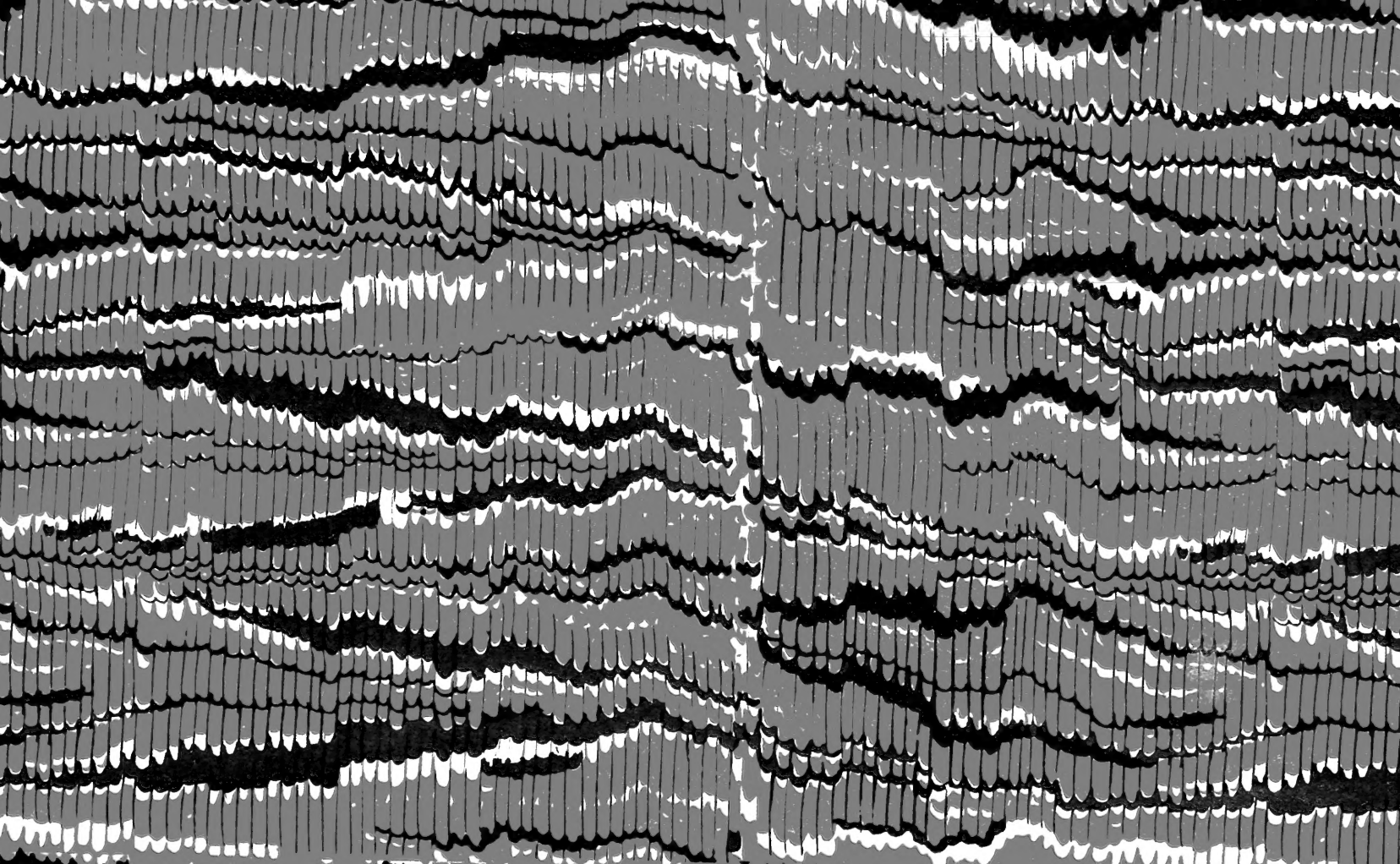

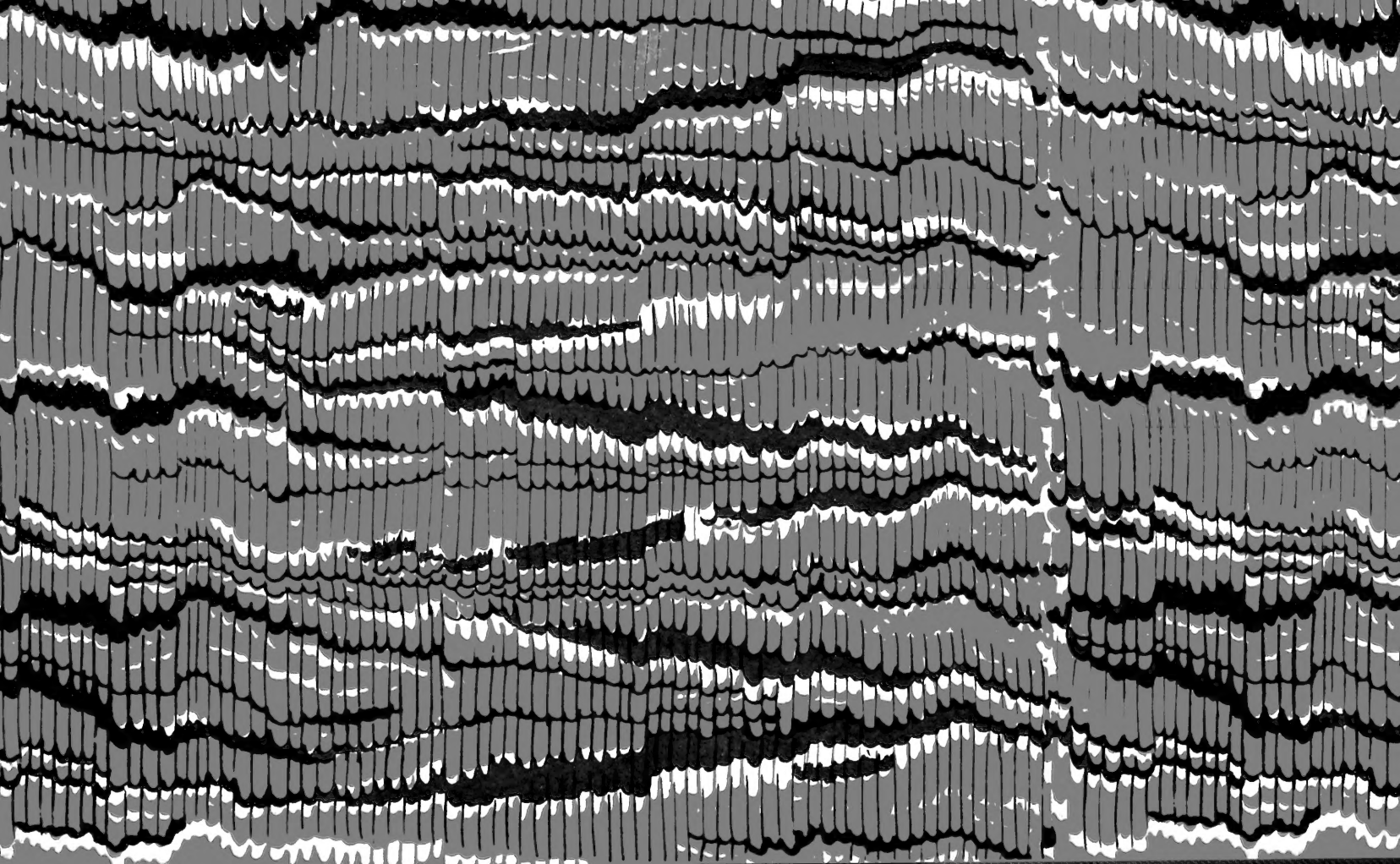

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A Quarterly Journal of Ornithology

EDITOR
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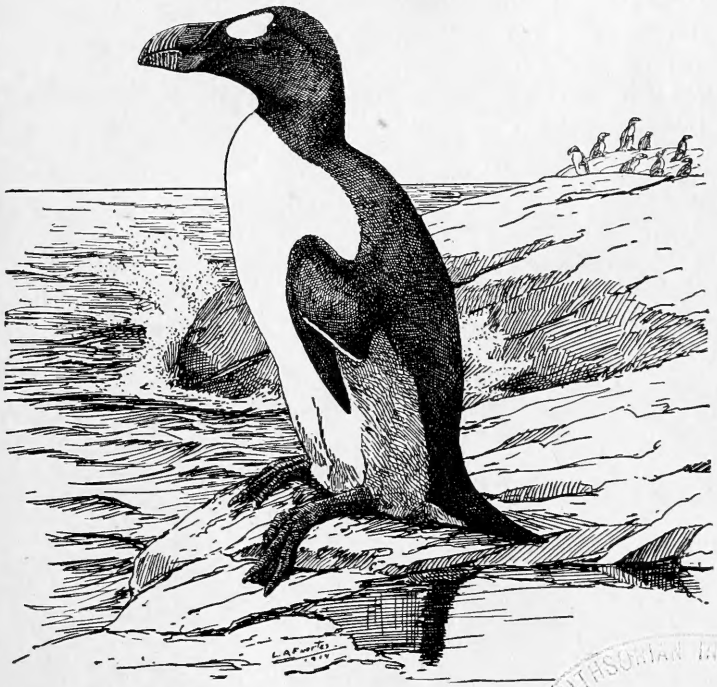

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Millais, John Guille, Compton's Brow, Horsham, England.....1911
Namiye, M., Tokio, Japan.....1886
Nicholson, Francis, The Knoll, Windermere, Westmoreland, England.....1884
North, Alfred J., Australian Museum, Sydney, New South Wales..1902
Ogilvie-Grant, William Robert, British Museum (Nat. Hist.), Cromwell Road, London, S. W.....1899
Palmén, Dr. J. T., Helsingfors, Finland.....1883
Ramsey, E. P., Sydney, New South Wales.....1884
Ringer, Frederic, Nagasaki, Japan.....1888
Sclater, William Lutley, 10 Sloane Court, Chelsea, London, S. W..1906
Snethlage, Dr. Emilia, Museu Goeldi, Pará, Brazil.....1915
Sushkin, Dr. Peter, University, Kharkov, Russia.....1903
Theel, Dr. Hjalmar, University of Upsala, Upsala, Sweden.....1884
Tschusi zu Schmidhoffen, Victor, Ritter von, Villa Tännenhof, bei Hallein, Salzburg, Austria.....1884
Van Oort, Edward Daniel, Museum Nat. Hist., Leyden, Holland..1913
Waterhouse, F. H., 3 Hanover Square, London, W.....1889
Winge, Dr. Herluf, Univ. Zoölogical Museum, Copenhagen, Denmark.....1903
Worcester, Prof. Dean C., Manila, P.I.....1903
Zeledon, Don José C., San José, Costa Rica.....1884

MEMBERS.

ALLEN, ARTHUR A., McGraw Hall, Cornell University, Ithaca, N. Y. (1909)1914
ALLEN, FRANCIS H., 4 Park St., Boston, Mass. . . . . (1888)1901
ALLEN, Dr. GLOVER M., 234 Berkeley St., Boston, Mass. . . . . (1896)1904
ANDERSON, Dr. RUDOLPH M., 901 Virginia St., Sioux City, Ia. . . (1907)1914
ATTWATER, H. P., 2120 Genesee St., Houston, Texas. . . . . (1891)1901
BAILEY, VERNON, 1834 Kalorama Ave., Washington, D. C. . . . (1887)1901
BAILEY, Mrs. VERNON, 1834 Kalorama Ave., Washington, D. C. (1885)1901
BAILY, WILLIAM L., Ardmore, Pa. . . . . (1886)1901
BARBOUR, Dr. THOMAS, Mus. Comp. Zoölogy, Cambridge, Mass. (1903)1914
BARTSCH, Prof. PAUL, Smithsonian Inst., Washington, D. C. . . (1896)1902
BERGTOLD, Dr. W. H., 1159 Race St., Denver, Colo. . . . . (1889)1914
BOND, FRANK, 3127 Newark St., N. W. Washington, D. C. . . . (1887)1901
BOWLES, JOHN HOOPER, The Woodstock, Tacoma, Wash. . . . (1891)1910
BRAISLIN, Dr. WILLIAM C., 556 Washington Ave., Brooklyn, N.Y. (1894)1902
BROOKS, ALLAN, Okanagan Landing, B. C. . . . . (1902)1909
BRYAN, WILLIAM ALANSON, College of Hawaii, Honolulu, Hawaiian Islands. . . . . (1898)1901
BURNS, FRANK L., Berwyn, Pa. . . . . (1891)1901
BUTLER, AMOS W., 52 Downey Ave., Irvington, Indianapolis, Ind. (1885)1901
CHAMBERS, W. LEE, Eagle Rock, Cal. . . . . (1907)1913
CLARK, AUSTIN HOBART, 1726 18th St., N. W., Washington, D.C. (1899)1905
CLARK, Dr. HUBERT LYMAN, Museum of Comparative Zoölogy, Cambridge, Mass. . . . . (1886)1902
DAGGETT, FRANK S., Museum, Exposition Park, Los Angeles, Cal. (1889)1901
DAWSON, WILLIAM LEON, R. D., No. 3, Box 110, Santa Barbara, Cal. (1895)1905
DEANE, WALTER, 29 Brewster St., Cambridge, Mass. . . . . (1897)1901
DEARBORN, NED, Linden, Md. . . . . (1902)1907
EATON, ELON HOWARD, Hobart College, Geneva, N. Y. . . . . (1895)1907
EVERMANN, Prof. BARTON W., Cal. Academy of Sciences, San Francisco, Cal. . . . . (1883)1901
FINLEY, WILLIAM L., 651 East Madison St., Portland, Ore. . . (1904)1907
FLEMING, JAMES H., 267 Rusholme Road, Toronto, Ontario. . . (1893)1901
GAULT, BENJAMIN TRUE, Glen Ellyn, Ill. . . . . (1885)1903
GOLDMAN, EDWARD ALFONSO, Biological Survey, Washington, D. C. (1897)1902
HOFFMANN, RALPH, 11 W. Concord Ave., Kansas City, Mo. . . (1893)1901
HOLLISTER, NED, U. S. Nat. Museum, Washington, D. C. . . . . (1894)1910
HOWELL, ARTHUR H., 2919 S. Dakota Ave., Washington, D. C. (1889)1902
JACOBS, J. WARREN, 404 S. Washington St., Waynesburg, Pa. . (1889)1904

JEFFRIES, WILLIAM AUGUSTUS, 11 Pemberton Square, Boston, Mass. (1883)1901
JOB, HERBERT K., 291 Main St., West Haven, Conn.....(1896)1901
JORDAN, Prof. DAVID STARR, Stanford University, Cal.....(1885)1901
KALMBACH, EDWIN R., Biological Survey, Washington, D. C..(1910)1915
KENNARD, F. H., Dudley Road, Newton Centre, Mass.....(1892)1912
KNOWLTON, F. H., U. S. Nat. Mus., Washington, D. C.....(1883)1902
MACKAY, GEORGE H., 304 Bay State Road, Boston, Mass....(1890)1901
MAILLIARD, JOHN W., 300 Front St., San Francisco, Cal.....(1895)1901
MILLER, Mrs. OLIVE THORNE, 5928 Hays Ave., Los Angeles, Cal.(1887)1901
MOORE, ROBERT THOMAS, King's Highway, Haddonfield, N. J.(1898)1914
MORRIS, GEORGE SPENCER, Olney, Philadelphia, Pa.....(1887)1903
MORRIS, ROBERT O., 82 Temple St., Springfield, Mass.....(1888)1904
MURDOCH, JOHN, 16 High Rock Way, Allston, Mass.....(1883)1901
MURPHY, ROBERT C., Museum Brooklyn Institute, Eastern Parkway, Brooklyn, N. Y.....(1905)1914
NICHOLS, JOHN TREADWELL, Am. Mus. Nat. Hist., New York City(1901)1914
NORTON, ARTHUR H., Museum Natural History, 22 Elm St., Portland, Maine.....(1890)1902
PEARSON, T. GILBERT, 2257 Loring Place, New York City....(1891)1902
PHILLIPS, JOHN C., Wenham, Mass.....(1904)1912
PREBLE, EDWARD A., 3027 Newark St., Washington, D. C....(1892)1901
RATHBUN, SAMUEL F., 217 14th Ave., N., Seattle, Wash.....(1893)1902
RHOADS, SAMUEL N., 81 Haddon Ave., Haddonfield, N. J.....(1885)1901
RILEY, JOSEPH H., U. S. National Museum, Washington, D. C.(1897)1905
RIVES, Dr. WILLIAM C., 1702 Rhode Island Ave., Washington, D. C. (1885)1901
ROBINSON, Col. WIRT, U. S. A., West Point, N. Y.....(1897)1901
SETON, ERNEST THOMPSON, Greenwich, Conn.....(1883)1901
*SHERMAN, Miss ALTHEA R., National via McGregor, Iowa..(1907)1912
SHIRAS, Hon. GEORGE, 3d, Stoneleigh Court, Washington, D. C.(1907)1915
STEPHENS, FRANK, 3746 Park Boulevard, San Diego, Cal.....(1883)1901
STRONG, Dr. REUBEN M., Univ. of Mississippi, University, Miss.(1889)1903
SWALES, BRADSHAW HALL, Mus. of Zool., Ann Arbor, Mich.(1902)1909
SWARTH, HARRY S., Mus. Vert. Zool., Univ. of Cal., Berkeley, Cal.(1900)1909
TAVERNER, PERCY A., Victoria Memorial Museum, Ottawa, Canada (1902)1909
THAYER, JOHN ELIOT, Lancaster, Mass.....(1898)1905
TODD, W. E. CLYDE, Carnegie Museum, Pittsburgh, Pa.....(1890)1901
TOWNSEND, CHARLES H., Aquarium, Battery Park, New York City (1883)1901
TOWNSEND, Dr. CHARLES WENDELL, 76 Marlborough St., Boston, Mass.....(1901)1905
TROTTER, Dr. SPENCER, Swarthmore College, Swarthmore, Pa..(1888)1901

*Life Member.

WARREN, EDWARD ROYAL, 20 West Caramillo St., Colorado Springs, Colo.....(1902)1910
WAYNE, ARTHUR T., Mt. Pleasant, S. C.....(1905)1906
WETMORE, ALEX., Biological Survey, Washington, D. C.....(1908)1912
WILLETT, GEORGE, 2123 Court St., Los Angeles, Cal.....(1912)1914
WOLCOTT, Dr. ROBERT H., Univ. of Nebraska, Lincoln, Neb..(1901)1903
WOOD, NORMAN A., Museum Univ. of Mich., Ann Arbor, Mich..(1904)1912
WRIGHT, Mrs. MABEL OSGOOD, Fairfield, Conn.....(1895)1901

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ABBOTT, CLINTON GILBERT, Orchard Hill, Rhinebeck, N. Y.....1898
ADAMS, BENJAMIN, 476 5th Ave., New York City.....1911
ADAMS, WALLACE, 2630 Webster Ave., Berkeley, Cal.....1901
ADAMS, Dr. Z. B., 43 Cottage Farm Rd., Brookline, Mass.....1908
AIKEN, Hon. JOHN, Superior Court, Court House, Boston, Mass....1905
ALEXANDER, Miss ANNIE M., 92 Sea View Ave., Piedmont, Cal.....1911
ALLEN, MARY P., 206 Moon St., Hackettstown, N. J.....1913
AMES, JOHN S., North Easton, Mass.....1913
ANDERSON, ERNEST M., Provincial Museum, Victoria, B. C.....1915
ANDERSON, Mrs. J. C., Great Barrington, Mass.....1903
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ANTHONY, Mrs. S. REED, 175 Beacon St., Boston, Mass.....1913
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ARNOLD, EDWARD, Grand Trunk R'y., Montreal, Quebec.....1894
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AYRES, Miss MARY ADELINE, 119 High St., Medford, Mass.....1915
BABCOCK, DEAN, Estes Park, Colo.....1911
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BAKER, JOHN H., Nat. Cash Register Co., Dayton, Ohio.....1911
BALDWIN, ROGER N., 3739 Windsor Place, St. Louis, Mo.....1904
BALES, Dr. BLENN R., 149 W. Main St., Circleville, Ohio.....1907
BALL, Mrs. BENNET F., Oakville, Conn.....1905
BALL, DAVID S., 622 W. 113 St., New York City.....1913
BALL, Miss HELEN AUGUSTA, 43 Laurel St., Worcester, Mass.....1893
BALL, Dr. JAS. P., 5001 Frankford Ave., Philadelphia, Pa.....1911
BANKS, Miss MARTHA B., Westport, Conn.....1911
BARBOUR, Rev. ROBERT, Y. M. C. A., Montclair, N. J.....1902
BARKER, MERLE TAFT, 178 High St., Taunton, Mass.....1915

BARNARD, Judge JOB, 1306 Rhode Island Ave., Washington, D. C...1886
BARNES, Hon. R. MAGOON, Lacon, Ill.....1889
BARRETT, CHAS. H. M., 1339 Valley Place, S. E., Washington, D. C...1912
BARRETT, HAROLD LAWRENCE, 704 Centre St., Jamaica Plain, Mass...1909
BARRY, Miss ANNA K., 5 Bowdoin Ave., Dorchester, Mass.....1907
BARTLETT, Miss MARY F., 227 Commonwealth Ave., Boston, Mass..1912
BARTLETT, WM. M., Silver Hill Road, South Lincoln, Mass.....1913
BARTRAM, EDWIN B., Strafford, Pa.....1913
BATTEN, GEORGE, 93 Union St., Montclair, N. J.....1911
BATTEN, GEORGE, JR., 381 Fourth Ave., New York City.....1914
BAYNES, ERNEST H., Meriden, N. H.....1912
BECK, ROLLO HOWARD, San José, R. D. 21, Cal.....1894
BELL, Prof. W. B., Agricultural College, N. D.....1912
BENNETT, Rev. GEO., Iowa City, Ia.....1913
BENNETT, WILLIAM J., 1941 1st St. N. W., Washington, D. C.....1901
BENSON, C. STANLEY, 75 Plymouth St., North Abington, Mass.....1915
BETTS, NORMAN DE WITT, Forest Products Lab., Madison, Wis.....1908
BICKNELL, Mrs. F. T., 319 S. Normandie Ave., Los Angeles, Cal....1913
BIDDLE, Miss EMILY WILLIAMS, 2201 Sansom St., Philadelphia, Pa..1898
BIGELOW, ALBERT F., 84 State St., Boston, Mass.....1910
BIGELOW, Dr. LYMAN F., 80 Winter St., Norwood, Mass.....1914
BLACKWELDER, ELIOT, Univ. of Wisconsin, Madison, Wis.....1895
BLAIN, MERRILL W., 1026 N. Coronado St., Los Angeles, Cal.....1910
BLAKE, SIDNEY F., 154 Walnut St., Stoughton, Mass.....1910
BLOOMFIELD, Mrs. C. C., 723 Main St., W., Jackson, Mich.....1901
BOARDMAN, Miss E. D., 416 Marlborough St., Boston, Mass.....1906
BOGARDUS, Miss CHARLOTTE, Elm St., Coxsackie, N. Y.....1909
BOGERT, WILLIAM S., 1000 Garden St., Bellingham, Wash.....1904
BOLLES, Mrs. FRANK, 6 Berkeley St., Cambridge, Mass.....1912
BOLT, BENJAMIN FRANKLIN, 1421 Prospect Ave., Kansas City, Mo..1909
BOND, HARRY L., Lakefield, Minn.....1908
BORLAND, WM. G., 14 Wall St., New York City.....1911
BORNEMAN, HENRY S., 1613 Dyre St., Frankford, Philadelphia, Pa....1912
BOSSON, CAMPBELL, 722 Tremont Bldg., Boston, Mass.....1906
BOULTON, W. RUDYUD, JR., 338 1st St., Beaver, Pa.....1915
BOURNE, THOS. L., Hamburg, N. Y.....1914
BOWDISH, B. S., Demarest, N. J.....1891
BOWDISH, Mrs. B. S., Demarest, N. J.....1902
BOWDITCH, HAROLD, 60 Harvard Ave., Brookline, Mass.....1900
BOWDITCH, JAMES H., 903 Tremont Bldg., Boston, Mass.....1913
BRACKEN, Mrs. HENRY M., 1010 Fourth St., S. E., Minneapolis, Minn. 1897
BRADBURY, W. C., 1440 Race St., Denver, Colo.....1915
BRADLEE, THOMAS STEVENSON, Somerset Club, Boston, Mass.....1902
BRANDRETH, FRANKLIN, Ossining, N. Y.....1889
BRANDT, HERBERT W., 2025 East 88 St., Cleveland, Ohio.....1915
BREWSTER, EDWARD EVERETT, 316 East C St., Iron Mountain, Mich.1893

Brewster, Mrs. William, 145 Brattle St., Cambridge, Mass.....1912
Bridge, Edmund, 52 Wyman St., West Medford, Mass.....1910
Bridge, Mrs. Edmund, 52 Wyman St., West Medford, Mass.....1902
Brimley, H. H., Raleigh, N. C.....1904
Bristol, John I. D., 1 Madison Ave., New York City.....1907
Britten, G. S., 302 University Bldg., Syracuse, N. Y.....1913
Brock, Dr. Henry Herbert, 687 Congress St, Portland, Me.....1894
Brockway, Arthur W., Hadlyme, Conn.....1912
Brooks, Rev. Earle Amos, 419 N. River Ave., Weston, W. Va.....1892
Brooks, Maurice Graham, French Creek, W. Va.....1915
Brown, Miss Annie H., 31 Maple St., Stoneham, Mass.....1909
Brown, Edward J., U. S. Nat. Museum, Washington, D. C.....1891
Brown, Harry A., 40 Talbot St., Lowell, Mass.....1912
Brown, Mrs. Henry Temple, Lancaster, Mass.....1912
Brown, Philip G., 85 Vaughan St., Portland, Me.....1911
Brown, Stewardson, 20 E. Penn St., Germantown, Philadelphia, Pa..1895
Brown, Wm. James, 250 Oliver Ave., Westmount, Quebec.....1908
Browning, Wm. Hall, 16 Cooper Square, New York City.....1911
Bruen, Frank, 69 Prospect St., Bristol, Conn.....1908
Bryant, Harold Child, Mus. Vert. Zool., Univ. of California, Berkeley, Cal.....1913
Burbank, Chas. O., 48 Glenwood Ave., Newton Centre, Mass.....1912
Buckwalter, Mrs. A. I., Union, Mass.....1915
Burgess, John Kingsbury, Chestnut St., Dedham, Mass.....1898
Burleigh, Thos. D., 825 N. Negley Ave., Pittsburgh, Pa.....1913
Burnett, William L., State Agric. College, Fort Collins, Colo.....1895
Burnham, John Bird, 233 Broadway, New York City.....1912
Burt, Henry P., 355 Union St., New Bedford, Mass.....1908
Burtch, Verdi, Branchport, N. Y.....1903
Cabot, Louis, Brookline, Mass.....1904
Caduc, Eugene E., 512 Massachusetts Ave., Boston, Mass.....1910
Callender, James Phillips, 32 Broadway, New York City.....1903
Calvert, J. Fletcher, 596 Princess Ave., London, Ont.....1912
Campbell, Miss Clara D., 1253 Beacon St., Brookline, Mass.....1913
Carpenter, Rev. Charles Knapp, 311 Park St., Elgin, Ill.....1894
Carpenter, George I., 129 Dean St., Brooklyn, N. Y.....1907
Carriger, H. W., 5185 Trask St., Fruitvale Station, Oakland, Cal....1913
Carter, John D., Lansdowne, Pa.....1907
Cash, Harry A., 448 Hope St., Providence, R. I.....1898
Chamberlain, Chauncy W., 36 Lincoln St., Boston, Mass.....1885
Chapin, Prof. Angie Clara, 25 Freeman Cottage, Wellesley College, Wellesley, Mass.....1896
Chapin, James P., Amer. Mus. of Natural History, New York City..1906
Chapman, Mrs. F. M., Englewood, N. J.....1908
Chapman, Roy, 2316 Pierce Ave., St. Anthony Park, St. Paul, Minn...1911
Chase, Sidney, Nantucket, Mass.....1904

Cheesman, Morton R., 55 W. 4th St., S., Salt Lake City, Utah.....1911
Chipman, Miss Grace E., Sandwich, Mass.....1912
Christy, Bayard H., 403 Frederick Ave., Sewickley, Pa.....1901
Clark, Clarence H., Lubec, Me.....1913
Clark, Josiah H., 238 Broadway, Paterson, N. J.....1895
Clarke, Charles E., 11 Chetwynd Road, Tufts College, Mass.....1907
Clarke, Miss Harriet E., 9 Chestnut St., Worcester, Mass.....1896
Cleaves, Howard H., Public Museum, New Brighton, N. Y.....1907
Cleveland, Dr. Clement, 925 Park Ave., New York City.....1903
Cleveland, Miss Lilian, Woods Edge Road, West Medford, Mass...1906
Coale, Henry K., Highland Park, Ill.....1883
Cobb, Miss Anna E., 322 Broadway, Providence, R. I.....1913
Cobb, Miss Annie W., 20 Amsden St., Arlington, Mass.....1909
Cobb, Dr. Stanley, 206 E. Chase St., Baltimore, Md.....1909
Coffin, Mrs. Percival B., 3232 Groveland Ave., Chicago, Ill.....1905
Colburn, Albert E., 806 S. Broadway, Los Angeles, Cal.....1891
Cole, Dr. Leon J., College of Agric., Univ. of Wis., Madison, Wis.....1908
Commons, Mrs. F. W., 608 Chamber of Commerce, Minneapolis, Minn.1902
Conn, Hugh, Cochrane, Ont., Canada.....1915
Coney, Mrs. Geo. H., R. F. D., Box 25, Windsor, Conn.....1906
Conklin, Charles Edgar, Roslyn, N. Y.....1915
Cook, Frederick W., 1604 East Harrison St., Seattle, Wash.....1915
Cook, Miss Lilian Gillette, 165 West 82 St., New York, N. Y....1899
Cooke, Miss May Thacher, 1450 Fairmount St., Washington, D. C...1915
Cope, Francis R., Jr., Dimock, Pa.....1892
Copeland, Manton, 88 Federal St., Brunswick, Me.....1900
Craig, Wallace, Orono, Me.....1912
Cram, R. J., 26 Hancock Ave., W., Detroit, Mich.....1893
Crandall, C. W., 10 Third St., Woodside, N. Y.....1891
Crane, Miss Clara L., Dalton, Mass.....1904
Crane, Mrs. Zenas, Dalton, Mass.....1904
Crehore, Frederic M., P. O. Box 1252, Boston, Mass.....1913
Cressy, Mrs. A. S., Avon Road, Unionville, Conn.....1912
Crosby, Maunsell S., Rhinebeck, N. Y.....1904
Culver, Delos E., Addingham, Pa.....1913
Cummings, Miss Emma G., 16 Kennard Road, Brookline, Mass.....1903
Currie, Rolla P., 632 Keefer Place N. W., Washington, D. C.....1895
Currier, Edmonde Samuel, 416 E. Chicago St., St. Johns, Ore.....1894
Curtis, Charles P., 244 Beacon St., Boston, Mass.....1915
Cushman, Miss Alice, 919 Pine St., Philadelphia, Pa.....1910
Dana, Miss Ada, 488 Centre St., Newton, Mass.....1912
Dane, Mrs. Ernest B., Chestnut Hill, Mass.....1912
Davenport, Mrs. Elizabeth B., Lindenhurst, Brattleboro, Vt.....1898
Davidson, Mrs. Francis S., 1302 W., S. Grand Ave., Springfield, Ill..1912
Davis, Charles H., 700 N. Hamilton St., Saginaw, W. S., Mich.....1906
Day, Chester Sessions, 15 Chilton Road, West Roxbury, Mass....1897

DEAN, R. H., 720 Quintard Ave., Anniston, Ala.....1913
DEANE, GEORGE CLEMENT, 80 Sparks St., Cambridge, Mass.....1899
DELOACH, R. J. H., Georgia Experiment Station, Experiment, Ga...1910
DENSMORE, Miss MABEL, 629 4th St., Red Wing, Minn.....1910
DERBY, RICHARD, 116 E. 79th St., New York City.....1898
DEWEY, Dr. CHARLES A., 78 Plymouth Ave., Rochester, N. Y.....1900
DEXTER, LEWIS, 1889 Elm St., Manchester, N. H.....1915
DICKEY, DONALD R., San Rafael Heights, Pasadena, Cal,.....1907
DICKEY, SAMUEL S., Waynesburg, Pa.....1905
DILLE, FREDERICK M., 2927 W. 28th Ave., Denver, Colo.....1892
DIONNE, C. E., Laval University, Quebec, Canada.....1893
DIXON, FREDERICK J., 111 Elm Ave., Hackensack, N. J.....1891
DODSON, JOSEPH H., Room 1201, 19 S. La Salle St., Chicago, Ill....1909
DORN, Prof. LOUIS, Concordia College, Fort Wayne, Ind.....1912
DRUMMOND, Miss MARY, 510 Spring Lane, Lake Forest, Ill.....1904
DULL, Mrs. A. P. L., 211 N. Front St., Harrisburg, Pa.....1900
DUNLOP, ERIC B., St. Regis Hotel, Winnipeg, Man.....1915
DURFEE, OWEN, Box 125, Fall River, Mass.....1887
DURYEA, Miss ANNIE B., 62 Washington St., Newark, N. J.....1911
DYKE, ARTHUR CURTIS, 205 Summer St., Bridgewater, Mass.....1902
EATON, Miss MARY S., Monument St., Concord, Mass.....1909
EATON, SCOTT HARRISON, Malcolm Hotel, Lawrenceville, Ill.....1912
EDSON, JOHN M., Marietta Road, Bellingham, Wash.....1886
EHINGER, Dr. CLYDE E., 100 Rosedale Ave., West Chester, Pa.....1904
EIFRIG, Prof. C. W. GUSTAVE, 504 Monroe Ave., Oak Park, Ill.....1901
EIMBECK, Dr. A. F., New Haven, Mo.....1906
EKBLAW, WALTER ELMER, care of G. Ekblaw, Rantoul, Ill.....1911
ELDRIDGE, ARTHUR S., South Lincoln, Mass.....1912
ELLIOT, Mrs. J. W., 124 Beacon St., Boston, Mass.....1912
ELLS, GEORGE P., Norwalk, Conn.....1904
EMMONS, RUPERT A., 17 T. St., N. E., Washington, D. C.....1914
EMORY, Mrs. MARY DILLE, 156 Foundry St., Morgantown, W. Va...1899
EUETE, RUSSELL, Terrace Park, Ohio.....1915
EVANS, WILLIAM B., Westtown, Pa.....1897
FARLEY, JOHN A., 52 Cedar St., Malden, Mass.....1904
FAY, S. PRESCOTT, 53 State St., Boston, Mass.....1907
FELGER, ALVA HOWARD, North Side High School, Denver, Colo.....1898
FELL, Miss EMMA TREGO, 1534 N. Broad St., Philadelphia, Pa.....1903
FINDLAY, D. DOUGLAS, Carleton Place, Ontario, Canada.....1914
FISHER, Miss ELIZABETH WILSON, 2222 Spruce St., Philadelphia, Pa..1896
FISHER, Dr. G. CLYDE, American Mus. Nat. Hist., New York City..1908
FLANAGAN, JOHN H., 89 Power St., Providence, R. I.....1898
FLETCHER, Mrs. MARY E., Proctorsville, Vt.....1898
FOOTE, Miss F. HUBERTA, 90 Locust Hill Ave., Yonkers, N. Y.....1897
FORBES, ALEXANDER, Milton, Mass.....1912
FORDYCE, GEO. L., 40 Lincoln Ave., Youngstown, Ohio.....1901
FOWLER, FREDERICK HALL, 221 Kingsley Ave., Palo Alto, Cal.....1892

FOWLER, HENRY W., Acad. Nat. Sciences, Philadelphia, Pa.....1892
FOX, Dr. WILLIAM H., 1826 Jefferson Place, Washington, D. C.....1883
FRANCIS, NATHANIEL A., 35 Davis Ave., Brookline, Mass.....1913
FRASER, DONALD, Johnstown, N. Y.....1902
FREEMAN, Miss HARRIET E., 37 Union Park, Boston, Mass.....1903
FRENCH, CHARLES H., Canton, Mass.....1904
FRENCH, Mrs. CHAS. H., Canton, Mass.....1908
FULLER, T. OTIS, Needham, Mass.....1904
FULLER, Mrs. T. Otis, Needham, Mass.....1909
GABRIELSON, IRA N., Biological Survey, Washington, D. C.....1912
GARDINER, CHARLES BARNES, 5 Minard Place, Norwalk, Ohio.....1903
GERTKEN, SEVERIN, Prof., St. Johns University, Collegeville, Minn..1912
GIANINI, CHAS. A., Poland, N. Y.....1911
GILMAN, M. FRENCH, Fort Bidwell, Cal.....1907
GLADDING, Mrs. JOHN R., 30 Stimson Ave., Providence, R. I.....1912
GOLSAN, LEWIS S., Box 97, Prattville, Ala.....1912
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GOULD, JOSEPH E., Arcadia, Fla.....1889
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GRONBERGER, S. M., Smithsonian Inst., Washington, D. C.....1909
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GUILD, HENRY R., Fly Club, Cambridge, Mass.....1912
GUTSELL, JAMES S., 301 College Ave., Ithaca, N. Y.....1911
HADLEY, ALDEN H., Monrovia, Indiana.....1906
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HALL, FRANK H., Agricultural Experiment Station, Geneva, N. Y.....1910
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HARDON, Mrs. HENRY W., 315 West 71st St., New York City.....1905
HARPER, FRANCIS, 555 First Ave., College Point, N. Y.....1907
HARRINGTON, RALPH M., 1239 Central Y. M. C. A., Brooklyn, N. Y...1915
HARRIS, HARRY, Kansas City, Mo.....1911
HATHAWAY, HARRY S., Box 1466, Providence, R. I.....1897
HAVEMEYER, H. O., Jr., Mahwah, N. J.....1893
HAZARD, Hon. ROWLAND G., Peace Dale, R. I.....1885
HELME, ARTHUR H., Miller Place, N. Y.....1888
HENDRICKSON, W. F., 276 Hillside Ave., Jamaica, N. Y.....1885
HENNESSEY, FRANK C., 1108 E. Porter St., Albion, Mich.....1914
HERRICK, FRANCIS H., Adelbert College, Cleveland, Ohio.....1913
HERRICK, HAROLD, 25 Liberty St., New York City.....1905

HERRICK, NEWBOLD L., Cedarhurst, N. Y.....1913
HERSEY, F. SEYMOUR, 6 Maple Ave., Taunton, Mass.....1911
HERSEY, L. J., Wray, Colo.....1909
HILL, JAMES HAYNES, Box 485, New London, Conn.....1897
HILL, Mrs. THOMAS R., The Montrose, Philadelphia, Pa.....1903
HINCKLEY, ARTHUR T., 548 Fifth St., Niagara Falls, N. Y.....1915
HINCKLEY, GEO. LYMAN, Redwood Library, Newport, R. I.....1912
HINCKLEY, HENRY H., 50 West Hill Ave., Melrose Highlands, Mass..1912
HINE, Prof. JAMES STEWART, Ohio State Univ., Columbus, Ohio.....1899
HINE, Mrs. JANE L., Auburn, Ind.....1890
HIX, GEORGE E., 100 W. 91st St., New York City.....1904
HODGE, Prof. CLIFTON FREMONT, Univ. of Ore., Eugene, Oregon....1899
HOLLAND, HAROLD MAY, Box 1851, Los Angeles, Cal.....1910
HOLLAND, Dr. WILLIAM J., Carnegie Museum, Pittsburgh, Pa.....1899
HOLLISTER, WARREN D., McPhee Bldg., Denver, Colo.....1901
HOLMAN, RALPH H., 33 Chestnut St., Stoneham, Mass.....1907
HOLT, ERNEST G., Biological Survey, Washington, D. C.....1911
HONYWILL, ALBERT W., Jr., 50 Farmington Ave., Hartford, Conn....1907
HORSFALL, ROBERT BRUCE, 1457 E. 18 St., Portland, Ore.....1905
HOWELL, A. BRAZIER, Covina, Cal.....1909
HOWLAND, R. H., 164 Wildwood Ave., Upper Montclair, N. J.....1903
HOYT, WILLIAM H., Box 425, Stamford, Conn.....1907
HUBBARD, Mrs. SARA A., 177 Woodruff Ave., Brooklyn, N. Y.....1891
HUBER, WHARTON, Gwynedd Valley, Pa.....1915
HUDSON, Mrs. K. W., The Bellevue, Intervale, N. H.....1911
HULL, EDWIN D., 6024 Ellis Ave., Chicago, Ill.....1913
HUNN, JOHN T. SHARPLESS, 1218 Prospect Ave., Plainfield, N. J.....1895
HUSSEY, ROLAND F., 1308 E. Anne St., Ann Arbor, Mich.....1915
HUSHER, Mrs. EDWIN H., 1495 West Adams St., Los Angeles, Cal....1915
INGALLS, CHARLES E., East Templeton, Mass.....1885
INGERSOLL, ALBERT M., 908 F St., San Diego, Cal.....1885
IRVING, JOHN, Glen Cove, N. Y.....1894
ISHAM, C. B., 27 W. 67 St., New York City.....1891
IVES, H. DAVID, Southampton, N. Y.....1912
JACKSON, HARTLEY, H. T., Biological Survey, Washington, D. C.....1910
JACKSON, THOMAS H., 304 N. Franklin St., West Chester, Pa.....1888
JAMES, NORMAN, Catonsville, Md.....1913
JARVES, Miss FLORA AMY, Box 151, Kingston Hill, R. I.....1913
JENKS, CHAS. W., Bedford, Mass.....1912
JENNEY, CHARLES F., 100 Gordon Ave., Hyde Park, Mass.....1905
JENNINGS, RICHARD D., 129 Harrison St., East Orange, N. J.....1913
JENSEN, J. K., Westwood, Mass.....1912
JEWETT, STANLEY G., 582 Bidwell Ave., Portland, Oregon.....1906
JOHNS, ERWIN WM., 19 West Market St., Iowa City, Iowa.....1910
JOHNSON, CHAS. E., 714 16 Ave., S. E., Minneapolis, Minn.....1912
JOHNSON, Mrs. GRACE PETTIS, City Library Asso., Springfield, Mass..1908

JOHNSON, JULIUS M., 77 Herkimer St., Brooklyn, N. Y.....1913
JOHNSON, WILBUR WALLACE, 144 Harrison St., East Orange, N. J.....1914
JORDAN, A. H. B., Everett, Wash.....1888
JUMP, Mrs. EDWIN R., 97 Oakleigh Road, Newton, Mass.....1910
JUSTICE, HENRY, 2023 Pine St., Philadelphia, Pa.....1913
KEAYS, JAMES EDWARD, 328 St. George St., London, Ontario.....1899
KELLOGG, RALPH T., Silver City, N. M.....1913
KELSO, Dr. JOHN E. H., Braeside, Edgewood, Lower Arrow Lake, B. C.1915
KENT, DUANE E., 47 West St., Rutland, Vt.....1913
KERMODE, FRANCIS, Provincial Museum, Victoria, B. C.....1904
KEYES, Prof. CHAS. R., Mt. Vernon, Ia.....1904
*KIDDER, NATHANIEL T., Milton, Mass.....1906
KIHN, WILFRED L., 755 Eastern Parkway, Brooklyn, N. Y.....1913
KILGORE, WILLIAM, Jr., 4304 Colfax Ave., S., Minneapolis, Minn.....1906
KIRKHAM, Mrs. JAMES W., 275 Maple St., Springfield, Mass.....1904
*KIRKHAM, STANTON D., 152 Howell St., Canandaigua, N. Y.....1910
KIRKWOOD, FRANK C., Monkton, Md.....1892
KITTREDGE, JOSEPH, Jr., U. S. Forest Service, Missoula, Mont.....1910
KLOSEMAN, Miss JESSIE E., 9 School St., Dedham, Mass.....1909
KNAEBEL, ERNEST, 3707 Morrison St., Chevy Chase, D. C.....1906
KNAPP, Mrs. HENRY A., 301 Quincy Ave., Scranton, Pa.....1907
KNOLHOFF, FERDINAND WILLIAM, 40 E. 42d St., New York City.....1890
KRETZMAN, Prof. P. E., 1230 St. Anthony Ave., St. Paul, Minn.....1913
KUSER, ANTHONY R., Bernardsville, N. J.....1908
KUSER, Mrs. ANTHONY R., Bernardsville, N. J.....1910
KUSER, JOHN DRYDEN, Bernardsville, N. J.....1910
LA DOW, STANLEY V., 610 W. 116th St., New York City.....1913
LACEY, HOWARD GEORGE, R. F. D. No. 1, Kerrville, Texas.....1899
LAMB, CHAS. R., 77 Franklin St., Boston, Mass.....1912
LANG, HERBERT, Amer. Mus. Nat. Hist., New York City.....1907
LATIMER, Miss CAROLINE P., 19 Pierrepont St., Brooklyn, N. Y.....1898
LAURENT, PHILIP, 31 E. Mt. Airy Ave., Mt. Airy, Philadelphia, Pa...1902
LAW, J. EUGENE, 1834 El Cerrito Place, Hollywood, Cal.....1907
LAWRENCE, JOHN L., Lawrence, N. Y.....1915
LENGERKE, JUSTUS VON, 200 5th Ave., New York, N. Y.....1907
LEVEY, Mrs. WILLIAM, Alton Bay, N. H.....1915
LEWIS, HARRISON F., R. R. 2 Yarmouth, Nova Scotia.....1912
LEWIS, Mrs. HERMAN E., 120 Grove St., Haverhill, Mass.....1912
LIGON, STOKLEY, Chloride, New Mexico.....1912
LINCOLN, FREDERICK CHARLES, Colo. Mus. Nat. Hist., Denver, Colo..1910
LINGS, GEO. H., Richmond Hill, Cheadle, Cheshire, Eng.....1913
LITTLE, LUTHER 2d, Sierra Madre, Cal.....1913
LONGSTREET, RUBERT J., Stetson University, DeLand, Fla.....1913
LUCE, Mrs. FRANCES P., Vineyard Haven, Mass.....1912

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*Life Associate.

LUM, EDWARD H., Chatham, N. J.....1904
LUND, EWARD G., 527 Beacon St., Boston, Mass.....1915
MACLAY, MARK W., Jr., 830 Park Ave., New York City.....1905
MADDOCK, Miss EMELINE, 6386 Drexel Road, Overbrook, Pa.....1897
MADISON, HAROLD L., Park Museum, Providence, R. I.....1912
MAHER, J. E., 351 Communipaw Ave., Jersey City, N. J.....1902
MAIN, FRANK H., 227 N. 18 St., Philadelphia, Pa.....1913
MAITLAND, ROBERT L., 141 Broadway, New York City.....1889
MANN, ELIAS P., Williamstown, Mass.....1912
MAPLES, JAMES C., Port Chester, N. Y.....1913
MARBLE, RICHARD M., Woodstock, Vt.....1907
MARKS, EDWARD SIDNEY, 655 Kearney Ave., Arlington, N. J.....1915
MARRS, Mrs. KINGSMILL, 9 Commonwealth Ave., Boston, Mass.....1903
MARSHALL, ELLA M. O., New Salem, Mass.....1912
MARTIN, Miss MARIA ROSS, Box 365, New Brunswick, N. J.....1902
MARX, EDWARD J. F., 207 Burke St., Easton, Pa.....1907
MATTERN, EDWIN S., 1042 Walnut St., Allentown, Pa.....1912
MATTERN, WALTER I., 1042 Walnut St., Allentown, Pa.....1912
MCCLINTOCK, NORMAN, 504 Amberson Ave., Pittsburgh, Pa.....1900
MCCONNELL, THOMAS S., 1813 Huey St., McKeesport, Pa.....1915
MCCOOK, PHILIP J., 571 Park Ave., New York City.....1895
MCILHENNY, EDWARD AVERY, Avery Island, La.....1894
MCLAIN, ROBERT BAIRD, Room 26, McLain Building, Wheeling, W. Va.....1893
MCLANE, JAMES LATIMER, Jr., Garrison P. O., Baltimore, Md.....1915
MCLEAN, Hon. GEO. P., Simsbury, Conn.....1913
MCMAHON, WALT F., 74 Eddy St., West Newton, Mass.....1913
MCMILLAN, Mrs. GILBERT, Gorham, N. H.....1902
MEAD, Mrs. E. M., 303 W. 84th St., New York City.....1904
MEANS, CHAS. J., 29 Marlborough St., Boston, Mass.....1912
MEEKER, JESSE C. A., 51 Washington Ave., Danbury, Conn.....1915
MENGEL, G. HENRY, 739 Madison Ave., Reading, Pa.....1913
MERRIAM, CHARLES, Weston, Mass.....1908
MERRIAM, HENRY F., 26 Wyoming Ave., Maplewood, N. J.....1905
MERRILL, ALBERT R., Hamilton, Mass.....1912
MERRILL, D. E., State College, New Mexico.....1913
MERRILL, HARRY, 316 State St., Bangor, Maine.....1883
MERSHON, W. B., Saginaw, Mich.....1905
METCALF, Z. P., A. & M. College, West Raleigh, N. C.....1913
MEYER, Lieut. G. RALPH, C. D. of Oahu, Honolulu, H. I.....1913
MEYER, Miss HELOISE, Lenox, Mass.....1913
MILLER, Miss BERTHA STUART, Box 2, Palisade, N. J.....1915
MILLER, CHAS. W., Jaffna College, Jaffna, Ceylon.....1909
MINER, LEO D., 1836 Vernon St., N. W. Washington, D. C.....1913
MITCHELL, CATHERINE ADAMS, Riverside, Ill.....1911
MITCHELL, Dr. WALTON I., 603 Beacon Bldg., Wichita, Kan.....1893

MOORE, HENRY D., Haddonfield, N. J.....1911
MOORE, WILLIAM G., 257 W. Main St., Haddonfield, N. J.....1910
MORCOM, G. FREAN, Box 175, Huntington Beach, Cal.....1886
MORLEY, S. GRISWOLD, 2535 Etna St., Berkeley, Cal.....1911
MORRISON, ALVA, 53 Middle St., Braintree, Mass.....1915
MORSE, ELIZA A., 21 Elm St., Worcester, Mass.....1913
MORSE, HARRY GILMAN, Huron, Ohio.....1912
MOSHER, FRANKLIN H., 17 Highland Ave., Melrose Highlands, Mass..1905
MOUSLEY, WM. HENRY, Hatley, Que., Canada.....1915
MUNRO, J. A., Okanagan Landing, British Columbia, Canada.....1913
MUNSON, Prof. WILLIAM H., 208 Winona St., Winona, Minn.....1915
MURIE, O. J., Sellwood 219 7th Ave., Moorhead, Minn.....1913
MYERS, Mrs. HARRIET W., 311 N. Ave. 66, Los Angeles, Cal.....1906
MYERS, Miss LUCY F., Brookside, Poughkeepsie, N. Y.....1898
NEWELL, Mrs. H. S., 2431 E. 5th St., Duluth, Minn.....1912
NIMS, Mrs. LUCIUS, 17 Union St., Greenfield, Mass.....1913
NOKES, Dr. I. D., 820 Marsh-Strong Bldg., Los Angeles, Cal.....1915
NOLTE, Rev. FELIX, St. Benedict's College, Atchison, Kan.....1903
NORRIS, J. PARKER, Jr., 2122 Pine St., Philadelphia, Pa.....1904
NORRIS, ROY C., 725 N. 10th St., Richmond, Ind.....1904
NOVY, FRANK ORIEL, 721 Forest Ave., Ann Arbor, Mich.....1909
OGDEN, Dr. HENRY VINING, 141 Wisconsin St., Milwaukee, Wis.....1897
OHL, H. C., 1457 Jay St., Fresno, Cal.....1913
OLDYS, HENRY, Silver Springs, Md.....1896
*OLIVER, Dr. HENRY KEMBLE, 4 Newbury St., Boston, Mass.....1900
ORDWAY, Miss ELIZABETH I., 20 Myrtle St., Winchester, Mass.....1913
OSBORN, ARTHUR A., 58 Washington St., Peabody, Mass.....1912
OTTEMILLER, FREE, 30 N. Pine St., York, Pa.....1914
OVERTON, Dr. FRANK, Patchogue, N. Y.....1909
*OWEN, Miss JULIETTE AMELIA, 306 N. 9th St., St. Joseph, Mo.....1897
PAINE, AUGUSTUS G., Jr., 18 West 49th St., New York City.....1886
PALMER, S. C., Swarthmore College, Swarthmore, Pa.....1899
PANGBURN, CLIFFORD H., 1001 Cherry St., Philadelphia, Pa.....1907
PAUL, LUCIUS H., 19 Aurora St., Rochester, N. Y.....1908
PEABODY, LLOYD, 645 Delaware Ave., St. Paul, Minn.....1915
PEABODY, Rev. P. B., Blue Rapids, Kan.....1903
PECK, MORTON E., 1458 Court St., Salem, Ore.....1909
PENARD, THOS. E., 16 Norfolk Rd., Arlington, Mass.....1912
PENFIELD, Miss ANNIE L., 155 Charles St., Boston, Mass.....1912
PENNINGTON, FRED ALBERT, 5529 Kenwood Ave., Chicago, Ill.....1910
PEPPER, Dr. WM., 1811 Spruce St., Philadelphia, Pa.....1911
PERKINS, ARTHUR W., Farmington, Me.....1915
PERKINS, Dr. GEO. H., Burlington, Vt.....1912
PERRY, Dr. HENRY JOSEPH, 636 Beacon St., Boston, Mass.....1909
PETERS, ALBERT S., Lake Wilson, Minn.....1908

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PETERS, JAMES LEE, Harvard, Mass.....1904
PHELPS, FRANK M., 212 E. 4th St., Elyria, Ohio.....1912
PHELPS, Mrs. J. W., Box 36, Northfield, Mass.....1899
PHILIPP, PHILIP B., 220 Broadway, New York City.....1907
PHILLIPS, ALEXANDER H., 54 Hodge Road, Princeton, N. J.....1891
PHILLIPS, CHAS. LINCOLN, 5 West Weir St., Taunton, Mass.....1912
PINCHOT, GIFFORD, 1617 Rhode Island Ave., Washington, D. C.....1910
PLATT, Mrs. DAN F., Englewood, N. J.....1913
POE, Miss MARGARETTA, 1204 N. Charles St., Baltimore, Md.....1899
POND, Miss ELLEN J., 160 Lexington Ave., New York City.....1909
PORTER, Rev. E. C., 24 Randolph St., Arlington, Mass.....1912
PORTER, LOUIS H., Stamford, Conn.....1893
POTTER, JULIAN K., 563 Bailey St., Camden, N. J.....1912
PRAEGER, WILLIAM E., 421 Douglas Ave., Kalamazoo, Mich.....1892
PRICE, JOHN HENRY, Crown W Ranch, Knowlton, Mont.....1906
PRICE, LIGON, R. F. D. 1, Box 44, Dunmore, W. Va.....1913
PRIMM, ROY LEE, 1113 W. Dayton St., Madison, Wis.....1912
PURDY, JAMES B., R. F. D. 4, Plymouth, Mich.....1893
QUIGGLE, JAMES C., McElhattan, Pa.....1915
RADETSKY, HARVEY D., 4433 Federal Boulevard, Denver, Colo.....1915
RAMSDEN, CHAS. T., Box 146, Guantanamo, Cuba.....1912
REA, PAUL M., Charleston Museum, Charleston, S. C.....1912
REAGH, Dr. ARTHUR LINCOLN, 39 Maple St., West Roxbury, Mass..1896
REDFIELD, Miss ELISA W., 29 Everett St., Cambridge, Mass.....1897
REED, HUGH DANIEL, 108 Brandon Place, Ithaca, N. Y.....1900
REHN, JAMES A. G., 6033 B Catherine St., Philadelphia, Pa.....1901
REYNOLDS, THEO. E. W., R. F. D. 2, Box 92, Kent, Wash.....1912
RHOADS, CHARLES J., National Reserve Bank, Philadelphia, Pa.....1895
RICE, JAMES HENRY, Jr., Summerville, S. C.....1910
RICE, WARD J., Roachdale, Ind.....1913
RICHARDS, Miss HARRIET E., 36 Longwood Ave., Brookline, Mass..1900
RICHARDSON, WYMAN, 50 Claverly Hall, Cambridge, Mass.....1912
RIKER, CLARENCE B., 43 Scotland Road, South Orange, N. J.....1885
RIPLEY, Mrs. J. W., 67 Greenleaf St., Malden, Mass.....1912
ROBBINS, CHARLES A., Onset, Mass.....1914
ROBERTS, WILLIAM ELY, 5513 Irving St., Philadelphia, Pa.....1902
ROBERTSON, HOWARD, 157 S. Wilton Drive, Los Angeles, Cal.....1911
ROBINSON, ANTHONY W., 401 Chestnut St., Philadelphia, Pa.....1903
ROE, CHAS. M., 3012 Bathgate St., Cincinnati, O.....1906
*ROGERS, CHARLES H., Amer. Mus. Nat. Hist., New York City.....1904
ROOSEVELT, FRANKLIN DELANO, Hyde Park, N. Y.....1896
ROPER, KENYON, 509 N. 4th St., Steubenville, Ohio.....1911
ROSS, GEORGE H., 23 West St., Rutland, Vt.....1904
ROSS, Dr. LUCRETIUS H., 507 Main St., Bennington, Vt.....1912
ROWLEY, JOHN, 42 Plaza Drive, Berkeley, Cal.....1889

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SACKETT, CLARENCE, Rye, N. Y.....1910
SANBORN, COLIN C., P. O. Box 50, Evanston, Ill.....1911
SAUNDERS, ARETAS A., Y. M. C. A. Building, New Haven, Conn.....1907
SAVAGE, JAMES, 1097 Ellicott Sq., Buffalo, N. Y.....1895
SAVAGE, WALTER GILES, Glenwood, Ark.....1898
SAWYER, EDMUND J., Box 123, Watertown, Mass.....1915
SCHENCK, FREDERIC, Lenox, Mass.....1912
SCHERMERHORN, CHARLES F., Oak Knoll, Fla.....1915
SCHORGER, A. W., Forest Products Laboratory, Madison, Wis.....1913
SHANNON, WM. PURDY, 1170 Broadway, New York City.....1908
SHARPLES, ROBERT P., West Chester, Pa.....1907
SHAW, CHAS. F., 676 Bedford St., North Abington, Mass.....1912
SHAW, WILLIAM T., 600 Linden Ave., Pullman, Wash.....1908
SHEARER, Dr. AMON R., Mont Belvieu, Tex.....1905
SHELDON, CHARLES, Woodstock, Vt.....1911
SHELTON, ALFRED, Univ. of Ore., Eugene, Ore.....1911
SHOEMAKER, CLARENCE R., 3116 P St., Washington, D. C.....1910
SHOFFNER, CHARLES P., 28 German-American Bldg., Phila., Pa.....1915
SHROSBREE, GEORGE, Public Museum, Milwaukee, Wis.....1899
SILLIMAN, O. P., 220 Salinas St., Salinas, Cal.....1915
SIMMONS, GEO. FINLAY, 622 First National Bank, Houston, Texas...1910
SMITH, AUSTIN PAUL, 742 Pennsylvania Ave., San Antonio, Texas...1911
SMITH, Rev. FRANCIS CURTIS, 812 Columbia St., Utica, N. Y.....1903
SMITH, Prof. FRANK, 913 West California Ave., Urbana, Ill.....1909
SMITH, HORACE G., State Museum, State House, 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, NAPIER, 46 Côtés des Neiges Road, Montreal, Quebec.....1915
SMYTH, Prof. ELLISON A., Jr., Polytechnic Inst., Blacksburg, Va....1892
SNYDER, WILL EDWIN, 309 De Clark St., Beaver Dam, Wis.....1895
SPELMAN, HENRY M., 48 Brewster St., Cambridge, Mass.....1911
SQUIER, THEO. L., 149 Freemont St., Battle Creek, Mich.....1915
STANTON, Prof. J. Y., 410 Main St., Lewiston, Me.....1883
STANWOOD, Miss CORDELIA JOHNSON, Ellsworth, Me.....1909
STEPHENS, T. C., Morningside College, Sioux City, Iowa.....1909
STEVENS, FRANK E., 25 Hudson St., Somerville, Mass.....1912
STEVENS, Dr. J. F., Box 546, Lincoln, Neb.....1908
STEWART, PHILLIP B., 1228 Wood Ave., Colorado Springs, Colo.....1915
STEWART, Mrs. PHILLIP B., 1228 Wood Ave., Colorado Springs, Colo.1915
STILES, EDGAR C., 345 Main St., West Haven, Conn.....1907
ST. JOHN, EDWARD PORTER, 57 Farmington Ave., Hartford, Conn...1911
STOCKBRIDGE, CHAS. A., Fort Wayne, Ind.....1911
STODDARD, HERBERT LEE, Field Museum Nat. Hist., Chicago, Ill...1912
STONE, CLARENCE F., Branchport, N. Y.....1903
STREET, J. FLETCHER, Beverly, N. J.....1908
STUART, FRANK A., Marshall, Mich.....1915
STUART, GEO. H., 3rd, 923 Clinton St., Philadelphia, Pa.....1913

Sturgis, S. Warren, Groton, Mass.....1910
Sturtevant, Edward, St. George's School, Newport, R. I.....1896
Sugden, Arthur W., 52 Highland St., Hartford, Conn.....1913
Surface, Harvey Adam, State Zoölogist, Harrisburg, Pa.....1897
Swain, John Merton, Box 528, Farmington, Me.....1899
Swenk, Myron H., 3028 Starr Street, Lincoln, Neb.....1904
Taylor, Alexander R., 1410 Washington St., Columbia, S. C.....1907
Teachenor, Dix, 3230 Woodland Ave., Kansas City, Mo.....1915
Terrill, Lewis McI., 53 Stanley Ave., St. Lambert, Quebec.....1907
Thomas, Miss Emily Hinds, Bryn Mawr.....1901
Tinker, Almerin D., 631 S. 12th St., Ann Arbor, Mich.....1907
Tower, Mrs. Kate Denig, 9 Newbury St., Boston, Mass.....1908
Townshend, Henry Hotchkiss, 69 Church St., New Haven, Conn...1915
Treganza, A. O., 614 E. South St., Salt Lake City, Utah.....1906
Trotter, William Henry, 36 N. Front St., Philadelphia, Pa.....1899
Tudbury, Warren C., 621 Citizens' Nat. Bank Bldg., Los Angeles, Cal.....1903
Tufts, Miss Mary I., 1 Atlantic St., Lynn, Mass.....1910
Tweedy, Edgar, 404 Main St., Danbury, Conn.....1902
Tyler, John G., 1114 Belmont Ave., Fresno, Cal.....1912
Tyler, Dr. Winsor M., 522 Massachusetts Ave., Lexington, Mass..1912
Valentine, Miss Anna J., Bellefonte, Pa.....1905
Van Cortlandt, Miss Anne S., Croton-on-Hudson, N. Y.....1885
Van Name, Willard Gibbs, 121 High St., New Haven, Conn.....1900
Vantassell, F. L., 116 High St., Passaic, N. J.....1907
Vetter, Dr. Charles, 2 West 88th St., New York City.....1898
Vietor, Dr. Edward W., 166 St. James Place, Brooklyn, N. Y.....1911
Vietor, Mrs. Edward W., 166 St. James Place, Brooklyn, N. Y.....1914
Visher, Dr. Stephen S., 1018 S. 7th Ave., Moorhead, Minn.....1904
Wadsworth, Clarence S., 37 Washington St., Middletown, Conn..1906
Waite, Mrs. J. Gilman, 19 Pearl St., Medford, Mass.....1912
Walker, Dr. R. L., 355 Main Ave., Carnegie, Pa.....1888
Wallace, Chas. R., 69 Columbus Ave. Delaware, Ohio.....1913
Wallace, James S., 12 Wellington St., E., Toronto, Ontario.....1907
Walter, Dr. Herbert E., 67 Oriole Ave., Providence, R. I.....1901
Walters, Frank, 40 West Ave., Great Barrington, Mass.....1902
Ward, Frank H., 18 Grove Place, Rochester, N. Y.....1908
Ward, Mrs. Martha E., 25 Arlington St., Lynn, Mass.....1909
Ward, Roy A., Biological Survey, Washington, D. C.....1915
Warner, Edward P., Concord, Mass.....1910
Watson, Mrs. Alex M., 124 Hatton St., Portsmouth, Va.....1910
Weber, J. A., Palisades Park, N. J.....1907
Wellman, Gordon B., 54 Beltran St., Malden, Mass.....1908
Wetmore, Mrs. Edmund, 125 E. 57th St., New York City.....1902
Weygandt, Dr. Cornelius, Wissahickon Ave., Mt. Airy, Philadelphia, Pa.....1907

WHARTON, WILLIAM P., Groton, Mass.....1907
WHITE, FRANCIS BEACH, St. Paul's School, Concord, N. H.....1891
WHITE, GEORGE R., Dead Letter Office, Ottawa, Ontario.....1903
WHITE, Dr. JAMES C., 259 Marlborough St., Boston, Mass.....1913
WHITE, W. A., 158 Columbia Heights, Brooklyn, N. Y.....1902
WILBUR, ADDISON P., 60 Gibson St., Canandaigua, N. Y.....1895
WILCOX, T. FERDINAND, 118 E. 54th St., New York City.....1895
WILLARD, BERTEL G., 1619 Massachusetts Ave., Cambridge, Mass...1906
WILLARD, FRANK C., Tombstone, Arizona.....1909
WILLCOX, Prof. M. A., 63 Oakwood Road, Newtonville, Mass.....1913
WILLIAMS, Miss BELLE, Sec., Audubon Soc., Columbia, S. C.....1915
WILLIAMS, ROBERT S., New York Botanical Gardens, New York City..1888
WILLIAMS, ROBERT W., Tallahassee, Fla.....1900
WILLIAMSON, E. B., Bluffton, Ind.....1900
WILLIS, Miss CLARA L., 1615 Beacon St., Waban, Mass.....1915
WILLISTON, Mrs. SAMUEL, 577 Belmont St., Belmont, Mass.....1911
WINDLE, FRANCIS, West Chester, Pa.....1909
WING, DEWITT C., 5401 Dorchester Ave., Chicago, Ill.....1913
WINSLOW, ARTHUR M., Jackson, Mich.....1912
WOOD, J. CLAIRE, 179 17th St., Detroit, Mich.....1902
WOOD, NELSON R., Smithsonian Institution, Washington, D. C.....1895
WOODRUFF, LEWIS B., 14 E. 68th St., New York City.....1886
WRIGHT, ALBERT H., 707 E. State St., Ithaca, N. Y.....1906
WRIGHT, Miss HARRIET H., 1637 Gratiot Ave., Saginaw, W. S., Mich.1907
WRIGHT, HORACE WINSLOW, 107 Pinckney St., Boston, Mass.....1902
WRIGHT, SAMUEL, Conshohocken, Pa.....1895
WYMAN, LUTHER E., 3927 Wisconsin St., Los Angeles, Cal.....1907
YOUNG, JOHN P., 1510 5th Ave., Youngstown, Ohio.....1911
ZIMMER, J. T., 42 Holdrege St., Lincoln, Neb.....1908

DECEASED MEMBERS.

Fellows.

	Date of Death
Aldrich, Charles	March 8, 1908
Baird, Spencer Fullerton	Aug. 19, 1887
Bendire, Charles Emil	Feb. 4, 1897
Coues, Elliott	Dec. 25, 1899
Elliot, Daniel Giraud	Dec. 22, 1915
Goss, Nathaniel Stickney	March 10, 1891
Holder, Joseph Bassett	Feb. 28, 1888
Jeffries, John Amory	March 26, 1892
McIlwraith, Thomas	Jan. 31, 1903
Merrill, James Cushing	Oct. 27, 1902
Purdie, Henry Augustus	March 29, 1911
Sennett, George Burritt	March 18, 1900
Trumbull, Gurdon	Dec. 28, 1903
Wheaton, John Maynard	Jan. 28, 1887

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Barboza du Bocage, José Vicente	July —, 1908
Berlepsch, Hans von	Feb. 27, 1915
Burmeister, Karl Hermann Konrad	May 1, 1891
Cabanis, Jean Louis	Feb. 20, 1906
Dresser, Henry Eeles	Nov. 28, 1915
Gätke, Heinrich	Jan. 1, 1897
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Lawrence, George Newbold	Jan. 17, 1895
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Newton, Alfred.....June 7, 1907
Parker, William Kitchen.....July 3, 1890
Pelzeln, August von.....Sept. 2, 1891
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Saunders, Howard.....Oct. 20, 1907
Schlegel, Hermann.....Jan. 17, 1884
Sclater, Philip Lutley.....June 27, 1913
Seebohm, Henry.....Nov. 26, 1895
Sharpe, Richard Bowdler.....Dec. 25, 1909
Taczanowski, Ladislas [Casimirovich].....Jan. 17, 1890
Wallace, Alfred Russel.....Nov. 7, 1913

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Anderson, John.....Aug. 15, 1900
Baldamus, Auguste Karl Eduard.....Oct. 30, 1893
Blakiston, Thomas Wright.....Oct. 15, 1891
Blasius, [Paul Heinrich] Rudolph.....Sept. 21, 1907
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Bogdanow, Modest Nikolaevich.....March 16, 1888
Brooks, William Edwin.....Jan. 18, 1899
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Radde, Gustav Ferdinand Richard von. March 15, 1903
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Bagg, Egbert. July 12, 1915
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Associates.

Adams, Charles Francis. May 20, 1893
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Antes, Frank Tallant. Feb. 6, 1907
Atkins, Harmon Albro. May 19, 1885
Avery, William Cushman. March 11, 1894
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NESTS OF THE TENNESSEE WARBLER (*Vermivora peregrina*).

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THE TENNESSEE WARBLER IN NEW BRUNSWICK.

BY B. S. BOWDISH AND P. B. PHILIPP.

Plate I.

DURING an expedition made by Messrs. T. F. Wilcox and P. B. Philipp to northern New Brunswick in 1914, two male Tennessee Warblers (*Vermivora peregrina*) were secured in breeding condition. No females were taken and no nests were found, but the birds were believed to have certainly been breeding, both because of the condition of the specimens taken, and the persistence of the males in remaining day after day in or about the small areas where they were first noted.

In June, 1915, a visit was made by the authors to the same locality for the purpose of obtaining data as to the breeding habits of the species. The number of nests found and the consequent amount of breeding data collected are thought sufficient to warrant the publication of the present notes, especially in view of the meagreness of the published accounts of the breeding habits of this none too common bird.

The region in question is particularly well adapted to the nesting requirements of the Tennessee Warbler, as we noted them during the above period. Extensive lumbering has removed the greater part of the large growth spruce and balsam timber, which forms the great bulk of the forests of this region, leaving areas of small trees, which, in the older clearings, have grown thickly, and to an

average height of ten feet. These are interspersed with areas of more or less open, large timber, and others where the second growth has reached little more than the proportions of somewhat scattered shrubbery. The essentially level surface is frequently scored by slight depressions which form the beds of tiny streams, bordered on either side by boggy ground, dotted with grass tussocks, bushes and small trees, and overspread with a luxuriant growth of moss. Such areas are most numerous in cleared tracts, but not infrequent in the edges and the more open portions of the woods. These are the summer home-sites of the Tennessee Warbler.

While it was natural to expect to find this bird breeding under similar conditions as its near congener, the Nashville Warbler, and while some of the scanty data suggested that it did so, certain statements were extant to the effect that the nests were to be found "in low bushes near the ground," doubtless the basis for such an assertion being one or two nests alleged to have been taken from small bushes at a height of three or four feet. The very few reliable records we have been able to find, coinciding largely with our own experience, suggest a doubt as to the correctness of identification of nests taken from such situations, and purporting to be those of the Tennessee Warbler.

This Warbler, because of its inconspicuous gray and olive green coloring, might easily escape observation, save for the singing of the males which perch high up in the large trees where they sing almost constantly. At the time of our visit to the breeding country, in the middle of June, nest building was completed and full sets of eggs had been laid. Altogether, ten nests were located, all built on the ground in substantially the same general sort of situation, and all but two were found by flushing the bird. The nest is built in the moss, usually in a wet place at the foot of a small bush, and in most cases in woods, somewhat back from the more open part of the clearings. A hollow is dug in the moss, usually beneath an overhanging bunch of grass. The nest is in nearly every case entirely concealed and it is impossible to see it from any view-point without displacing the overhanging grass. Consequently unless the bird is flushed it would be all but impossible to find it. The outer foundation of the nest is of dry grass, forming quite a substantial structure. Several nests had whisps of grass stems extend-

ing from the front rim, as noted in description of first nest below. It is lined, usually, with fine dry grass, to which in some instances the quill-like hairs of the porcupine, or white moose hairs, are added, and more rarely still, fine hair-like roots which were not identified. The females, so far as observed, do all the incubating and sit very closely,— so closely, in fact, that one was caught alive on the nest, where the exact situation had been previously marked. The nest is so carefully concealed that even when the bird is flushed it is sometimes very difficult to find it, so deeply is it buried in the moss.

This species seems to be somewhat gregarious. In 1914, in one small clearing, five males were heard singing at the same time. In 1915, in the same clearing, three males were heard singing at once, and two nests were found. In almost every clearing of suitable size at least two pairs of birds were found, the nests being sometimes located rather close together. The females, when once flushed off the nest, are very shy about returning while the observer is about, but one can easily tell whether a flushed female has a nest in the immediate neighborhood by the utterance of a sharp "chip," which is nervously given, the bird flitting constantly about from twig to twig, a habit which makes them difficult to collect in the heavy undergrowth.

On the second day of our sojourn, June 19, we visited one of the typical nesting places of this warbler, a boggy, cleared swale, with scattering, small second growth, and soon flushed a female from a nest containing six fresh, or practically fresh, eggs. This nest, typical of the majority of those found in both construction and situation, was placed in the side of a small tussock, bedded in moss and completely overhung by the dead grass of the previous year's growth. The nest was composed entirely of fine, nearly white, dead grass stems. From the front rim protruded outward and downward, a wisp of dead grass tips, lying over the lower grasses in the tussock, and shingled over by the overhanging grass, establishing a continuity of the side of the tussock, thus cunningly adding to the perfect concealment. A tiny tree and one or two bush shoots grew from the tussock, close to the nest, and this feature was typical of the greater number of the nests found. Though larger, the nest was similar, both as to general appearance and situation,

to nests of the Nashville Warbler, found by Philipp and Wilcox the previous year, and to a nest of that species found by Bowdish in Ontario.

On June 20 another nest with six eggs was found, also situated in a moss bank, overhung with grass, in the edge of the woods and partially under the tips of a fallen dead branch. A nest with five fresh eggs, found on the same date, was snuggled down in the middle of a flat bed of moss, with little grass in the vicinity, and could be seen without the removal of any cover. This was the most striking departure from the type of nesting already described.

On June 22, a rainy day, the female was caught on the nest with six eggs, found June 20, by clapping a hat over the nest. On June 23 three nests were found, each containing five eggs, built in the typical situations before described. On June 24 another typically situated nest containing five eggs was found. Another was located on the same date which had been dragged from its original site, presumably by some mammal, bits of egg shell giving evidence of destruction of eggs. This was the most bulky and substantially built of all the nests found.

Another nest with five fresh eggs was found on June 26, and a nest in its original, typical situation, containing bits of egg shell, bespoke another tragedy. The last nest, found June 27, situated in the side of a grass tussock, in the edge of woods, just off a boggy clearing, contained *seven* eggs, in which incubation appeared to be half or more complete. These eggs had not hatched on July 1, the day before we left, and the last opportunity we had to examine the nest.

Four nests measured as follows, in inches:

1. Depth, outside, 2; inside, $1\frac{1}{2}$; diameter, outside, $3\frac{1}{2}$; inside, 2.
2. Depth, outside, $2\frac{1}{4}$; inside, $1\frac{1}{4}$; diameter, outside, 4; inside, $1\frac{1}{2}$.
3. Depth, outside, $3\frac{1}{4}$; inside, $1\frac{1}{8}$; diameter, outside, $3\frac{1}{2}$; inside, 2.
4. Depth, outside, 3; inside, $1\frac{1}{2}$; diameter, outside, 3; inside, $1\frac{1}{8}$.

None of these presented the "quite flat" appearance described by J. Parker Norris, Jr., in the nest taken by Allan Brooks in British Columbia. On the contrary, they were well cupped and, though far from bulky, were fairly substantially built.

The eggs vary from 5 to 7 in number, usually 5, and are dead white in ground color, well sprinkled with fine specks and small blotches of reddish brown, and less numerous and conspicuous lilac markings, more thickly about the large end, where, in perhaps a third of the specimens, they tend to form a wreath. Three sets measure as follows, in hundredths of an inch:

No. 1. .66 × .50; .62 × .47; .64 × .47; .62 × .47; .62 × .47; .62 × .47.

No. 2. .66 × .52; .65 × .51; .67 × .52; .64 × .51; .70 × .50.

No. 3. .64 × .49; .63 × .49; .65 × .47; .62 × .45; .63 × .47.

The males sing most persistently, and at all times of day, and as they sing from some perch, usually lofty, within a few rods of the nest, they give a good clue to its general location.

The song, though quite characteristic, is rather difficult to describe. In fact, the authors finding this beyond their powers, appealed to Mr. Louis Agassiz Fuertes, who kindly furnished the following notes:

"I would not recognize it among other 'Vermivoræ' by its 'chip,' but I usually spot its *song*, which to my ear is represented as 'Xee', Xee', Xee' see', see', see' see'-e-e-e-e-" or K'see'-K'see', xee', xee', see' see' see'-e-e-e-e-.' It is done in a thin or wiry quality of tone, high, like a Nashville's, and is the only Warbler song I know that is a consistent accelerando from end to end, all on the same pitch. Though wiry, it is frequently quite loud, and may be heard for some distance. It may — and probably does — have more elaborated songs for the period of early summer, which I have never heard."

As a basis for estimating the frequency of song repetition, counts were kept on three singing birds for a period of five minutes each, with a result of 32, 36 and 22 songs, respectively, within the period. In one instance, a bird was observed to sing while on the wing, repeating the song twice in the course of a short flight.

In addition to the birds of the ten nests observed, at least a dozen males were heard singing in other localities within a radius of four or five miles. The Tennessee Warbler would appear to be one of the most numerous warblers of this part of New Brunswick, while the two nesting records of the Nashville Warbler in 1914 and one nest with four eggs, found on dry upland, June 29 of the

present year, would, according to our experience, seem little more than casual.

The stomachs of four birds taken were preserved and sent to Mr. H. W. Henshaw, Chief of the Biological Survey, United States Department of Agriculture, who kindly furnished the following copies of analyses of contents:

No. 1, male, June 21, contents; eight small caterpillars (as in No. 3), 35%; Dipterous fragments, 23%; a small spider, 2%; scale-like fragments (perhaps of some catkin), 40%.

No. 2, female, June 22; empty.

No. 3, female, June 23, contents: a camponotid ant, 16%; at least 78 small caterpillars (Tortricidæ), 75%; a snail (Vitrea hammoides) 4%; unidentified vegetable fragments, 5%.

No. 4, male, June 28, contents: 3 Lampyrids near Podabrus, 8%; a small Coleopterous (?) larva, 3%; about 15 small caterpillars (as in No. 3), 25%; a Neuropterous insect (apparently a caddis fly), 50%; 2 small spiders, 14%; trace of unidentified vegetable matter.

In connection with the subject of food, a note published in the 'Bulletin of the Nuttall Ornithological Club,' Vol. V, 1880, page 48, by J. A. Allen, cites destruction of grapes by these birds in Kansas in September of the previous year, the birds puncturing the skin and eating the pulp or succulent parts.

On the other hand, W. F. McAtee, describing his experience with injury to grapes by these birds, in 'The Auk,' Vol. XXI, 1904, page 489, found that while puncturing many grapes, the Warblers did not eat the pulp, but seemed to quench their thirst with the juice. Examination of stomach contents showed insects of species most injurious to grapevines, and as the Warblers are present in the grape growing areas as transients only, it is argued that such harm as is wrought by the grape puncturing habit is probably far more than offset by the insects eaten. The suggestion is also made that by supplying abundance of water, the injurious habit might be eliminated.

Little information seems available as to the migration of the Tennessee Warbler in New Brunswick. The Biological Survey has but two records of arrival, both for Petit Codiac, by John Brittain; May 19, 1886, and May 26, 1888.

In conclusion, it may be of interest to cite the more pertinent

published data respecting the breeding of the Tennessee Warbler, which we have been able to locate.

In 'The Warblers of North America,' Chapman cites C. J. Maynard 'Birds of Coos Co., N. H. and Oxford Co., Me.,' (Proceedings Boston Society Natural History, 1871, page 7) who "found it to be very common in wooded localities about Umbagog." The citation does not state that nests were found and we have not been able to consult the source cited.

H. D. Minot, 'Land and Game Birds of New England,' 1876, states that "the nest and eggs are essentially like those of the Nashville Warbler, though the eggs vary and exhibit certain peculiar forms, and though the nest is 'often placed in the woods.'"

In the 'Bulletin of the Nuttall Ornithological Club,' Vol. VI, 1881, page 7, C. Hart Merriam, in 'Birds of the Adirondac Region,' states of the Tennessee Warbler: "Breeds. Not rare in suitable localities. Generally prefers hard-wood areas." In a list of the birds of Point De Monts, Quebec, the same author in the same publication, Vol. VII, 1882, page 234, says: "A tolerably common summer resident."

J. H. Langille, 'Our Birds in Their Haunts,' 1884, says "It breeds far to the north, its nest having been found in Michipicoton, on Lake Superior."

Ernest Thompson Seton, 'The Birds of Western Manitoba,' (Auk, Vol. III, 1886, pages 325-326) gives the Tennessee Warbler as a "Rare summer resident."

Walter Faxon found a singing male in Berkshire Co., Mass., July 15, 1888; (Auk, Vol. VI, 1889, page 102). He quotes William Brewster as always having found it in conifer regions and C. H. Merriam and J. A. Allen as having found it frequenting hard wood.

John Brittain and Philip Cox, Jr., in notes on summer birds of the Restigouche Valley, New Brunswick (Auk, Vol. VI, 1889, page 118) give the Tennessee Warbler as "Very rare."

In 'Bulletin No. 18, United States Department of Agriculture — Bureau of Biological Survey,' Wells W. Cooke records two sets of eggs taken by one of the parties of the Biological Survey in the summer of 1901 at Fort Smith, Mackenzie. "These eggs are among the first absolutely authentic specimens known to science." This note however gives no description of the nesting habits.

J. Parker Norris, Jr., describes (Auk, Vol. XIX, 1902, page 88) a nest and four eggs in his collection, taken by Allan Brooks at Cariboo, British Columbia, June 15, 1901. On the same date Brooks found another nest with newly hatched young and several more nests with young the following week. From this it would appear that the breeding season there was a week or two earlier than we found it in New Brunswick. We infer from Brooks' data that he found the birds nesting on dry ground, but otherwise the situation of the nests, arched over by dry grass, seems to have been the same as in the case of the New Brunswick nests. Norris' description of these eggs agrees largely with those we observed, but his nest differs both as to the flat appearance previously mentioned and in having a greater variety of material, leaves not occurring in the nests we found, while moss was seldom used by the New Brunswick birds. A photograph of the nest in the Norris collection appears in 'The Oölogist,' (Vol. XXII, 1905, page 134).

Macoun's Catalogue of Canadian Birds, as to breeding, only quotes the description of the Norris nest, above mentioned, and an alleged nest reported by W. Raine as having been taken near Edmonton, Alberta, in 1899, situated two feet up in a willow bush. O. W. Knight in his 'Birds of Maine' reports a nest found by C. D. Farrer, near South Lewiston, Maine, June 4, 1895, containing five eggs, advanced in incubation, and other nests with young, found near Bangor, Maine.

The August, 1915, issue of 'The Oölogist' reports a nest and four eggs in the collection of Gerard Alan Abbott, taken by E. Arnold, at Gaff Topsail, Newfoundland, June 25, 1913.

THE COURTSHIP OF THE MERGANSER, MALLARD, BLACK DUCK, BALDPATE, WOOD DUCK AND BUFFLEHEAD.[1]

BY CHARLES W. TOWNSEND, M. D.

THE following studies have all been made within the limits of large cities, where the birds, protected from gunners, act without fear and show, sometimes at close range, their natural characteristics. The Baldpate has been studied at Jamaica and Leverett Ponds, the Merganser, Mallard and Black Duck at these ponds and in the Fens and Back-Bay Basin — all in the Boston Park System — in the reservoir at Chestnut Hill and at Fresh Pond in Cambridge. All of these bodies of water are within four miles of the Boston State House, and, as I frequently pass near them, I have made a practice for several years of stopping whenever possible and watching the ducks through strong binoculars. The Bufflehead has been studied chiefly at Squantum and at Lynn Beach, while the Wood Duck has been watched at still closer range in the Boston Zoölogical Park. All my notes, which were made on the spot and extend over several years, are drawn upon so as to give as complete a picture as possible for each bird. This seems worth while as so little has been published on the courtship of North American ducks. The reader is referred to previous papers on the courtship of the Golden-eye and Eider [2] and of the Red-breasted Merganser.[3]

The occupations of wintering ducks may be roughly divided into three parts. Most of their time is spent in procuring food either by diving or dipping; another part is devoted to preening their feathers and to sleeping either on the water or on the shore or ice; the rest is devoted to courtship. Courtship is commonly to be seen in the autumn months, less frequently in December and January, but it occupies more and more time and increases in ardency during February, March and April, before the departure of the

[1] Read before the Nuttall Ornithological Club, April 26, 1915.
[2] Auk, XXVII, 1910, p. 177.
[3] Auk, XXVIII, 1911, p. 341.

birds for the breeding grounds. A group of birds are apt to be all doing the same thing at the same time. For example, courting may be going on actively, when suddenly the flock takes to diving or dipping. Again the birds may become indolent, and doze and preen themselves, so that one may often be disappointed on visiting a pond to find the ducks all feeding or dozing and not courting. If one's time is limited, he may often draw a blank.

If, in a group of ducks the drakes are seen to be restlessly swimming back and forth or weaving their way in and out through the crowd as if they were at an afternoon tea, the case looks promising. This afternoon-tea-effect is very characteristic of courtship among water birds in general, and one can often tell at a glance whether courtship is in progress or not. The most favorable opportunity for observation is afforded when the ducks are crowded into a small area of open water near the shore by the freezing over of the larger part of the pond.

There is a great variety in the methods of courtship of ducks from the very spectacular performance,— the song and dance — of the Whistler to the simpler movements of the Mallard, but one can trace in most of them a general family resemblance. All are interesting as primitive forms of dancing, an art which has undergone wonderful developments in the human species, but undoubtedly owes its origin to courtship impulses. It is to be noted that, even among mankind, the dance may not be with the feet alone, but may include movements of the body, neck, head, arms and hands. Indeed certain human dances in Java and some of the Oceanic islands are limited to one or more of these last named movements without any leg action.

The courtship of the Merganser or Goosander (*Mergus americanus*), is fairly spectacular and differs widely from that of its red-breasted cousin, *M. serrator*. The only description I can find of it is one by Mr. William Brewster [1] who states that he saw the performance on March 16, 1909, at Fresh Pond, Cambridge. This and the brief description given by Mr. J. G. Millais [2] of the Courtship of the European Merganser (*Mergus merganser*),— a

[1] Bird Lore, XIII, 1911, p. 125–127.
[2] British Diving Ducks, 1913, vol. 2, p. 94.

bird which is regarded by many authors as identical with *M. americanus* — correspond very closely to my own observations which now follow:

A group of five or six male Mergansers may be seen swimming energetically back and forth by three or four passive females. Sometimes the drakes swim in a compact mass or in a file for six or seven yards or even farther, and then each turns abruptly and swims back. Again they swim in and out among each other, and every now and then one with swelling breast and slightly raised wings spurts ahead at great speed by himself or in the pursuit of a rival. The birds suggest swift motor boats by the waves which curl up on either side, and by the rapidity with which they turn and swash around. Again they suggest polo-ponies, as one in rapid course pushes sidewise against a rival, in order to keep him away from the object of the quest. They frequently strike at each other with their bills, and I have seen two splendid drakes rise up in the water breast to breast, and, amid a great splashing, during which it was impossible to see details, fight like game-cocks. The pursuit is varied by sudden, momentary dives and much splashing of water.

The smooth iridescent green heads, the brilliant carmine bills tipped with black nails, the snowy white of flanks and wing patches and the red feet, which flash out in the dive, make a wonderful color effect, contrasting well with the dark water and white ice. The smaller females with their shaggy brown heads, their neat white throat-bibs, their quaker blue-gray backs and modest wing patches, which are generally hidden, are fitting foils to their mates. I have reserved for the last the mention of the delicate salmon yellow tint of the lower breast and the belly of the male, a coloration of which he is deservedly proud, for, during courtship, he frequently raises himself up almost on to his tail with or without a flapping of the wings and reveals this color, in the same way that the Eider displays his jet black shield. Most of the time he keeps his tail cocked up and spread, so that it shows from behind a white centre and blue border. Every now and then he points his head and closed bill up at an angle of forty-five degrees or to the zenith. Again he bows or bobs his head nervously and often at the same time tilts up the front of his breast from which flashes out the salmon

tint. From time to time he emits a quickly repeated purring note, *dorr – dorr* or *krr – krr*.

The most surprising part of the performance is the spurt of water fully three or four feet long which every now and then is sent backwards into the air by the powerful kick of the drake's foot. It is similar to the performance of the Whistler but much greater, and while the foot of the Whistler is easily seen and is plainly a part of the display, it is difficult to see the red foot of the Merganser in the rush of water, although it is evident doubtless, to the females. The display of the brilliantly colored foot in both species is probably the primary sexual display, and the splash, at first incidental and secondary, has now become of primary importance.

During all this time the female swims about unconcernedly, merely keeping out of the way of the ardent and belligerent males, although she sometimes joins in the dance and bobs in a mild way. At last she succumbs to the captivating display and submerges herself so that only a small part of her body with a bit of the crest appear above the water, and she swims slowly beside or after her mate, sometimes even touching him with her bill. Later she remains motionless, flattens herself still more, the crest disappears and she sinks so that only a line like that made by a board floating on the water is seen. One would never imagine it to be a live duck. The drake slowly swims around her several times, twitches his head and neck, picks at the water, at his own feathers and at her before he mounts and completely submerges her, holding tightly with his bill to her neck meanwhile. Then she bathes herself, washes the water vigorously through her feathers and flaps her wings; the drake stretches himself and flaps his wings likewise. From the beginning of submergence by the female the process is the same in all the duck family that I have observed.

The Mallard (*Anas platyrhynchos*) is a common duck in Jamaica and Leverett Ponds, in the Fens and in the Back Bay Basin. Most of these birds have been introduced by the Park Department and semi-domesticated, and some are housed in winter, but there are always a considerable number that fly freely and spend the winter in the few open places at the entrance of springs and water courses that are to be found at that season. They are practically wild birds, and it is possible and probable that some are really wild.

Many of them have more or less blood of the Black Duck, but my courtship description applies to what appeared to be full blooded Mallards.

When the Mallard drake courts, he swims restlessly about following or sidling up to a duck. She may lead him quite a chase before she vouchsafes to acknowledge his presence, although he is continually bowing to her, bobbing his head up and down in nervous jerks so that the yellow bill dips into the water for a quarter of its length and comes up dripping. He also rears himself up in the water and from time to time displays his breast. She occasionally turns her head to one side and carelessly dabbles her bill in the water, but sooner or later, if all goes well, she begins to bow also, less vigorously at first — not touching the water at all — and to the empty space in front of her. Suddenly she turns and the pair bow to each other in the same energetic nervous jerks, and, unless a rival appears to spoil the situation, the drake has won his suit. A somewhat similar description of the courtship is given by J. G. Millais,[1] but none as far as I know has been given by American writers.

The most numerous duck in the fresh waters in and about Boston is the Black Duck and both *Anas rubripes rubripes* and *Anas rubripes tristis* are well represented throughout the winter and spring. A group of fifteen or twenty may be seen solemnly feeding by dipping, with their tails pointing zenithward, when they begin to swim about nervously, weaving their ways in and out among their fellows. Now one swims rapidly with head low and darts at another that, in order to avoid him, dives just below the surface with a great splashing with his wings. Soon nearly the whole group are chasing each other and diving awkwardly. Every now and then the short quack of the drake is heard, sometimes the loud croak of the duck. Now a drake flys for fifteen or twenty feet over the water with drooping body and legs and plumps down by a duck with a splash and an impetus that carries him three or four feet further. This is repeated again and again by the drakes and is a conspicuous part of the courtship. At times they bob the head in a manner exactly similar to that already described in the case of the

[1] The Natural History of the British Surface-feeding Ducks, 1902, p. 6.

Mallard. The bobbing does not continue so long, for the short flights seem to play a more essential and important part in the courtship of the Black Duck. It is possible that the white lower surface of the wings revealed in these short flights may have an entrancing effect on the females. The under surface of the wings of Pigeons who indulge in the same tactics on land are also white. It is a common courtship action however, even with birds whose under wing surface is not conspicuous and, it seems to me, these flights are very different from the pursuit in the air of the female by one or more males. The short flights are courtship displays for the purpose of attracting the female and of leading to a choice. The pursuit flights are different and are not in the nature of display; it is possible indeed that the choice has already been made. Such flights take place both in the case of the Black Duck and of the Mallard and probably of other species.

A striking instance of pursuit flight in the Black Duck observed in Southern Labrador in 1909, I have described as follows:[1]

"At Esquimeaux Point on June 2, as I was standing on the rocks on the shore, I was startled by the loud quack or croak characteristic of the female black duck, and looking up I saw two large black ducks, evidently males, in close pursuit of a smaller female. They doubled and twisted in a manner wonderful to see, as the duck appeared to be straining every nerve to elude the drakes. At last one of the drakes gave up the pursuit and disappeared over the low forest, whereupon the other drake and the duck sailed away together, as if it had all been arranged beforehand, straight to a secluded pool out of sight behind the rocks."

Mr. Bent has seen similar flights in the Mallard in Manitoba and thus describes it:[2] "I have seen as many as three males in ardent pursuit of one female, flying about high in the air, circling over the marshes in rapid flight and quacking loudly; finally the duck flies up to the drake of her choice, touches him with her bill and the two fly off together, leaving the unlucky suitors to seek other mates."

I have found no previous mention of the courtship of the Black

[1] "A Labrador Spring," 1910, p. 95.
[2] MS.

Duck except one by Mr. Edmund J. Sawyer [1] who describes the actions of two Black Ducks that flew repeatedly two or three rods back and forth in a small pool, alighting each time with splashings of the water while other ducks swam about unconcernedly. An interesting sketch of this courtship flight illustrates the article.

The Baldpate (*Mareca americana*) is a charming little duck with his pale blue bill, snowy white pate, and vinous breast. He is an arrant thief, however, and much prefers to rob his diving neighbors, particularly the Coot and Lesser Scaup, of their provender brought from the bottom by honest labor, than to search the shallower waters by his own limited method of dipping. The robbery is bold and open, and apparently awakens no resentment. In his courting he continually emits gentle but eager whistling notes, and with neck extended and head low, bill wide open and wings elevated behind so that the tips are pointed up at an angle of forty-five degrees, he swims rapidly over the water behind or beside the duck. Occasionally he pecks playfully at the side of her head, and now and then in his excitement jumps clear of the water and flies for two or three yards.

I have found no previous account of the courtship of this species. Millais' description of the courtship of the European Wigeon (*Mareca penelope*) shows a striking similarity, the only difference being in the character of the note emitted. Millais [2] says that as the female swims away, the drakes "follow in a close phalanx, every male raising his crest, stretching out his neck close over the water and erecting the beautiful long feathers of the scapulars to show them off. He also depresses the shoulder joint downwards, so as to elevate the primaries in the air. All the time the amorous males keep up a perfect babble of loud Whee — ous, and they are by far the noisiest of ducks in their courtship."

The courtship of the Wood Duck (*Aix sponsa*) is a pretty sight. The gorgeously colored drake swims close to his modest little wife who is dressed in quaker gray and wears large white spectacles. If she swims too fast for him he is apt to touch her head with his bill, and when she stops he jerks his head up and down in an

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[1] Bird Lore, XI, 1909, p. 195.
[2] British Surface-feeding Ducks, p. 45.

abbreviated bow. At the same time he whistles in a low sweet way as if he were drawing in rather than blowing out his breath. The feathers of his crest and head are at the same time erected.

The only description heretofore given of this courtship that I can find, with the exception of a partial one by Hatch,[1] is the following from Audubon:[2] "Observe that fine drake. How gracefully he raises his head and curves his neck. As he bows before the object of his love, he raises for a moment his silken crest. His throat is swelled and from it there issues a guttural sound, which to his beloved is as sweet as the song of the Wood Thrush to its gentle mate. The female as if not unwilling to manifest the desire to please which she really feels, swims close by his side, now and then caresses him by touching his feathers with her bill, and shows displeasure towards any other of her sex that may come near. Soon the happy pair separate from the rest, repeat every now and then their caresses, and at length having sealed the conjugal compact, fly off to the woods to search for a large Woodpecker's hole."

The Bufflehead (*Charitonetta albeola*) in nuptial plumage is a handsome sight and well deserves his name for his head is as large in proportion to his body as is the Buffalo's, for *buffle-head* means, I suppose, *buffalo-head.* The white triangle behind the eyes contrasts strikingly with the glossy greenish-black forehead, and the white of the flanks rolls up over the white of the wings. The female is much more modestly dressed and only a small white patch adorns her smaller head.

As far as I know the courtship of this species has never been described. Millais[3] says "From what I could gather from naturalists in British Columbia the Courtship is very like, if not exactly similar to that of the Golden-eye, but no one seems to have observed it at close range." As will be seen my own observations do not bear this out.

A group of thirty-five or forty of these birds with sexes about equally divided may have been actively feeding, swimming together in a compact flock all pointing the same way. They dive within a few seconds of each other and stay under water 14 to 20

[1] P. L. Hatch, "Notes on the Birds of Minnesota," 1892, p. 54.
[2] Birds of America, 1842, VI, p. 275.
[3] British Diving Ducks, Vol. I, p. 109.

seconds and repeat the diving at frequent intervals.[1] Suddenly a male swims vigorously at another with flapping wings, making the water boil, and soon each male is ardently courting. He spreads and cocks his tail, puffs out the feathers of his head and cheeks, extends his bill straight out in front close to the water and every now and then throws it back with a bob in a sort of reversed bow. All the time he swims rapidly, and, whereas in feeding the group were all swimming the same way in an orderly manner, the drakes are now nervously swimming back and forth and in and out through the crowd. Every now and then there is a commotion in the water as one or more drakes dive with a splashing of water only to come up again in pursuit or retreat. As the excitement grows a drake flaps his wings frequently and then jumps from the water and flies low with outstretched neck towards a duck who has listlessly strayed from the group. He alights beside her precipitately, sliding along on his tail, his breast and head elevated to their utmost extent and held erect. He bobs nervously. And so it goes.

RHYTHMICAL SINGING OF VEERIES.

BY HENRY OLDYS.

IN a recent article in 'The Independent' I made the following statement:

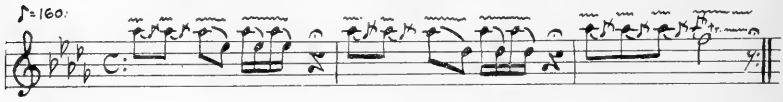
"Thrush songs are especially worthy of careful investigation, because of their advanced character. Those of superior Olive-backed, Hermit, and Wood Thrushes, disclose a rhythmical arrangement very satisfying to the human ear; and from incomplete study of the singing of the Veery, I am inclined to believe that the oboe phrases of this member of the thrush family will, in some instances, be found, on close attention, to show a similar arrangement."

Since this article was published (20th July, 1914) I have been so

[1] A series of four dives timed with a stop watch in the Back Bay Basin averaged 18 seconds, varying between 14 and 20 seconds. At Lynn Beach of four dives three were 17 seconds, one, 15 seconds, in duration.

fortunate as to have noted several verifications of this prediction, the first as recently as May 19, 1915. I was at Rhinebeck, N. Y., at the charming home of Mr. Maunsell S. Crosby, an enthusiastic student of bird life. In the late afternoon, as we were standing beside a large pond (or small lake) on his place, our attention was attracted by the singing of a Veery. Other Veery songs had greeted our ears, but this one particularly excited our interest because of its containing a short phrase with a closing trill. We had listened but a moment or two when it became evident that this shorter phrase occurred with regular frequency, following two other phrases, which differed from each other slightly and had each its fixed place in the song.

On our making this discovery I directed my efforts toward obtaining an exact record of the song. It is extremely difficult to record all the minor notes of a Veery or a Hermit Thrush, and the record I secured is not perfect in this respect. It shows, however, the principal notes — those that give the song its character — and is sufficiently correct to represent the phrases substantially as they were sung. The following is the record I made:



All the notes were given with the Veery 'burr,' which I have indicated by the wavy lines above them. While I listened the song was repeated fifteen or twenty times and, so far as I observed, without variation.

The proximity of the dinner hour compelled a suspension of my study of the song sooner than I should have wished; but I contented myself with the hope that I might have an opportunity to resume the study on the following morning before breakfast. In this I was disappointed, for although Mr, Crosby and I were on the scene very early the next morning, the bird remained absolutely silent during our entire stay in the vicinity. Perhaps it had passed on to the north.

No further opportunity presented itself for investigation of Veery music until a lecturing trip for the University of Minnesota

brought me to Taylor's Falls, Minn., on June 9. At this attractive spot beside the Dalles of the St. Croix I was so fortunate as to make several interesting ornithological notes, including the record of two rhythmical Veery songs. The first bird was singing in regular order three phrases, each with different closing notes, like those of the Rhinebeck Veery, and also with an additional opening note in the third phrase, as in the case of the Rhinebeck bird. To show the rhythm alone these phrases may be freely syllabled thus:

Wee-te-a-wee, te-a-wee, te-a-wee:
Wee-te-a-wee, te-a-wee, te-a-wee:
Wee-te-te-a-wee, te-a-wee, te-a-wee.

I did not take the notes, chiefly because of the presence in the vicinity of a voluble Rose-breasted Grosbeak, an energetic brass band with a particularly enthusiastic bass drummer, and a merry-go-round with the usual depressing music, traction-engine whistle, and other noise producers.

The second bird was uttering a song of *four* phrases, in which the first and third phrases were identical and ended with A flat; the second phrase was similar to these, but closed with G flat (both of these closing notes being long); and the fourth phrase was noticeably shorter than any of the others and was finished with an indeterminate broken chord.

The following day I was at Moose Lake, Minn., a point about forty miles south of Duluth. Veeries were plentiful and were singing freely. Every song I listened to critically consisted of three different phrases, repeated always in the same order. Another point of resemblance to the Rhinebeck song was that the first part of each phrase consisted of two higher notes and the second of a broken chord on a lower pitch repeated without further change of pitch. In the notations of Veeries' songs made by other musicians the closing notes have sometimes been represented as chords; but I believe that what these listeners heard were not actual chords, but broken chords, the separate notes of which were uttered so rapidly as to cause them to seem to blend in complete harmony.

The Veery's singing offers a very difficult study to the recorder of bird music; but because of its very difficulty it is especially tempting to an enthusiastic and conscientious explorer of this

neglected field of natural history. Because of its difficulty, also, it should be undertaken only by trained musicians. For while much excellent work in describing and differentiating bird songs has been done by naturalists who lack musical training, yet the final word as regards birds' notes must be spoken by the musician, whose education fits him to observe important features that are quite certain to escape the attention of one whose musical ear has never been cultivated. In lectures and writings I have persistently endeavored to arouse the interest of musicians in this fascinating and important phase of ornithological research; and while my efforts have met with some success, yet there is pressing demand for many, many more properly equipped students.

Let me take this opportunity to say a few words about the noting of bird songs. Adequate appreciation is not given by either naturalists or musicians to the fact that a number of problems, not inferior in importance to any to which ornithologists are devoting their energies, require for their solution careful and exhaustive study of the utterances of birds by competent musicians. The question of the extent of the part played by inheritance in specific songs is on a par with similar questions relating to migration, nest-building, feeding, and other activities of birds. The matter of the growth of vocal ability in young birds (which has scarcely been touched) and that of seasonal activity in singing are fully as important as the allied questions of plumage growth and seasonal moult — in each case development follows normally definite lines dependent on the previous evolutionary history of the species. And such problems as the reason for song, the origin of song, the reason for governance of bird music by laws of rhythmical sequence, similar to — often identical with — laws that govern human music, open up broad fields of research which in interest and value stand unrivaled; for they inseparably connect themselves with one of the greatest, most interesting, and least understood problems of psychology — the origin and development of æsthetic taste in man.

The young student of bird songs need not be discouraged if he finds his records out of accord with those of other observers; nor should he sweepingly condemn the work of others because of such discrepancy. Because of the great individual diversity of bird

songs; the impossibility in the case of some songs, of making more than merely suggestive records (though such suggestive records have a value, often important); and the extreme difficulty, in certain other instances, of securing a perfect record, legitimate differences of interpretation will arise in this branch of ornithology, as in all other branches. Such discrepancies will gradually disappear as knowledge progresses.

But all such points, be it understood, can best be discussed by musical scientists, rather than non-musical scientists, whose lack of musical information often leads them to offer frivolous and absurd objections. (One such criticism in the case of a published record of a Bewick's wren song showed ignorance of the fundamental fact that the key of a song merely indicates its pitch, and was based on the ludicrous notion that it would be more difficult for a bird to sing in six flats than in one!)

The study of thrush music is of especial value, owing to its advanced character in comparison with most bird music; and it is my earnest hope that musicians living within the breeding ranges of different members of the thrush family throughout the world may become interested in making permanent records of noteworthy songs, and thus preserve them to science.

TWO PROBLEMS IN THE MIGRATION OF WATER FOWL.

BY JOHN C. PHILLIPS.

I. Do American Ducks Reach the Marshall Islands?

I HAVE recently run across an ornithological item of great interest, which as far as I know has not been brought to the attention of American ornithologists. This concerns the capture of three species of American ducks in the Marshall Isles, northeast of New Guinea. These islands lie on the parallel of 10° N. latitude and are over 2200 miles southwest of the Hawaiian Islands and obviously far off the known course of any American migrants.

In 1899, Reichenow, the well-known German ornithologist, reported (Ornith. Monatsb., p. 41) that Herr Brandeis, Imperial Governor of the Marshalls, had written of a remarkable flight of birds. "Each year at the end of October, coming from the north, enormous wedge-shaped flocks of wild ducks come in continuous flight over Atoll Bikar, Uterick, Ailuk, Jemo, Likieb and Wotje. These flocks cover the sky for three or four days. Tired birds from these flights settle down on the islands and after they have recuperated, set out in small flocks in a *southerly direction* [italics mine] following the main flock. In May similar flocks appear again, flying north, which on this occasion take their way over Atoll Ailinglablab, and from there between Kwadjelin and Likieb and over Gasparico. The planter de Brum is going to obtain some specimens."

In the same Journal for 1901, p. 17, Herr Reichenow records the receipt of Marshall Island duck skins sent by Herr Dr. Bartels from Jaluit to the Zoölogical Museum at Berlin. The species were *Anas carolinensis*, *A. acuta americana* and *Nyroca valisneria*.

Reichenow adds that he thinks these ducks must come from Alaska, perhaps the valley of the Lower Yukon, and from there they may take their course along the Alaskan Peninsula to the Aleutian Islands and go south over the ocean. He asks where these ducks can winter, and adds that a further flight would take

them to the New Hebrides and New Zealand. Notwithstanding this, no such birds have ever been taken either there or in Australia, New Guinea or the Polynesia Isles. He thinks there must be some large shallow, quiet tracts in the Polynesian Ocean where sea-weed collects. Possibly they might find a feeding ground among the small coral islands between the Solomons and Australia.

The above facts excite no end of speculation but in view of the meagre data at hand and the extraordinary character of the information we must wait for further reports.

From the north Pacific coast to the Marshalls is roughly 5000 miles, a distance which is far greater than any trans-ocean flight yet known. Obviously until we know the predominating species among this body of ducks, it is almost impossible to guess at its origin. The farthest Pacific point which our migrants reach is the Hawaiian group. Here the Pintail and Shoveller are the only common ducks, and these are by no means in really large numbers, while the Baldpate, Mallard, Green-winged Teal, Buffle-head are extremely rare migrants (Henshaw, 1902). The Red-breasted Merganser is perhaps not quite so rare.

From this it does not seem likely that the mysterious Marshall Isle flight ever strikes the Hawaiian group.

As to the breeding ground of the three species mentioned by Reichenow we can at least say that it must be American, but the occurrence of the Canvas-back suggests a mid-continental origin, that is, provided the Canvas-back occurs in large numbers. This duck is so sparsely distributed on the north Pacific coast, and is so infrequent a breeder in Alaska that the Yukon Valley could hardly supply a great body of migrants.

Mr. Henshaw (Auk, 1900, p. 245) tells us of the 2000 mile flight of certain migrants from the Aleutians to the Hawaiian group, but remarkable as is this fact, it would be entirely eclipsed by the appearance of American birds 2000 miles further from our continent.

Mr. Bent (Smith. Mic. Collec., Vol. 56, No. 32) believes that the European Teal probably breeds on the whole Aleutian chain of islands, and that the American Green-winged Teal is confined to the mainland of Alaska. This makes the appearance of *N. carolinensis* in the Pacific still more mystifying.

The question of the winter distribution of these ducks is scarcely

worth guessing at until further data are available. It is not possible that they can ever reach the coast of Australia, as the avifauna there is so well known that even as stragglers they could not escape detection. The coast of New Guinea is also fairly well known, but the Solomon Islands are as yet only imperfectly explored, though American ducks along the coasts ought certainly to have been reported.

A brief investigation makes me very skeptical of the presence of an oceanic feeding place. There is no large windless area in the Polynesian Sea, at least not during the winter months, and it is almost beyond belief that Teal, or Canvas-backs either, could lead a really oceanic life for any length of time. Moreover, the ocean south of the Marshalls is very deep, and the borders of the coralline atolls offer a very unattractive vegetable supply. The surface flora of these seas is not rich, and there is no indication of a sargasso sea.

II. Behavior and Makeup of the Migrating Flocks of Canada Geese.

In 'The Auk' for July, 1910, I called attention to a peculiar action of migrating Canada Geese, long familiar to those who have shot geese over live decoys. At that time I saw nothing significant in this behavior, but, looking at it in a different way, it seems at least worth recording again.

The facts referred to are the following. Canada geese (*Branta canadensis*) migrate in large and small flocks, and they are decoyed down to some of the Massachusetts ponds which happen to be situated on favorite flight lines, by the use of an elaborate system of live and wooden decoys. Many of the wild geese would not alight in the ponds at all, were it not for the irresistible attraction of the decoys. The nature of geese is, of course, exceedingly wild. They usually alight well out in the pond, and, after a varying period, swim towards the decoy geese on the shore. At such a time the slightest disturbance will alarm them. A distant boat, a gun shot, a person walking along the shore, or a noise from the shooting stand will result either in their taking to wing and continuing their flight, or in keeping them in the middle of the pond, suspicious of the surroundings.

Now if a successful shot is finally made into such a flock, and perhaps one half or three fourths of their number have been killed, the remainder, after a few turns in the air, or a short flight of five or ten minutes, will almost always return to the pond, where, if not actually disturbed, they will remain from several hours to a day or so. Sometimes they will decoy a second time.

Now the method employed in capturing such "left over" geese is to put out a boat, which manœuvre is seldom objected to, and to scull directly down upon them. A close shot is often obtained from the boat and an approach of from sixty to seventy-five yards is almost always possible. If disturbed, such geese nearly always come back to another part of the pond, when the same process is repeated, only the birds get a little wilder each time, as a rule. The more successful the first shot from the stand and the less geese there are "left over," the better is the chance of obtaining a close shot from a boat.

Now this curious "stupidity" is manifested by the same geese, which, in an organized migrating flock only a few minutes before, would have left the pond at the slightest indication of danger. Some mutual interrelation has become disorganized, and that this has been caused by something more than fright alone would seem probable, because on the winter feeding grounds geese do not show any such "stupidity," but simply depart post-haste after some or many of their numbers have fallen. Also in a Massachusetts decoy pond, if, through some error, a poor shot or total miss is made, the frightened flock simply holds on its way South, and is not seen again. Of course the presence of the live decoys has something to do with the puzzled behavior of the geese, but will it explain their disregard of an approaching boat.

It is to be remarked that the geese referred to are birds in full migration and thus under the impelling force of a peculiar "instinct."

That geese migrate in families and that autumn flocks at least are composed of parents and their young has always been inferred. This theory is strengthened by the actual count of large numbers of flocks of geese on the autumn migration in Massachusetts made by myself at Wenham and Oldham Ponds. When plotted out in a frequency curve, we get a marked rise in the curve running

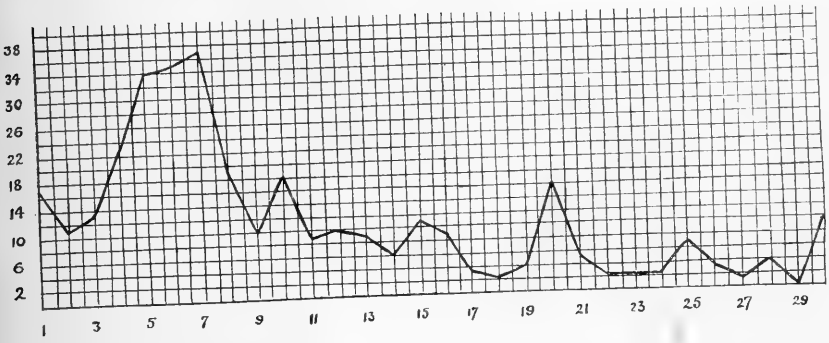
up from a flock of two to a flock of five, the apex being at the number seven. Then the curve falls to a right hand base at the number nine. Above this number there are small rises in the curve at various points, notably ten, fifteen and twenty, which may have some significance, but as we go up into the larger flocks, the numbers (number of flocks counted) are smaller, and the counts themselves perhaps not so accurate. The "small flock" frequency curve (flocks of one to fifteen in number) is composed of counts of 262 different flocks. It gives us the usual size as six or seven birds, the next commonest number being five. The scarcity of flocks of eight and nine is remarkable. Only ten flocks of nine each were observed, while there were thirty-seven flocks of seven each and thirty-five flocks of six each. The actual average size of a flock of autumn migrants in Massachusetts is not considered here. It is much larger, nearer thirty-five, because very large flocks of 100 to 300 are not rare. These large flocks need not concern us.

It is of interest to note that the small flocks, when they are captured entire, show from inspection of various external age characters — size, roughness of soles of feet, development of wing spurs, etc.— a pair of old birds and several young, two to five, or even six. It is especially easy to pick out the young birds from the old in early October flights, because the young have had less time to develop, but it is not always possible to do this with certainty. We are speaking, of course, of the fall migration only. Whether these facts, special behavior and individual make-up of the "small flock," hold for the vernal migration is unknown to me, and it would be harder to ascertain.

I give below a curve of frequency for flocks of geese of from one to thirty in number. The peaks of the curve at ten, fifteen and twenty may mean combinations of two, three, or four families: but as noted above the observations are hardly numerous enough for the larger flocks. The striking fact is the very sharp rise of the curve to six and seven. The frequency of ones and twos and even threes and fours is much too high, because I have had to include in the curve a number of geese undoubtedly left over from shot-up flocks. In the natural state of affairs there would probably be very few flocks below the number four. Flocks of eight are perhaps mostly one large family, while flocks of nine are composed of small families.

I plotted two separate curves in this way from observations made both at Wenham, Mass., and at Pembroke, Mass., and both curves were exactly alike, showing the same rises and falls which this combined curve shows, so that I feel sure that we are dealing with something significant.

It is hardly necessary to state that the apex of this curve, at six and seven, represents the average size of a family of Canada



Geese as demonstrated by wild nests and captive pairs, so that our flock counts are exactly what we would expect from single families.

In conclusion I may say that (I) The peculiar behavior of migrating geese when shot into over live decoys is not explainable on the basis of fright alone, but suggests the temporary breaking of a special form of interdependence, resulting in a curious lack of alertness in the individuals left behind. Is this due to parents seeking young, or to young with parental guidance removed, or to both causes. (II) Geese migrate in family parties and groups of families. The usual size of a family is six or seven, often it is five, and occasionally eight.

A STUDY OF THE SEASONAL DECLINE OF BIRD SONG.

BY HENRY J. FRY.

THIS study of the decline of bird song was made at the 1914 Summer School of the Biological Laboratories at Cold Spring Harbor, Long Island, while taking the course offered there in ornithology. Observations were begun July 1, and the last were made August 10, hence the period studied comprises forty-one days.

All work on the problem was confined to a limited area, not more than three quarters of a mile square, centering about the end of Cold Spring Harbor, which is an inlet from Long Island Sound. The region contains an unusual diversity of bird habitats, including open salt water, tidal marshes and sandy beaches, fresh water lakes, streams and small swamps, road-ways dotted with farm houses, orchards and open fields, scrubby pastures and dense woods. The altitude ranges from sea level, along the edge of the water to an elevation of from two to three hundred feet on the hills immediately surrounding the inlet.

There is nothing unusual about this vicinity that would effect the decline of song in any abnormal way. Perhaps the presence of so much water, surrounded by abrupt hills renders the atmosphere somewhat more humid than usual, but the average summer temperature is about the same as is found at that latitude inland.

Systematic observations were regularly taken many times each day. Every morning from 6.00 to 7.30 was spent in the study of song, as was the time from 10.00 to 11.30, and alternate afternoons were given to the same work. A large part of the other hours of the days was spent in the open, and always with pencil and notebook in hand, recording song data. The central parts of the area were studied a little more closely than the rest, but all the remoter sections were visited at least three or four times each week, especially when they harbored birds not found elsewhere in the locality.

Three mornings a week, the half hour between 7.00 and 7.30 was devoted in a peculiar way to one of three especially favorable

points, each place being visited once a week. On these occasions a prepared sheet of paper was used, having thirty vertical columns, one for each minute from 7.00 to 7.30, and every song or call heard during that half hour was carefully recorded, in the proper column. Thus the number of species singing, and the quantity of their song, were tabulated. This gave an accurate parallel study to the notes taken during the usual observation hours, checking any false deductions.

A large chart was kept in the study to which all field notes were transferred every evening. It contained forty-one vertical columns, one for each day from July 1 to August 10, and about fifty horizontal columns, each one set apart for a certain species. All notes taken July 1, were placed in the column under that date, the items on the various birds, each inserted in the proper horizontal column. The same was done for July 2, and so forth to the end of the period studied. Every day the notations on the song volume of each species, was compared with the song volume of that bird, for the previous day, so that the progress of the decline was carefully followed. Thus when the end of the period came, by running the eye along the notes of any column, the progress of that bird's song could be determined at a glance.

As an example of the character of the notations, those on the Catbird (*Dumetella carolinensis*) are here given, taken directly from the chart, though for the convenience of the eye, the items are listed one under the other, while on the chart they were all on one horizontal column, each note in the column under the proper date.

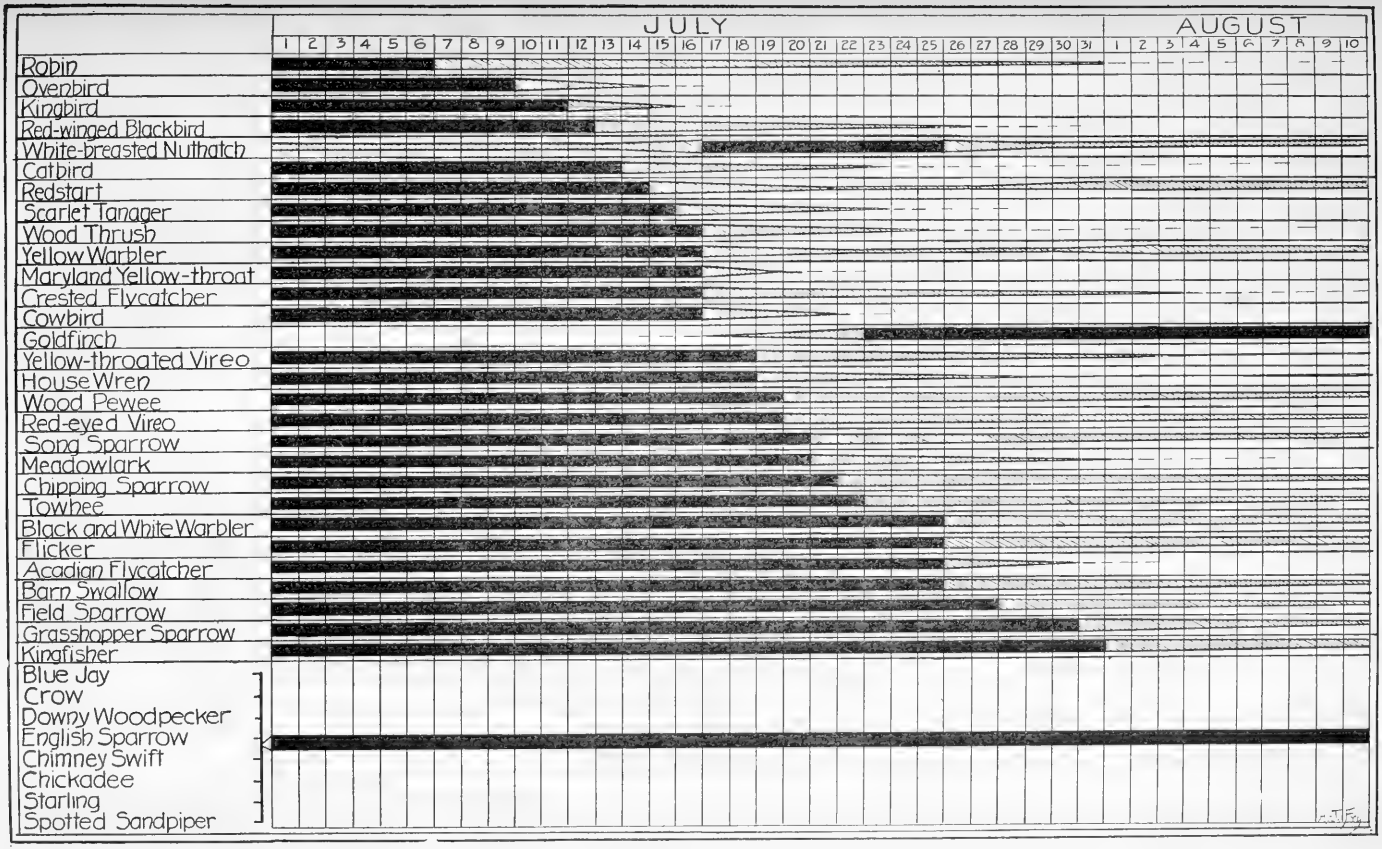
July 1 — Catbirds are in full song.
" 2 — Ditto.
" 3 — Ditto.
" 4 — Ditto.
" 5 — Ditto.
" 6 — Ditto.
" 7 — Ditto.
" 8 — Ditto.
" 9 — Ditto.
" 10 — Perhaps the songs are becoming a trifle less vivacious, though this is a question.
" 11 — About the same full volume as last week — any diminution doubtful.

July 12 — Ditto.
" 13 — Ditto.
" 14 — Intensity and frequency of song are lessening.
" 15 — Ditto.
" 16 — Ditto.
" 17 — Songs less frequent than yesterday.
" 18 — Songs have become infrequent.
" 19 — Ditto.
" 20 — At best, songs are much softer and shorter than a week ago.
" 21 — Songs are very occasional.
" 22 — Ditto.
" 23 — Songs becoming less every day.
" 24 — Nothing heard but an occasional gurgle.
" 25 — Ditto.
" 26 — Ditto.
" 27 — No song at all.
" 28 — Ditto.
" 29 — A phrase of song heard rarely.
" 30 — Ditto.
" 31 — No song at all.
Aug. 1 — Ditto.
" 2 — Ditto.
" 3 — Ditto.
" 4 — One short phrase of song heard.
" 5 — No song at all.
" 6 — Ditto.
" 7 — A single short phrase of song heard.
" 8 — No song.
" 9 — Ditto.
" 10 — Ditto.

NOTE: — The scold notes were numerous throughout the entire period.

It was immediately noticed that cold or rainy weather caused an evident depression in the songs of that day. Hence temperature, direction and strength of the wind, cloud conditions, humidity, and also the hour at which the observations were taken, as well as the exact localities visited, were daily recorded. In the final conclusions as to general song decline, local depressions caused by the weather, have been omitted, as they were of a purely temporary nature.

It would be interesting to repeat this study in the same locality for five or six successive years, keeping strict watch on the average temperature of each summer, to discover if a comparatively cool


JULY
AUGUST
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31
1 2 3 4 5 6 7 8 9 10
Robin
Ovenbird
Kingbird
Red-winged Blackbird
White-breasted Nuthatch
Catbird
Redstart
Scarlet Tanager
Wood Thrush
Yellow Warbler
Maryland Yellow-throat
Crested Flycatcher
Cowbird
Goldfinch
Yellow-throated Vireo
House Wren
Wood Pewee
Red-eyed Vireo
Song Sparrow
Meadowlark
Chipping Sparrow
Towhee
Black and White Warbler
Flicker
Acadian Flycatcher
Barn Swallow
Field Sparrow
Grasshopper Sparrow
Kingfisher
Blue Jay
Crow
Downy Woodpecker
English Sparrow
Chimney Swift
Chickadee
Starling
Spotted Sandpiper

summer caused an earlier decline than usual, or if a warmer season retarded the diminution.

The accompanying chart is a graphical presentation of the data given in this paper, showing the decline of bird song, for thirty-seven species, studied at Cold Spring Harbor, from July 1 to August 10, 1914. It will be seen that this chart is on the same plan as the one described above. The forty-one vertical columns represent the days of the period studied, and each wide horizontal line (taking the place of the notes on the horizontal columns) by its varying width indicates the song decline of a species. The birds have been arranged according to the date when the depression begins, the one affected first, being placed at the head of the list. The heavy black portions of the lines indicate maximum volume of song, and obliquely lined portions represent the days of lesser quantity. The volume of song of one species as compared with the volume of another is not taken into consideration at all, for the Song Sparrow (*Melospiza melodia melodia*) which was heard almost constantly, and the Meadowlark (*Sturnella magna magna*) which sang only occasionally, are both represented by black lines of the same width so long as they continue to sing at their maximum, which is up to July 21. After that date the narrowing lines show their decline, but there is absolutely no indication as to the relative volume of song between the two species.

At the end of the paper are several lists summing up the results. One of them contains those birds, concerning which manifestly insufficient data have been gathered, and another summer's study might show different results for some of these species. It must be remembered that the studies did not begin till the first of July, and if any of the birds commenced to decline prior to that date, the fact could only be surmised. Surely the majority were in full song at that time, and only further study, beginning in June will clear up the doubtful cases, which have also been listed.

The Robin (*Planesticus migratorius migratorius*) was heard continually during the first few days of July but a scarcely perceptible decline of song began as early as the seventh. In fact, had it been carefully studied from the middle of June, the song volume of July 1, in comparison with that of the preceding weeks, even then might have shown the first faint signs of diminution. In all probability

the decrease did not really begin till about the seventh, and from that date on through the rest of the month the decline was very gradual. There was a day or two when there seemed to be a temporary, though slight, increase, but by August 1 it was heard only occasionally, and during the last few days prior to August 10, only a few phrases were recorded now and then.

The Ovenbird (*Seiurus aurocapillus*) sang frequently up to the tenth of July, after which there was a very rapid diminution. The last song was heard on the sixteenth, though had its haunts been continually watched during the week following the sixteenth, it might have been recorded occasionally for a few days later. It is interesting to note that a full song, though softer than July's, was distinctly heard on August 7. Was this an accident, or is there a slight rejuvenation of song later in the season?

Any conclusion at all on the Kingbird (*Tyrannus tyrannus*) is but tentative as its data are not as full as for most of the other species. The song, if it may be called such, was heard occasionally throughout the first half of July and the last record is on the fifteenth. In all probability it would have been heard a good deal later had its particular haunts been more persistently studied. The call notes were numerous throughout the whole period, though they diminished somewhat during August.

The Red-winged Blackbird (*Agelaius phœniceus phœniceus*) gave its "kong-quer-quee" about the swamps till the thirteenth of July. It is a question whether or not diminution had commenced prior to July 1. After the thirteenth it was heard infrequently and the last record is the thirtieth. The sharp call notes were also noted throughout July, and as there is no record for them after August 1, their diminution seems to practically coincide with the song.

The White-breasted Nuthatch (*Sitta carolinensis carolinensis*) was noted occasionally during the first twelve days, and after that date its "yanks" were a good deal more in evidence, and this increase in call continued till about the thirtieth. After that date, and on through to the end of the period studied, it was heard in about the same lessened frequency of the early part of July.

Up to the fourteenth, the Catbird (*Dumetella carolinensis*) was heard repeatedly. After the tenth its vivacity may have lessened

somewhat, but it was a slight change at best. The diminution was rapid from the fourteenth to the twenty-fourth, and after that only an occasional gurgle or phrase of song was heard, the last record for any song at all being August 7. The scold notes were heard throughout the period.

Up to the fifteenth, the Redstart (*Setophaga ruticilla*) was heard frequently, but by the twenty-second the song had fallen off decidedly. It was noted occasionally till about the twenty-seventh, when an increase set in, and by August 2, the song was once more much in evidence and continued so, though a second decline was under way during the last few days of the period.

The Scarlet Tanager (*Piranga erythromelas*) was in full, rich song till about July 16, though further study may show this date inaccurate by several days. From that time on the song declined steadily and the last one was recorded on the twenty-seventh. The "chip-churs" were heard throughout the period.

The Wood Thrush (*Hylocichla mustelina*) was singing on every hand the first sixteen days. About the seventeenth a slight diminution was apparent which rapidly increased, and after the twenty-fifth the species was comparatively silent, though occasional, soft, short songs were heard at intervals as late as August 7. The "whit-whit" calls were heard daily.

The Yellow Warbler (*Dendroica æstiva æstiva*) began its song decline with the Wood Thrush on the seventeenth, and was heard less and less till the twenty-third, when the diminution ceased. Between this date and the thirtieth it sang occasionally and then began to increase, and by August 3 it was again singing quite frequently, though not as much as during the first part of July. It was still in this semi-revived period when the studies ceased, August 10.

The Maryland Yellow-throat (*Geothlypis trichas trichas*) started its decline with the above two species on the seventeenth, but the diminution in this case was remarkably rapid, and the last song was recorded on the twenty-second, and that performance was short and feeble.

The Crested Flycatcher (*Myiarchus crinitus*) was often heard calling in the woods through the early part of July. After the tenth the rapidly repeated roll calls became less frequent, and the

last record for one is the fifteenth. The single note whistles did not diminish till the seventeenth, and from that date they gradually decreased, but were heard occasionally throughout the remainder of the period.

Data on the Cowbird (*Molothrus ater ater*) are very scant for they were few in number. Their Starling-like calls were heard at intervals up to about July 17. Whether or not any diminution had begun before the first could not be determined, but probably not. After the seventeenth they were rarely heard and the last record is on the twenty-third.

The first song of the Goldfinch (*Astragalinus tristis tristis*) was not noted till the seventeenth of July, though in all probability it could have been heard occasionally prior to that. By the twenty-third it was singing quite frequently though at no time did it become common, and this condition continued throughout the remainder of the period. Since the decline set in some time after August 10, there are no data concerning the matter. The flight calls were heard occasionally from the beginning, and when the period of song began, they increased in frequency.

The Yellow-throated Vireo (*Lanivireo flavifrons*) remained in full song till about the nineteenth, when the diminution began which continued to the middle of the first week of August. The song did not cease altogether, however, and throughout the rest of the period it was heard almost every day, though infrequently.

The decline of the House Wren's song (*Troglodytes aëdon aëdon*) is about the same as that of the Yellow-throated Vireo. The diminution began about the nineteenth and continued till the thirtieth. The low ebb of song reached then about held its own through the rest of the period, and it was heard only once or twice each day after the last week of July.

The Wood Pewee (*Myiochanes virens*) began its decline almost imperceptibly around July 20, and from that day it gradually became less and less, though the daily diminution was scarcely evident. August 10, when the studies came to an end, it could still be heard quite frequently in sunny spots in the woods.

The story of the Red-eyed Vireo (*Vireosylva olivacea*) is almost identical with that of the Pewee, though perhaps its diminution is a trifle more marked. It too, gradually began to lessen in volume

about July 20, and the falling off continued bit by bit throughout the rest of the period. On August 10 it was singing infrequently.

The Song Sparrow (*Melospiza melodia melodia*) began to lose in volume and frequency about the twenty-first. Its decline, like that of the Pewee and Red-eyed Vireo, was very gradual, and there were days after the twenty-first when its cheering song could be heard quite often, but by August 10 it was singing only occasionally.

The data for the Meadowlark (*Sturnella magna magna*) are not as full as for most of the other species, and at best it was heard but seldom. Since only a few were seen at intervals it is difficult to determine whether or not the species was still in full song July 1. The frequency with which it sang the first week remained about constant till around the twenty-first, and after that it was heard but rarely. The last song recorded is on August 7.

The trill of the Chipping Sparrow (*Spizella passerina passcrina*) began to diminish July 22. The decline was not rapid, and like the Song Sparrow, it could be heard daily throughout the remainder of the period, but each week witnessed a decided lessening, and during the last few days it was heard but seldom.

The Towhee (*Pipilo erythrophthalmus erythrophthalmus*) was heard frequently, though locally, in song and call to the twenty-third. From that date the decline set in, though gradually, and both song and call were noted occasionally, during the remainder of the period though each week becoming less.

The Black and White Warbler (*Mniotilta varia*) did not begin its song decline till July 26. The diminution was not rapid and was scarcely perceptible day by day. August 10 it was heard occasionally.

The Flicker (*Colaptes auratus luteus*) was heard calling daily throughout the entire period, though after July 25 it was not quite as much in evidence. This date marked a diminution, but a very slight one, and the calls at the close of the studies were almost as frequent as during the first week.

The calls of the Acadian Flycatcher (*Empidonax virescens*) were observed frequently, though locally, to the twenty-sixth, when a rapid decline set in, and it was last heard August 2.

Data on the Barn Swallow (*Hirundo erythrogastra*) are rather

scant. The calls did not begin to lessen till about the twenty-sixth, and from that point on the decline was gradual, and it was still heard occasionally August 10.

The song of the Field Sparrow (*Spizella pusilla pusilla*) began diminution about the twenty-eighth, though it may have started earlier as in this case the data are not satisfactory. At most it was heard infrequently all summer and only in certain regions, but after the twenty-eighth the songs became more occasional. The diminution was gradual, however, and it was heard a little each day to the end of the period.

There are also but few data on the Grasshopper Sparrow (*Ammodramus savannarum australis*). It was heard infrequently and locally to the end of July, the thirty-first probably witnessing the beginning of a gradual decline, though it may have started somewhat earlier. It was noted occasionally throughout the remainder of the period.

The rattle-calls of the Kingfisher (*Ceryle alcyon alcyon*) were heard daily throughout the entire period, though after August 1 it was not nearly so noisy.

The following eight species underwent no decline. The scold-notes of the Blue Jay (*Cyanocitta cristata cristata*) were heard occasionally each day, as were the "caws" of the Crow (*Corvus brachyrhynchos brachyrhynchos*), and the calls of the Downy Woodpecker (*Dryobates pubescens medianus*). The English Sparrow (*Passer domesticus domesticus*) was heard continually about barns, and the twitterings of the Chimney Swift (*Chætura pelagica*) were a common sound throughout the period. The Chickadee (*Penthestes atricapillus atricapillus*) put in an occasional appearance, and the Starling (*Sturnus vulgaris vulgaris*) was heard every few days. The Spotted Sandpiper (*Actitis macularia*) was heard giving its "peent" calls, whenever near its haunts. When August 10 came all of these were as much in evidence as they had been on July 1.

All of the birds thus far discussed are included in the graphical chart. The following seven were omitted as their data are scant and unsatisfactory, and further study is necessary before any conclusion can be reached concerning them.

The Black-throated Green Warbler (*Dendroica virens*) was re-

ported only six times — July 5, 9, 17, 20 and 22, and August 3. Each time the song was full and rich.

The White-eyed Vireo (*Vireo griseus griseus*) was recorded eight times — July 6, 15, 16, 20, 22, 29 and 31, and August 7. In each case the songs were full, though perhaps the last one heard showed a slight diminution.

The Phœbe (*Sayornis phœbe*) was heard but three times — July 9 and 20, and August 1, and on each occasion it was giving the "phœ-be" call repeatedly.

There are three song records for the Purple Finch (*Carpodacus purpureus purpureus*) — July 4 and 16, and August 3. The song was full on all three occasions.

The Carolina Wren (*Thryothorus ludovicianus ludovicianus*) was heard but rarely after 6.00 A.M., though in a certain locality it was heard daily in full song about 4.00 A.M., up to August 1. Since no 4.00 A. M. observations were made after that date, it is a question whether or not the early morning matins were continued. The data are not sufficiently full to allow any conclusion.

The two-note warble-whistle of the Baltimore Oriole (*Icterus galbula*) was heard throughout the period, as was the scold-note The song had declined before July 1, leaving as a residue the two-note whistle which remained about constant throughout the period, hence no statement can be given.

The Brown Thrasher (*Toxostoma rufum*) was seen a number of times, but only his harsh call-note was heard.

The list following contains those birds, included in the graphical chart, on which the observations were not quite as full as was desired, and therefore statements concerning their decline have been made with some caution:—

Kingbird
Cowbird
Meadowlark
Barn Swallow
Field Sparrow
Grasshopper Sparrow

There is some doubt concerning the following birds, as to whether or not any decline in their song had begun prior to July, first:—

(Robin)
Kingbird
Red-winged Blackbird
Cowbird
Meadowlark

The following species underwent a rapid decline:—

Ovenbird	7 days.	Maryland Yellow-throat	6 days.
Kingbird	6 " ?	Cowbird	7 " ?
Scarlet Tanager	12 "	Acadian Flycatcher	8 "

The following underwent a gradual decline:—

Robin	35 days.	
Red-winged Blackbird	18 "	
Catbird	25 "	
Redstart	27 "	plus.
Wood Thrush	23 "	
Yellow Warbler	25 "	plus.
Crested Flycatcher	25 "	
Yellow-throated Vireo	23 "	
House Wren	23 "	
Wood Pewee	22 "	plus.
Red-eyed Vireo	22 "	plus.
Song Sparrow	21 "	plus.
Meadowlark	18 "	
Chipping Sparrow	20 "	plus.
Towhee	19 "	plus.
Black and White Warbler	16 "	plus.
Flicker	16 "	plus.
Barn Swallow	16 "	plus.
Field Sparrow	14 "	plus.
Grasshopper Sparrow	11 "	plus.
Kingfisher	10 "	plus

The following had a revival of song:—

(Ovenbird)
Redstart
Yellow Warbler

The following did not reach the period of full song till near the middle of July:—

White-breasted Nuthatch.
Goldfinch.

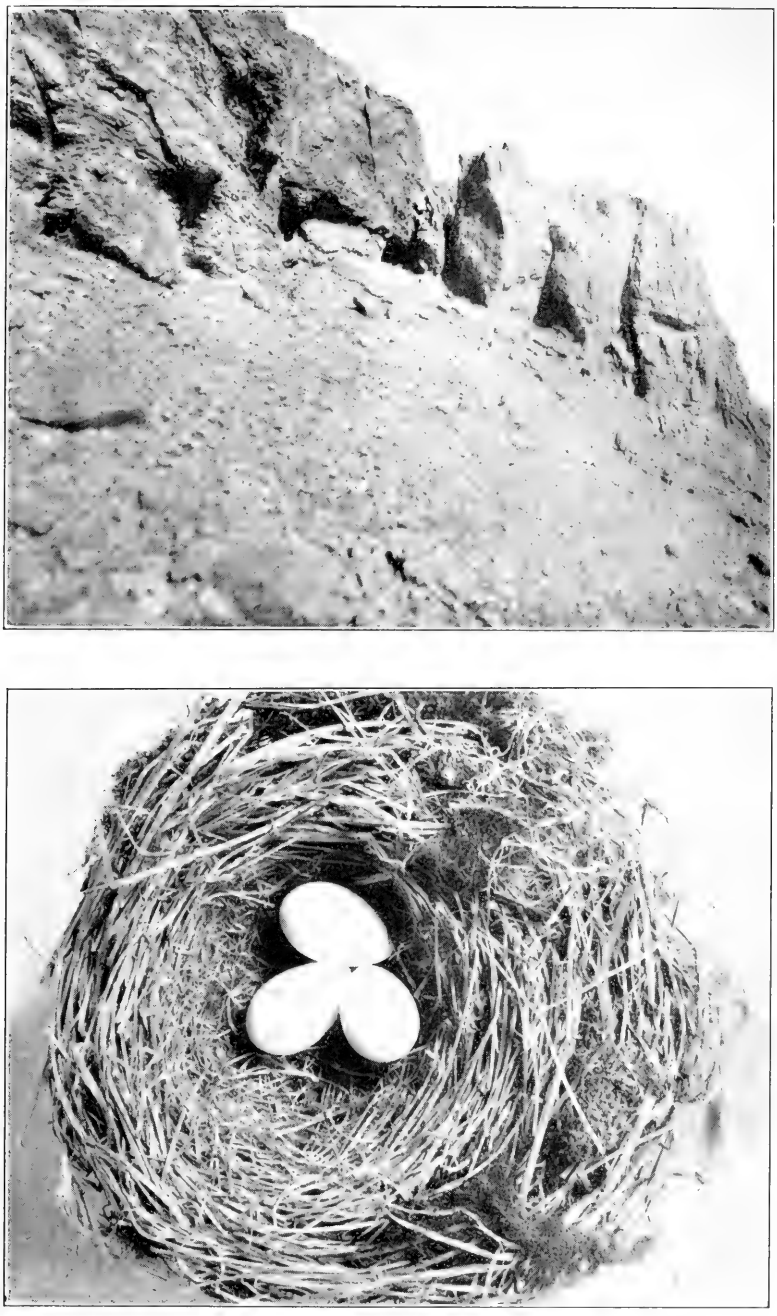
The following were singing regularly, though occasionally, at the close of the period studied, August 10:—

White-breasted Nuthatch
Redstart
Yellow Warbler

(Crested Flycatcher)
Goldfinch
(Yellow-throated Vireo)
(House Wren)
Wood Pewee
Red-eyed Vireo
Song Sparrow
Chipping Sparrow
Towhee
Black and White Warbler
Flicker
Barn Swallow
Field Sparrow
Grasshopper Sparrow
Kingbird

The following eight species underwent no decline:—

Blue Jay
Crow
Downy Woodpecker
English Sparrow
Chimney Swift
Chickadee
Starling
Spotted Sandpiper



NESTING SITE AND NEST OF THE BROWN-CAPPED ROSY FINCH (*Leucosticte australis*).

THE DISCOVERY OF THE NEST AND EGGS OF *LEUCOSTICTE AUSTRALIS.*

BY F. C. LINCOLN.

Plate II.

IT has become the pleasure of the writer to place on record the discovery of the first nest and eggs of the Brown-capped Rosy Finch (*Leucosticte australis*), known to science, together with an account of the incidents contributary to their discovery.

The work, which it was hoped would bring to light the eggs of this species, was undertaken jointly by the Colorado Museum of Natural History and Mr. William C. Bradbury of Denver, now widely known among oölogists as a patron of The Colorado Museum, through whose interest and generosity the superb collection of North American birds eggs has been placed on exhibition at this institution.

Mr. Bradbury had planned to take personal charge of the task but was disappointed through the necessity of a surgical operation, and the work accordingly devolved upon the writer, with Mr. Harold R. Durand of Littleton, Colorado, as Mr. Bradbury's personal representative, and Mr. A. H. Burns of the museum staff.

Through a former somewhat superficial experience with this species, I had become convinced of the lateness of its nesting and commenced the search from the old mining town of Alma, Colorado, on July 9, 1915. In this connection it may be noted that other arctic-alpine birds such as the White-tailed Ptarmigan (*Lagopus l. leucurus*) and Pipit (*Anthus rubescens*) had hatched their eggs at this date. No eggs of any other species were found.

The nest was discovered July 11, 1915, on the southwest exposure of the south peak of Mt. Bross, Park County, Colo., at an elevation of 13,500 feet, or within 600 feet of the summit, the elevation of Mt. Bross being 14,100 feet. This altitude of the nest site here marks the limit of plant growth, the remaining 600 feet, being bare rock, either slides or in the form of outcroppings or small cliffs.

It was in one of these latter that the nest was found, a short cliff about forty feet in height, of Lincoln porphyry, protruding through the upper edge of the schists and shales which occur just below the granite cap. The face of this cliff had suffered considerably from erosion, resulting in "chimneys" and cavities from a few inches to several feet in diameter, and in one of the smaller of these the nest was placed. The hole, forming the upper terminus of a vertical crack, ran back twelve or fourteen inches and was about forty inches from the base of the cliff.

The nest was discovered by flushing the female, which proved to be extremely solicitous, returning repeatedly despite our presence, thus affording me an opportunity to photograph her at the nest entrance. Both male and female were secured — C. M. N. H. Nos. 4723 and 4728.

The bulk of the nest was of dry grass and flower stems neatly and compactly woven together with a considerable quantity of fine moss, and lined with a fine yellow grass and a few feathers from the bird's body, with one White-tailed Ptarmigan feather. It rested well into the silt which covered the bottom of the hole, and the cup was placed to one side, thus giving walls of unequal thickness on two sides. This inequality did not, however, change the general exterior shape which is practically round measuring 4.75″ in diameter with a depth over all of 3.00″, while the cup measures 2.50″ in diameter with a depth of 1.60″.

The eggs, three in number, are pure white, slightly glossy, unmarked; ovate pyriform in shape; fresh; measurements in inches: — .91 × .60; .95 × .63; .97 × .62.

A COLLECTION OF BIRDS FROM SAGHALIN ISLAND.

BY JOHN E. THAYER AND OUTRAM BANGS.

IN the late spring and early summer of 1914, Prof. L. Munsterhjelm visited Saghalin Island, gathering there specimens of natural history of various kinds. During his stay in the island he collected about a hundred and fifty birds, at three places only, namely Sakachama, Haktshoko and Otomari, and on dates running from May 6 to July 14.

This collection was soon afterward acquired by Thayer and presented to the Museum of Comparative Zoölogy, a few skins only being retained for the Thayer Museum at Lancaster, Mass.

Prof. Munsterhjelm's choice little collection, of course, far from completely represents the ornis of Saghalin, still it contains many nice things, and adds somewhat to the knowledge of the bird fauna of that island. We therefore presume to give a full list of it.

In 1908 Prof. Lönnberg[1] published a long and very excellent account of the birds of Saghalin, the basis of his paper being a large collection made in the island by Prof. Ijima in 1906.

We have marked with an asterisk all species contained in Prof. Munsterhjelm's collection that are not to be found in the body of Lönnberg's list. Some of these are not new to the ornis of Saghalin, having been previously recorded by Nikolski in a paper written in 1889 in Russian, and are enumerated in Lönnberg's 'A List of Birds known from Saghalin, at the end of his article (pp. 60–66). A few, however, appear to be first records for the island. Even in a small collection, such as the one made by Prof. Munsterhjelm who failed to secure no end of species that were taken by Prof. Ijima, there are fourteen species that Prof. Ijima's collection did not contain. It would therefore seem, as prophesied by Lönnberg, that there are many species of birds yet to be added to the list of those found in Saghalin.

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[1] Contributions to the Ornis of Saghalin, Jour. of the College of Sci., Imp. Univ. of Tokyo, Vol. XXIII, Article 14, 1908.

Peristeridæ.

Turtur orientalis (LATH.).— One ♂, full grown but still in the immature plumage, July 8, 1914. Sakachama.

Rallidæ.

Rallus aquaticus indicus BLYTH.— Two adults, ♂ and ♀, July 7, 1914. Sakachama.

Colymbidæ.

Podiceps griseigena holbœlli REINHARDT.— Three adult females, May 14, June 6 and 14, 1914. Sakachama.

Gaviidæ.

Gavia stellata (PONTOPPIDAN).— Two specimens. A male and a female adult. Sakachama, June 10.

Laridæ.

***Hydrochelidon leucoptera grisea** (HORSFIELD).— Two adult females, May 28, 1914. Sakachama.

Mathews contends that there is an eastern subspecies of the white-winged black tern, worthy of recognition by name. He must have had access to adequate material, so we with much hesitation adopt the name he uses for this form.

We ourselves can detect no differences whatever between the present two skins and numbers of western specimens with which we have compared them. The two Saghalin skins afford the following measurements: —

No.	Sex	Wing	Tail feathers	Exposed culmen	Tarsus
66224	♀ ad.	198	67.	24	19.
66225	♀ ad.	201	68.5	23	18.5

Sterna longipennis NORDM.— Three adults, two males and a female, May 18, June 4 and June 26. Sakachama and Haktshoko.

Sterna aleutica BAIRD.— Eleven adults, nine males and two females. All taken June 23, 1914, except one male, collected June 24, 1914. Sakachama. Judged by the dates upon which these specimens were taken they must of course have been breeding.

***Larus schistisagus** STEJNEG.— One adult ♀, May 11, 1914. Sakachama.

***Larus vegæ** PALMEN.— One adult ♀, and one immature ♂, June 2, 1914. Haktshoko.

***Rissa tridactyla pollicaris** RIDG.— Two specimens, ♂ and ♀, both immature, June 26 and July 3, 1914. Sakachama.

Stercorariidæ.

* **Stercorarius pomarinus** (TEMM.).— One adult ♂, July 6, 1914. Sakachama.

Charadriidæ.

Numenius phæopus variegatus (SCOP.).— Three adults, two males and a female, May 20 and 27, 1914. Sakachama.

* **Tringa stagnatilis horsfieldii** (SYKES.).— Two adult males, May 14, 1914. Sakachama.

As Mathews suggests, eastern birds do appear to be just perceptibly paler than western ones.

* **Tringa glareola** (LINN.).— Five adults, both sexes, May 21 and 29, 1914. Sakachama.

Heteractitis brevipes (VIG.).— One adult ♀, May 16. Sakachama.

Actitis hypoleucus (LINN.).— Two adults, ♂ and ♀, July 6, 1914. Sakachama. Eastern and western specimens appear to us quite alike.

Pisobia minuta ruficollis (PALL.).— Ten adults, seven males and three females, May 15–18. Sakachama.

Pelidna alpina sakhalina (VIEILLOT).— Eight adults, both sexes, May 14 to 18. Sakachama. These skins, topotypes of the subspecies, represent a different form from the American Dunlin to which it has lately been referred by American ornithologists.

Gallinago stenura (KUHL.).— One adult ♀, May 29, 1914. Sakachama.

Lobipes lobatus (LINN.).— Two adult females, May 27, 1914. Sakachama.

Ardeidæ.

* **Ixobrychus sinensis sinensis** (GMEL.).— Two adults, ♂ and ♀, June 25, 1914. Sakachama.

These two skins agree closely with our specimens from China.

Anatidæ.

Anas platyrhynchos LINN.— Three adult females, and one young, May 11 and June 30. Sakachama.

Nettion crecca (LINN.).— Four adults, two males and two females, June 4. Sakachama.

* **Dafila acuta acuta** (LINN.).— Two adult males, May 12. Sakachama.

The American Sprig-tail has been formally separated by Reichenow, Ornth. Monbr. Vol. IX, p. 17–18, 1901, under the name *Anas acuta americana* (Bp.). The American bird is slightly different from the Eurasian, *D. acuta acuta*, besides the characters mentioned by Reichenow the American form has in the adult male plumage a longer tail. It also averages larger than the Old World Sprig.

The name *americana* is untenable if used with *Anas*, there being several earlier *Anas americana*, applied to various *Anatidæ*. Bonaparte's name, *Dafila acuta a. americana*, Compt. Rend. xliii, p. 650, 1856, just escapes being a nomen nudum, on account of the reference to *acuta* of Wilson,— the American bird, and could be used so long as the genus *Dafila* is maintained. We, however, believe that the American Sprig will have to be known by the name *Dafila acuta tzitzihoa* (Vieill.) N. D. v. p. 163, 1816, based on Hernandez. The original plate and description are both bad, but without doubt were meant to represent the Sprig which is a common migrant in Mexico.

* **Marila fuligula** (LINN.).— One adult male, May 12. Sakachama.

Falconidæ.

Pandion haliaëtus haliaëtus (LINN.).— One adult ♂, May 17. Sakachama. This skin, presents no differences, that we can detect when compared with European examples. It is, however, rather small, smaller in fact than other east Siberian examples.

Micropodidæ.

Chætura caudacuta caudacuta (LATH.).— Two adult females, June 11, 1914. Sakachama.

Cuculidæ.

Cuculus canorus telephonus HEINE.— Three adults, two males and female. June 24 to Ju y 8, 1914. Sakachama.

Picidæ.

Dryobates minor kamtschatkensis MALH.).— One adu ♂, May 23, 1914. Sakachama. This specimen seems referable here rather than to either *amurensis* or *minutillus* of Butur in, both of which forms however, are so very poorly characterized that without much more material than is available to us we cannot l·· certain.

Jynx torquilla japonica BP.— Five specimens, both sexes, May 9 to June 13, 1914. Sakachama.

Hirundinidæ.

Riparia riparia ijimæ (LÖNNB.).— Eight adults, both sexes, June 10 to June 30, 1914. Sakachama.

This form, as Hartert has already pointed out, is a very strongly marked one. The upper parts are very dark, in some skins almost blackish, and the pectoral band is very dark. The pale edges of the upper tail coverts, scapulars, and feathers of the lower back and rump stand out in marked contrast against this dark ground color and give the form a very charac-

teristic appearance. We also find, as Hartert did, that while most American specimens are quite like Old World examples of true *riparia*, some (in any large series) approach *ijimæ*.

Muscicapidæ.

Xanthopygia narcissina narcissina (TEMM.).— Two adults, ♂ and ♀, June 3 and July 8, 1914. Sakachama and Haktshoko.

Turdidæ.

Turdus chrysolaus TEMM. Two adult males, July 6 and July 10, 1914. Sakachama.

These are in the white-throated plumage, referred to by Lönnberg, and thought to represent immature though breeding birds.

Luscinia sibilans (SWINH.).— One adult ♂, May 29, 1914. Sakachama. We follow Hartert in associating this species with the Nightingales rather than with the Robin Red-breasts. If a special genus is not used for it this seems to be its proper place.

Calliope calliope calliope (PALL.).— Four adults, two males, two females, June 3 to July 2. Sakachama and Haktshoko.

These specimens are all extreme of the small race, none of them approaching Kamchatkan examples in size.

Sylviidæ.

Locustella ochotensis (MIDD.)— Eight specimens, both sexes, May 27 to June 25, 1914. Sakachama.

Acrocephalus bistrigiceps SWINH.— Four specimens, all males, June 26 and July 8 and July 14, 1914. Sakachama and Otomari.

Herbivocula schwarzi (RADDE.).— One adult ♂, July 1, 1914. Sakachama.

Reguloides proregulus proregulus (PALL.).— One adult ♂, May 19, 1914. Sakachama.

***Acanthopneuste tenellipes** (SWINH.).— Two adults, ♂ and ♀, May 23 and 29, 1914. Sakachama.

Paridæ.

Periparus ater pekinensis (DAVID).— One adult ♀, May 31, 1914. Haktshoko.

Motacillidæ.

Motacilla lugens KITTL.— Five specimens, both sexes, May 6 and 7. Sakachama.

Budytes flava taivanus SWINHOE.— Eight specimens, both sexes, May 12 to June 27, 1914. Sakachama.

One adult ♂ in this series, No. 66163, has the forehead gray and the frontal part of the superciliary stripe, nearly back to the eye, white, contrasted abruptly with the yellow posterior part of the superciliary.

Anthus hodgsoni RICHMOND.— Four specimens, both sexes, May 13 to June 29. Sakachama and Haktshoko.

Alaudidæ.

Alauda arvensis pekinensis SWINH.— Six specimens, three adult males, and three young males apparently just out of the nest. The adults all taken May 9 and the young June 24. Sakachama.

Fringillidæ.

Chloris sinica ussuriensis HARTERT.— Three specimens, an adult male and two adult females. May 6, 8 and 9, 1914. All from Sakachama.

Uragus sibiricus sanguinolentus (T. & S.).— Eight specimens, both sexes, taken from May 7 to June 2, 1914. Sakachama and Haktshoko.

Emberiza aureola PALL.— Eight specimens, both sexes, May 27 to June 25, 1914. Sakachama and Haktshoko.

Emberiza spodocephala personata TEMM.— Eight specimens, both sexes, May 10 to June 24, 1914. Sakachama and Haktshoko.

We can confirm what Lönnberg has already said, with this series, the skins being inseparable from Japanese ones.

Sturnidæ.

***Spodiopsar cineraceus** TEMM.— One immature ♂, July 7, 1914. Sakachama.

Sturnia violacea (BODD.).— One adult ♂, May 27, 1914. Sakachama.

AN UNDESCRIBED SPECIES OF DREPANIDIDÆ ON NIHOA, HAWAIIAN GROUP.

BY WILLIAM ALANSON BRYAN.

WHAT will probably prove to be the last species of land bird to be recorded from the Hawaiian Islands has recently been found living in a small colony on the island of Nihoa, a small isolated remnant of rock situated in the northwest or leeward chain of the Hawaiian group, and is here noted for the first time.

For a number of years it has been my desire to visit this island, which is in reality a small remaining part of what was undoubtedly a much larger volcanic point in former time,— for the purpose of studying its geology and collecting its fauna and flora. Although I have made three round trips along the Leeward chain, as far as Laysan and Midway Islands, I have never been able to land on this forbidden spot owing to unfavorable weather conditions and the dangers which attend the making of a landing there, even in the most favorable weather. With one or two exceptions other naturalists who have visited this chain of islands have also been unable to land and have been obliged to be content with viewing it as I have done — from a distance.

It is, therefore, with much satisfaction that I am able to report that at my suggestion Captain James H. Brown, in command of the U. S. Revenue Cutter "Thetis", was able to make a landing on the island on the occasion of the April, 1915, cruise of the "Thetis" to patrol the Hawaiian Island Bird Reservation. It is from information supplied by him and the members of his crew that I am able to report that my surmise with reference to the presence of land birds on the island has proved to be correct.

Owing to unexpected heavy weather the landing party was so unfortunate as to have their whale-boat wrecked on the shore after a safe landing had been made. One member of the crew was seriously injured, but fortunately no lives were lost. Once on shore it was with much difficulty and danger that the party was able to leave the island; having to swim through the angry breakers to a second boat sent out to rescue them from their

unhappy situation. For this reason, if for no other, no specimens of any kind save a few palm (*Pritchardia remota* Becc.) seed were secured.

The only species of land bird seen by them, and the only species believed to be precinctive to the island, was a small *Drepanididæ*, undoubtably belonging to the genus *Telespiza*. This genus was established for a single species (*Telespiza cantans*) from Laysan described originally by Mr. Scott B. Wilson (Ibis, 1890, p. 341). The female of the species from the same island was described by the Hon. Walter Rothschild from Palmer's collection as *Telespiza flavissima* (Ann. & Mag. Nat. Hist., Vol. X, 1892, p. 110) two years later.

It is only for want of a specimen in hand that I withhold a new name for this bird which doubtless occurs only on the island of Nihoa and appears to be heretofore unknown and unnamed, and, moreover, to be the last of the Hawaiian avifauna liable to be discovered in the group.

Captain Brown is well acquainted with the Laysan "Finch" having seen the species at Laysan and also the colony from there that has been established on Midway Island. He believes the male Nihoa bird to be a trifle larger and perhaps yellower over the breast than are the males of the Laysan species. As Nihoa is one of the islands included in the Hawaiian Island Bird Reservation no attempt was made to secure a cabinet specimen; though specimens could easily have been collected as the birds like their Laysan cousins are exceedingly inquisitive as well as fearless. He states that specimens could be taken with an ordinary hand-net. It was estimated by the party that there are perhaps a thousand specimens of the 'Nihoa Finch' on the island.

When Mr. Carl Elschner visited the Island in 1914, for a few hours only, he was engaged chiefly in geologic and chemical investigations and made no attempt to study its fauna or flora.

The "Albatross", during the investigation of the aquatic resources of the Hawaiian Islands, was in the vicinity of Nihoa on two occasions during the voyage to the Leeward Islands of the group in 1902, but the scientists were unable to land. Dr. Walter K. Fisher in his report on the "Birds of Laysan and the Leeward Islands" (Bull. U. S. Fish Comm., Vol. XXIII, pt. III, p. 778)

says that on "June 1st we sighted Bird Island rising like a citadel into a hazy skyline and the "Albatross" came to anchor at dark off the south side. Although we could see nothing of the island, birds were in evidence by their cries. An *Oceanodroma fuliginosa* flew aboard, attracted by the glare of the deck light and on the following evening *Bulweria* and *Puffinus cuneatus* were similarly lured in some numbers.

"From our anchorage Bird Island appeared like a very steep half-funnel shaped hillside with several bold rocks and cliffs rising from the general slope. Two sulcuses, on the east and west haloes, divide the slope into three ridges and in each valley there is a group of palm trees. The peak to the west rises 903 feet. The whole of the south slope is covered with a growth of bushes and rank grass. This portion of the island suggests the half of an old crater. The west, north and east sides rise as a wall of naked rock straight and sheer to an imposing height. The west face is black and menacing and perfectly perpendicular.

"We were in the vicinity of Bird Island two days but the sea was too heavy for landing. In fact, a safe landing can be made only in very quiet weather. The shore on the south side is so rocky that even a small swell causes considerable commotion. Birds nest all over the island. Those species which love the cliff find a congenial home on the precipices and in the escarpments of the south side, while the boobies and man-o'-war birds live among the bushes on the grassy slopes. In fact, the whole mountain seemed alive with *Sula cyanops, Sula piscator,* and *Sula sula.* The last species lives along the top of the low escarpment which rises out of the sea along the south side. These three species and man-o'-war birds were continually flying around the vessel, as were likewise the various terns. We noted with pleasure *Procelsterna saxatilis,* which was common. We saw only one or two *Diomedea immutabilis* west of the island some miles, but a number of *nigripes.* Birds collected or otherwise identified are: *Sterna fuliginosa, Sterna lunata, Anous stolidus, Micranous hawaiiensis, Procelsterna saxatilis, Gygis alba kittlitzi, Diomedea immutabilis, Diomedia nigripes, Puffinus cuneatus, Puffinus nativitatis, Bulweria bulweri, Oceanodroma fuliginosa, Phaëthon rubricauda, Sula cyanops, Sula piscator, Sula sula, Fregata aquila, Charadrius dominicus fulvus, Arenaria, interpres."*

The second visit of the Albatross was on August 5. It remained in the vicinity four days without being able to land. "Although a landing might possibly have been made with considerable risk when we first arrived, the problem of leaving the island proved scarcely reassuring, so that we had to be content with again observing the birds from a distance."

The islands of Nihoa and Necker are of interest to ethnologists as well as to ornithologists since they were visited by natives in former times in search of feathers. From the plumage of certain species they made some of the remarkable feather-work objects for which the ancient Hawaiians were famous. As the journey thither had to be made in their curious outrigger canoes, it is doubtful if it was frequently undertaken as to visit Nihoa from Niihau, which is the nearest inhabited island, entailed a journey of 120 miles over the open ocean; while Necker Island is at least 150 miles farther on in a northwesterly direction.

Nihoa is the highest island in the Leeward chain and is about a mile in length by 2000 feet in breadth which gives it an area of about 250 acres. As has been indicated it is most probably the eroded remains of a deeply subsided crater the outer slopes of which have been worn away by the sea, leaving only a portion of the volcanic bowl. The material of which it is composed is similar to that of the high islands of the group and there is evidence that it is even more ancient than Kauai.

Perhaps this hoary remnant of the past may at one time have been a stately island, like those of the inhabited group with which we are familiar. Perhaps the island has been cut off and isolated by subsidence and but this single hardy bird was able to withstand the hardships and vicissitudes through which this lonely bit of land has passed since the island was severed from a pan-Hawaiian land. At any rate, it is of interest to find here a species of *Drepanididæ* differing specifically at least, from its next of kin now living on Laysan which is at least 500 miles distant from Nihoa. It is a satisfaction to know that this rare and remote species is guarded by its rugged and isolated environment no less than by the protection afforded by having the island included in Hawaii's great bird sanctuary.

A NESTING OF THE ROSE-BREASTED GROSBEAK.

BY FRANCIS H. ALLEN.[1]

IN the spring of 1914 I watched a nesting of the Rose-breasted Grosbeak (*Zamelodia ludoviciana*) in West Roxbury, Mass., and though my notes are not so complete and detailed as I could wish, they are perhaps worth recording, and I offer them for what they are worth.

On May 23 I observed a female Grosbeak building in the top of a pear tree which stands about twenty feet from a veranda of my house. The nest, which was only just beginning to take shape, was in plain sight from our upper windows. From that time till incubation began the male bird was never seen at the nest, though he often sang near by. I think he took no part in the building. The female had a habit of uttering a few high-pitched and faint notes, rather prolonged, *ee ee ee*, while on and about the nest. They were, perhaps, addressed to her mate, though he seemed never to respond in any way, and, in fact, during this period of nest-building I never saw him near when these notes were uttered. It is hard to see of what value such a habit could be to a bird, for the notes would serve only to betray the presence of the nest; but they impressed me as a sort of crooning of satisfaction over the preparations going forward,— though the word crooning would not apply to the quality of the notes, which were high-pitched, as stated.

On May 28 I saw the bird moving about on the nest and judged that it was completed. As I did not go up to the nest at this period, I do not know just when the eggs were laid, nor did I note just when incubation began, but on June 7 the birds had been sitting for several days. The male assisted his mate in the work of incubation, but the female appeared to do most of it. The male took his cares lightly and sang habitually while incubating. The song thus given was shorter and less loud than the ordinary song of the species, but, though somewhat subdued in tone, it was not identical with the very soft and subdued song which is sometimes heard from

[1] Read before the Nuttall Ornithological Club, December 7, 1914.

this species and which is, I think, generally if not always more prolonged than the ordinary song. It began with three or four repetitions of a phrase like *tĭ'wee* and concluded with a warble. The female *hicked* a good deal on the nest, but for some time I did not hear what I have called the "crooning" notes.

On the afternoon of June 14 I watched the nest for a time from the ground below and at a short distance.

At 2.20 the male sang at the nest and was relieved by the female.

At 2.33 the female called *ee ee ee* (the "crooning" note) and was relieved by the male.

At 2.42 the male sang.

At 2.43 he sang again and was relieved by the female. The male called *ee ee ee* as he flew off. I think this was the only time I heard this note uttered by the male.

At 3.07 the female flew off with *ee ee ee*. Probably the male approached the nest at the same time and without my seeing him from where I sat, for, after waiting some time for him to appear, I went to the upper veranda and from there could see him perched on the edge of the nest, shading it with wings half spread. This was at 3.29.

At 3.34 the male sang and was promptly relieved by the female. A single *ee* was uttered by one of them. The female at once began feeding young, and this was the first intimation I had had that the young had hatched. They must have hatched that day, for on the day before, and I think on the morning of that day (June 14), the parents appeared to be still sitting.

On June 18 I noted that the young, of which there were three, were covered, or partly covered, with a whitish down which stood out from the body and up from the top of the head. They had a fine, high, rather sweet *hū'ee* with a slightly husky quality, which they uttered while being fed. I have heard this same note, but louder, uttered by a fully fledged bird, possibly an adult female (July 29, 1908).

On June 20 the note of the young was louder and usually a plain, unmodulated *hū*, though occasionally there was a suggestion of the rise in pitch at the end. Once or twice I heard a quavering *hū' wĭ-wĭ*. The young then cried before the mother came to the nest as well as while being fed. The female took the entire care of

the young, and after the 14th, when the young were just hatched, I never saw the male at the nest. For several days he had sung but little, but on the 20th he recovered his volubility and sang long and loud and frequently. On the next day he was still voluble.

On June 22 I went up to the nest to band the young birds. One of them flopped out as I reached up to the nest from the ladder, and fell fluttering to the ground, where it landed on its back and lay motionless. When I reached it and picked it up it remained motionless in my hand, but did not appear to be dead or dying, and I concluded that it was "playing possum." I banded it and put it back in the nest, where it stayed quietly. Another of the young, which I banded, also "played possum." I could not find the third young bird by feeling about,— the nest was above my head,— and I think it may have disappeared, or possibly it was underneath the other two. I refrained from poking about in the nest much for fear of hurting the young.

While I was at work at the nest, the female kept up an anxious *hick*-ing near by and at one time uttered a rapid succession of frantic *hicks* within a few feet; but the male sang cheerfully through it all and appeared not to notice what was going on. One may imagine, of course, that he was merely trying to reassure his mate or keep up her courage. He was especially voluble that morning, particularly early in the morning, before I went up to the nest, when his songs were unusually long and succeeded one another with only very short rests between.

On June 24, two days later, the male, which had been as voluble as ever the day before, was not heard at all, and as the nest appeared to be deserted, I went up to it and found it empty except for a dead young one, one of those that I had banded and probably the one that had fallen. Later I heard a surviving young one calling about a hundred yards off, and saw the mother, which answered her offspring with the familiar *hick* note.

I took the nest, which hung together remarkably well, considering the apparent looseness of its construction, and was easily removed intact. It is difficult to assign any precise dimensions to it, on account of its straggling character, but it may be called eight inches in external and three and one-half inches in internal diameter, and about four and one half inches deep externally and

two inches internally. It was composed of slender twigs of various kinds, the exterior largely dead hemlock twigs, which from their roughness held together well and kept the structure intact. The lining was of finer twigs, largely spiræa from the garden. The nest was set in a crotch near the top of the pear tree and about seventeen and one half feet from the ground.

Summary.

Summarizing these observations, we find that the female bird built the nest, apparently without help from her mate; that the male assisted in incubation and habitually sang while on the nest, the song seeming to be sometimes, if not always, a signal to the female that he was ready to be relieved; that the male appeared to take no part in the feeding of the young; that the female had a special note which she uttered when about the nest and sometimes, apparently, as a signal that she was ready to be relieved from her duties,— a note that was rarely uttered by the male; that the young, as is the case with most birds, had a peculiar note of their own, a food-call, which changed as they developed; and, finally, that young Rose-breasted Grosbeaks should be banded not later than a week after hatching if the risk of frightening them out of the nest is to be avoided.

FIVE YEARS PERSONAL NOTES AND OBSERVATIONS ON THE BIRDS OF HATLEY, STANSTEAD COUNTY, QUEBEC — 1911–1915.

BY H. MOUSLEY.

As far as I have been able to gather very little if anything has been published on the birds of this particular part of the country, and it may be well therefore to give some indication as to the exact location of Hatley and the County of Stanstead, of which the former forms one of the northern divisions. Looking at the map the county of Stanstead will be found stowed away as it were almost in the extreme southeast corner of the Province of Quebec; the southern border adjoining the State of Vermont, whilst the nearest point on the eastern side is within ten miles of the borders of New Hampshire, and thirty of Maine. The entire county comprises an area of about 410 square miles or 263,000 acres. Few parts of the country present a greater variety of surface than Stanstead County. The land on the eastern shore of Lake Memphremagog (a large sheet of water some 33 miles in length and from one to three miles in width) and extending through Hatley on the west side of Lake Massawippi is hilly and broken, the most prominent elevations being the Bunker and Massawippi hills, the latter rising to about 1400 feet above the sea level. The courses of the four principal rivers, the Barlow, Negro, Coaticook and Massawippi (none of which are of any great size or importance) are marked by uneven banks and hilly ground which generally extends for about a mile on each side. The three first have their source in the State of Vermont from which they flow in a northerly direction, the Barlow and Negro on the left hand side of the county and the Coaticook on the right side, the two former emptying themselves into Lake Massawippi at its southern extremity and being conveyed away at the northern end by the Massawippi river; which after flowing in a northeasterly direction for about eight miles joins the St. Francis near Lennoxville the same as the Coaticook river does on the east side, and thus the waters of these four rivers eventually find their way into the St. Lawrence by means of the St. Francis,

about midway between Montreal and Quebec, this waterway, no doubt, forming at least one of the minor highways of migration if not a principal one. The greatest elevation in the eastern part of the county is Barnston Mountain. In many places the surface is undulating and resembles the rolling prairies of the west, with no prominent hills. With the exception of some marshy ground and about 800 acres known as the "Burnt District," both near Lake Massawippi there is but little waste land in the county, the greater part of the hilly ground being adapted to cultivation or pasturage.

The soil in its native state was highly fertile and productive, the hills and higher grounds being covered with a heavy growth of maple, beech, birch, hop hornbeam, and white ash, whilst the lower grounds produced elm, basswood, cherry, butternut, poplar, hemlock, spruce, pine, cedar, fir and tamarack, but in their mistaken idea that the strength of the soil would always continue, the earlier settlers devastated the County of most of its valuable timber, until at the present day many of the farms have barely sufficient trees left for firewood and building purposes and to form sugaries. The County is divided into five townships, of which Hatley forms the principal northern one, the village being situated between latitude 45° 10′ and 45° 12′ north and longitude 71° 55′ and 71° 57′ west, and deriving its name from a village in England, no doubt that of East Hatley in the Diocese of Ely Cambridgeshire. The survey determining its original boundary was made in 1792 and subdivision into lots in 1795 and by 1815 it had become a place of some little business and importance, but now owing to the fact that the nearest railway station is between three and four miles away, the business done in former days when railways did not exist, has been removed to other towns and villages adjacent to the centers of transport. Owing to this lack of a railway, however, the village at the present day retains most of its original charm and beauty. It lies at an elevation of about 1000 feet above the sea level, and almost through its entire length there runs a fine avenue of maple trees. On the east it is backed by some hilly and well wooded ground rising 350 feet or more above the level of the village, whilst to the north and west the ground after rising for some distance falls away gradually until it reaches the level of Lake Massawippi, a fine sheet of water nine miles in length, with an average

width of about a mile. This lake together with that of Magog a little further north, and Lake Memphremagog to the south, are the three principal sheets of water in the County, affording excellent fishing at times, as well as a resting place for large flocks of ducks in the autumn. In years gone by the St. Francis tribe of Indians used to visit Lake Massawippi (even after the advent of the white settlers) for the purpose of fishing, trapping mink, coon, otter and beaver, etc., as well as hunting moose and deer, all of which were then found in abundance, but most have long since disappeared with the march of civilization! On the south side of the village runs the main road to Stanstead, the country assuming more of a level aspect with Bunkers hills in the distance on the right whilst the high rising ground on the east side of Hatley, extends for some considerable distance in the direction of what is known as Barnston Mountain. The district all round Hatley is entirely an agricultural one, dairy farming, hog raising, and the maple sugar industry forming the farmers' principal source of income. In addition to the maple trees there still remains a fair sprinkling of elm, beech, birch, cherry, butternut, poplar, hemlock, cedar, fir, pine and tamaracks, which with numerous small streams and the undulating nature of the country, form an excellent home for the various breeding birds, and resting place for the migratory ones that visit the district.

Although the list contains some 122 species, 63 of which have actually been found breeding (besides another 17 some of which are known and others believed to breed more or less frequently, but whose eggs have not yet been found), it must not be assumed that it is by any means complete, as very little has been done with regard to the Hawks and Owls, most attention having been paid to the Sandpipers, Sparrows and Warblers.

The position of Hatley makes its avifauna interesting lying as it does at the mouth of a "cul de sac" so to speak of the Canadian Zone, which has its termination in the States of Vermont and New Hampshire, with spurs of the Transition zone extending north on each side of it, the one on the right hand into southern Maine to about latitude 45°, whilst that on the left extends still further north, or to about latitude 47°. It follows naturally that the fauna is chiefly Canadian with a good deal of Transition or Alleghanian,

and a slight sprinkling of Hudsonian. Of the Canadian species such characteristic ones as the White-throated Sparrow and Winter Wren are getting very near their extreme southern breeding limits, whilst of the Transition forms, Hatley apparently, lies outside the regular breeding area of the Sora, Indigo Bunting, Red-breasted Grosbeak and Cowbird, the latter of which until the present summer (1915) was almost unknown even as a transient visitor.

In that charming book the "Birds of Maine" Mr. Ora W. Knight, on page 507, speaking of the Myrtle Warbler says, "The scattered flocks pass on leaving here and there a pair of mated birds, in many instances individuals being found frequenting the very same localities from year to year under conditions which would almost warrant the assumption that the very same individual birds had returned to their summer homes." With regard to this most interesting subject I will say that my five years' observations over a restricted area (mentioned hereafter) have more than "almost warranted" as the late Mr. Knight says, the assumption, they have entirely convinced me of the fact that the very same birds do come back year after year to the site endeared to them by the previous year's associations. If this is not so how can the following instances be lightly put on one side and explained away. In May, 1914, in a particular corner of the marsh I took a set of Swamp Sparrow's eggs, of a very handsome type, differing from any other set in a most marked degree. Visiting the same locality the following year I flushed a bird from another set of eggs, almost identical to those of the previous year. Again a set of Spotted Sandpiper's was taken on May 20, 1912, the earliest set ever found, and much below the average size, being in fact the smallest set I have ever seen or can hear of, the average dimensions being 1.18× .92 in. only. In the following year on the same side of the marsh and not far from the other nest, I found on May 25 (also the earliest date for that year) another set identical in size, 1.19 × .91 in., shape and markings, to that of the previous year. Finally a set of the White-throated Sparrow was taken in May, 1914, on the outskirts of a small damp wood, the birds building another nest almost at once close by, under the drooping branch of a small cedar bush, which I did not molest.

Visiting this same bush the following year another nest was

found within one inch of the other, in fact it was only the bough of the branch resting on the ground that divided the two nests. Am I in this case to believe that a strange pair of birds not only selected this same wood, but also the same part of it, and moreover the very identical bush in it, and spot under that bush, to build their nest in, if so; then I can only say it seems to savour of the uncanny. If space permitted I could enumerate many other similar instances to the above, with regard to the Myrtle Warbler, Robin, Chipping Sparrow, Bluebird and others. Of course I do not believe that in every case both birds can return, in some no doubt they do, in others it may be the male or female only, but which ever it is, that one, after selecting a new mate, will no doubt lead him or her as the case may be to the locality of the old nesting site. At all events this is the light in which I prefer to look upon it, leaving others to enjoy their own views on a subject, which, after all, is perhaps too deep for any of us to fathom with certainty.

In conclusion I may say that nearly all of my records have been made on some six farms (the smallest of which only some 75 acres in extent has produced 100 out of the 122 species enumerated and 47 of the 63 breeding records) one and one half miles south of the village consisting of about 1000 acres, on which is situated the little marsh so often referred to, especially in the case of the Sandpipers as "the marsh." This was originally a wood through which a small stream flowed, and lying in a natural hollow it was an easy matter, when the timber was cut down, to form a dam at the lower end and thus spread the water from the stream and surrounding sloping ground, over a surface of about 15 acres. In the summer time owing to the little rainfall and a bad leak near the dam the water level gets very low, leaving large beds of silt and mud exposed, with patches of cat-tails, forming an excellent feeding ground for marsh and shore birds, so much so that although there are several other small marshes in the neighbourhood, none of them present anything like the attraction that this one does (owing to its especially large mud beds) at all events to the Sandpipers, very few of which I have found anywhere else. The following synopsis will show at a glance to the best of my judgment the number in each order, and status of the 122 species enumerated in the text.

Order	Residents No. of Species	Summer Visitants No. of Species	Winter Visitants No. of Species	Transients No. of Species	Breeding, nests & eggs actually found No. of Species	Known, or believed to breed but no eggs found No. of Species
Anseres				4		
Herodiones		1		1	1	
Paludicolæ		1		1	1	
Limicolæ		2		10	2	
Gallinæ	2				1	1
Raptores	1	2		6		3
Coccyges		1		1	1	1
Pici	3	2			4	1
Macrochires		2		1	1	1
Passeres						
Sparrows		7		3	7	
Wood Warblers		13		4	10	3
Flycatchers and others	4	35	5	10	35	7
	10	66	5	41	63	17
			122 species			

1. **Anas rubripes** (Brewster). BLACK DUCK.— Common transient; (April 11) Aug. 6 to Oct. 17; (Nov. 25). Average date of arrival (for two years) Aug. 15; of departure (for two years) Oct. 14. Small flocks of this duck usually visit the marsh during the months of August to October, the date in April being for a pair only, and that in November for a single. They fly high as a rule with no fixed formation, and are very wary and difficult to approach when settled on the water. The total number of birds observed during the fall of 1914 was 95, the largest flock consisting of eighteen, as against 21 for the present year with a total of 93 birds.

2. **Nettion carolinense** (Gmelin). GREEN-WINGED TEAL.— Rare transient; Oct. 11. The above date of the present year, 1915, is the only one on which I have shot (or seen to identify) an example of this smallest of ducks, although on April 18 of this same year, I have an entry in my note book as follows, viz: "Small duck seen in the distance probably a teal?" I feel pretty sure now that it was one of this species. The present one was a female and alone, and when weighed just turned the scales at thirteen ounces.

3. **Chen hyperborea nivalis** (Forster). GREATER SNOW GOOSE.— Rare transient; April 6. A flock of fifteen of these fine birds passed over in the afternoon of the above date, 1914. They were heading north spread out in a gentle curve, and not in a sharp defined V shape. As no specimen was obtained I have adopted the generally recognized rule, that birds passing

to the breeding grounds in the far north by way of the eastern side of the Mississippi valley, belong to this species and not to the Lesser Snow Goose.

4. **Branta canadensis** (Linnæus). CANADA GOOSE.— Common transient; April 25 to May 2; Oct. 16 to Nov. 25. Flocks of from 20 to 30 of these geese can usually be seen both during the day and night, heading either north or south as the case may be, and generally spread out in a well defined V shape.

5. **Botaurus lentiginosus** (Montagu). AMERICAN BITTERN.— Fairly common summer visitant; April 24 to Sept. 29. Average date of arrival (for four years) April 27; of departure (for three years) Sept. 28. Eggs: May 29 to June 14. A pair of bitterns visit the marsh every year, but I have only succeeded in finding their nest on two occasions, the eggs on June 14 being heavily incubated, and hatching out some few days later. Of all the ugly little spitfires young bitterns beat anything I have ever seen. I suppose I must consider myself lucky in having been able to watch a male bittern boom for nearly half an hour, although the spectacle was not very edifying, reminding one somewhat of a person in the throes of seasickness. However, I suppose his lady love thought otherwise, and no doubt was duly impressed by the ceremony.

6. **Ardea herodias** (Linnæus). GREAT BLUE HERON.— Fairly common transient; April 19 to May 31; July 25 to Nov. 13. Average date of arrival (for four years) April 26; of departure (for three years) Nov. 8. One or two of these handsome birds can be found at most times on the marsh during the above dates.

7. **Rallus virginianus** (Linnæus). VIRGINIA RAIL.— Rare transient visitor; July 22 to 24. On the first of the above dates in the present year (1915), I saw (and shot for identification) my first example of this rail, and on the latter date saw another in about the same place, on the edge of the reeds, which no doubt was its mate.

8. **Porzana carolina** (Linnæus). CAROLINA RAIL OR SORA.— Rare summer visitant; May 23 to Oct. 12. Eggs: July 22. Up to July of the present year (1915) I had only seen two examples of this rail in October, and it was with much surprise therefore, whilst walking through a bed of cat-tails in the marsh on the above date in July, that I came across a nest containing six young birds which had just hatched and two addled eggs, which latter I was able to preserve as cabinet specimens. The nest was composed entirely of old dry cat-tail leaves, and when found the top was five and one half inches above the surface of the ground, upon which it rested, the water in the marsh being nearly all dried up at this date. There was a well defined approach from the ground to the summit of the nest, but apparently no canopy.

9. **Philohela minor** (Gmelin). AMERICAN WOODCOCK.— Rare transient; May 7 to 10. After three years repeated failure to find any traces of this bird, I flushed one on the first of the above dates in 1914, from underneath a cedar tree, and came upon it again three days later, whilst it was standing dozing at the edge of a little alder run, not far from the spot where I first put it up.

10. **Gallinago delicata** (Ord). WILSON'S SNIPE.— Fairly common transient; (Aug. 30, Sept. 14, 20); Oct. 2 to Nov. 9. The usual date of the fall arrival here seems to be about the first, or beginning of the second week in October, only a single bird in each case having been observed on the dates in August and September. During the fall of 1914 I counted thirty-nine between the above dates in October and November, as against only about a sixth of this number for the corresponding period of the previous year; fourteen being the greatest number seen in a single day. This year 15 examples have been noted. I am unable to give a spring date not having yet observed the bird at that season.

11. **Pisobia maculata** (Vieillot). PECTORAL SANDPIPER.— Fairly common transient; July 22 to Oct. 21. I have only seen thirty-five examples of the Pectoral Sandpiper so far, two in July, five in August (one of which was in the company of two Lesser Yellow-legs), fourteen in September, and fourteen in October, most of which latter were feeding with Wilson's snipe. At times they are not at all shy, and I have watched them feeding on several occasions within quite a short distance. In this species the males, contrary to the general rule amongst the Sandpipers, are the larger, one I shot weighing five ounces and taking just two females to balance the other side of the scales. They make excellent eating when properly cooked like snipe. I am unable to give a spring date, not having yet observed the bird at that season.

12. **Pisobia minutilla** (Vieillot). LEAST SANDPIPER.— Common transient; May 23 to June 2; July 10 to Sept. 4. Of all the Sandpipers enumerated this is the most abundant, as I find from my notes that during the past and present year (1915), 114 examples have been seen, and with four exceptions (three of which numbered between twelve and eighteen and the other twenty-five) they did not exceed six in a flock, and on many occasions singles only were observed. In the case of this species as well as in that of all the other shore birds observed here, the autumn migration produces by far the greatest number of birds.

13. **Ereunetes pusillus** (Linnæus). SEMIPALMATED SANDPIPER.— Fairly common transient; May 23 to 29; July 22 to Sept. 4. This elegant little Sandpiper is not nearly so plentiful as the Least, in fact I have never seen a flock composed entirely of them, they were always in the company of the latter. By carefully examining these mixed flocks and taking the same dates as mentioned in the account of the Least Sandpiper, I find only thirty-five were observed as against the 114 of the latter, thus giving a proportion of about three to one.

14. **Totanus melanoleucus** (Gmelin). GREATER YELLOW-LEGS.— Rare transient; May 11 to 12; Aug. 3 to Oct. 24. Judging from the few examples seen of this bird, one in the spring and eight in the fall, it is not unreasonable to suppose that they are merely stragglers, and that Hatley lies outside the usual line of migration. When disturbed I noticed these birds had a habit of alighting on dead tree stumps (of which there are many in the marsh) where they would remain for long periods at a time, and from

which no doubt they were better able to keep a sharp lookout for any approaching danger.

15. **Totanus flavipes** (Gmelin). LESSER YELLOW-LEGS.— Rare transient; July 9 to Aug. 10. I have only seen seven examples of this bird so far, four in July and three in August, so that no doubt Hatley, as suggested in the case of the Greater Yellow-legs, lies outside the general line of migration. When disturbed these birds only gave vent to a single "wheu" as against the three uttered in succession by their cousin the Greater Yellow-legs, whose notes are also louder and harsher. I have never seen them alight on anything but the ground.

16. **Helodromas solitarius** (Wilson). SOLITARY SANDPIPER.— Common transient; May 9 to 31; July 18 to Oct. 21. Average date of arrival (for three years) May 19; of departure (for two years) Oct. 7. On a few occasions only have I seen this Sandpiper in the company of others, and then generally the Least was its companion. It is particularly fond of wading about in the water up to its belly, but only on two occasions have I seen it swim. On the first of these a bird deliberately waded out of its depth, and then took to swimming about for half a minute or so, in the most matter of fact way, and on the second a wing tipped bird swam half way across the marsh before being able to reach a little mudbank on which it alighted. During the past two years I have observed seventy of these birds, the largest number seen together being six on one occasion only, whilst three, four and five have been noted several times. Only once have I seen it alight on the top of a tree stump, the ground or a log in my experience being the usual place. I see no reason why some day they should not be found breeding here, as the ponds they frequent with the surrounding woods seem likely enough places.

17. **Bartramia longicauda** (Bechstein). BARTRAMIAN SANDPIPER.— Rare summer visitant; May 10 to Aug. 20. Eggs: May 24. It was on the 24th of May, 1913, that I received word of a bird of this species, having been shot at close range, as it rose suddenly from the ground late the previous evening. Naturally I was not long in visiting the farm, which was only some few miles away, and being shown the field and place near where the bird had risen, I soon came across the nest, which was a natural depression in the ground in the centre of a bunch of buttercups, lined with dry grasses only, and contained a beautiful set of four evenly spotted eggs (average size 1.72 × 1.23), one being of a much lighter ground colour than the other three. The following year I was again notified that a pair of birds were about, but on the only two occasions on which I was able to visit the locality, I failed to locate their nest, although I have every reason to believe, they brought up a brood, as they were seen and heard several times again during the remainder of the summer. During the present year (1915) a parent bird with young was seen by two parties in the same district in which my set of eggs was taken, although at somewhat widely different points, so that possibly the breeding area and number of birds is larger than I imagined. However this may be, I look upon it as quite

my most interesting find, especially in view of the fact that during the past few years its numbers are considered to be increasing in northeastern United States, and let us hope in eastern Quebec also.

18. **Actitis macularia** (Linnæus). SPOTTED SANDPIPER.— Common summer visitant; May 1 to Sept. 24. Average date of arrival (for five years) May 4; of departure (for three years) Sept. 10. Eggs: May 20 to June 21. Usually not less than six pairs of this familiar little sandpiper breed on the margins of the marsh, and one of the most interesting events I have witnessed happened with regard to this species. I had shot an immature bird (for a cabinet specimen) which fell at the edge of the water, but on proceeding to the spot to pick it up as I thought was surprised to see it wading out in the water, where after getting out of its depth it sank to the bottom, and I could see it there in the clear water proceeding at a great pace by means of its wings and feet for a small mud bank, where it came to the surface and hid in the surrounding rushes. Persistent searching in late June and through July has failed to reveal any evidence of a second brood. Three eggs in a set are rare, only one out of fifteen nests examined having this number all the others containing four. On one occasion only have I seen a very excited parent bird with young alight on a cat-tail head, and very out of place and uncomfortable it seemed to be. It may not be generally known that these birds if flushed whilst constructing their nest invariably desert it, at least this has been my experience on four occasions, when I have flushed both birds whilst in the act of scooping out or lining the hole. In one instance, however, they made a fresh nest within forty-five feet of the old one. Most of the birds leave about the end of July or beginning of August, those remaining into September being immatures only.

19. **Oxyechus vociferus** (Linnæus). KILLDEER.— Rare transient; July 31. The above date of the present year (1915) is the only occasion on which I have come across this handsome plover, and then only one was seen feeding by itself on the edge of the marsh. By careful stalking and hiding in the cat-tail beds I was able on two occasions to get quite close to it.

20. **Ægialitis semipalmata** (Bonaparte). SEMIPALMATED PLOVER.— Rare transient; May 23 to 28; July 22 to Aug. 16. It is only during the present year (1915) that I have come across this pretty little plover, and then only fifteen examples have been noted between the above dates, the greatest number seen together being four on two occasions. In three cases they were alone and in the other five Least and Semipalmated Sandpipers were their companions.

21. **Canachites canadensis canace** (Linnæus). CANADIAN SPRUCE GROUSE.— Rare resident. This is decidedly a rare bird in the immediate vicinity of Hatley. I have never shot or even seen one (during the past five years) until the evening of Oct. 21 of the present year, 1915, when a female was shown to me in the flesh that had been shot in the morning.

22. **Bonasa umbellus togata** (Linnæus). CANADIAN RUFFED GROUSE.— Common resident; Eggs: May 15 to 30. As far as my observations have gone for the past five years, this fine game bird has remained

in "status quo" neither increasing nor decreasing. It is by no means plentiful at any time but judging from the number of broods seen earlier on, the present season, 1915, should prove to be above the average. Nests usually contain from eight to ten eggs, only on one occasion have I found as many as thirteen. In some cases it is not unusual for a few eggs in a set to be spotted, but I have a unique one of ten in which every egg is well spotted, not at the larger end as is usual but at the smaller, an uncommon occurrence even in the case of a single egg of any bird. I have never had the good fortune to catch a male in the act of drumming, although I have known of several drumming logs.

23. **Circus hudsonius** (Linnæus). MARSH HAWK.— Common summer visitant; April 14 to Oct. 17. Average date of arrival (for four years) April 18; of departure (for four years) Sept. 22. Although a pair of these birds have frequented some low lying overgrown marshy meadows for the past four summers, I have been unable so far to locate their nest, but have seen the young later on in the season hawking over the locality in company with the parent birds.

24. **Accipiter velox** (Wilson). SHARP-SHINNED HAWK.— Rare transient; May 3, Oct. 21. This little hawk must be rare in the district for the above dates of the present year (1915) are the only ones on which I have seen examples, notwithstanding I have invariably rapped on every evergreen tree containing a likely looking nest, in the hope of putting one up during the breeding season. When seen the one in May was flying low down and gave me a good view of its long square ended tail, the other in October was that of a male shot in the morning and shown to me in the flesh a few hours afterwards.

25. **Astur atricapillus atricapillus** (Wilson). GOSHAWK.— Rare transient; Oct. 21. The above date in 1914 is the only one on which I have seen an example of this hawk. It was an adult bird in fine plumage and was shot near a sugar house in some woods early in the morning and shown to me the same evening.

26. **Buteo borealis borealis** (Gmelin). RED-TAILED HAWK.— Rare transient; Oct. 29. The only example I have seen of this hawk was that of a fine adult bird which (contrary to its general custom) had been robbing a hen yard, and was eventually caught in a trap on the above date, and shown to me alive the same day.

27. **Buteo lineatus lineatus** (Gmelin). RED-SHOULDERED HAWK.— Common summer visitant; March 28 to Oct. 25. Average date of arrival (for three years) March 29; of departure (for three years) Oct. 21. This is undoubtedly the commonest of the large hawks in this district, and at least four pairs nest in the surrounding woods, although not having given much attention to them as yet, I can only record having actually found one inhabited nest which contained young. On one occasion I witnessed a pair of Kingbirds who had a nest in some drowned land on the outskirts of a large wood so mob and terrify a young hawk of this species that it seemed to lose the power of flight, and floundered about in the water until it became a most

miserable and bedraggled object, and it was not until the Kingbirds had left him that he ventured to essay a short flight on to a stub, where he dried his wings, and at intervals uttered shrill cries as if invoking his parents to come to his aid.

28. **Haliæetus leucocephalus leucocephalus** (Linnæus). BALD EAGLE.— Uncommon transient; Aug. 1. A specimen of this fine eagle was shot on the above date in 1914, on a farm just outside Hatley village, and was set up by a local taxidermist. I have since had the pleasure of seeing the bird and found it to be an immature one in fine plumage. It weighed seven and one half pounds so I was told, and the spread of its wings was seven feet.

29. **Falco columbarius columbarius** (Linnæus). PIGEON HAWK.— Rare transient; Oct. 5. The above date of the present year (1915) is the only one on which I have seen an example of this little falcon. When first seen it flew just over my head (whilst I was in a cat-tail bed in the marsh after snipe) in hot pursuit of a small bird, and I was afterwards able to get quite close to it while perched on a dead tree on the lookout for further quarry.

30. **Pandion haliaëtus carolinensis** (Gmelin). OSPREY.— Rare transient; May 3 to 5. Average date of arrival for two years May 4. During the above dates in May of this (1915) and last year, a pair of these birds have visited the neighbourhood and remained to fish in the waters of the marsh, where at intervals they could be seen dropping like an arrow, generally rising with a fish in their talons.

31. **Strix varia varia** (Barton). BARRED OWL.— Fairly common resident. Although I have only actually seen this Owl in the flesh on five occasions in April, October and November, its hooting has been beard in almost every month of the year, and for this reason I think it may be safely included under the above heading. I often regret the want of a younger companion who would help me work up the Owls and Hawks, as there must be many more species than I am able to record at present.

32. **Coccyzus erythrophthalmus** (Wilson). BLACK-BILLED CUCKOO. — Fairly common summer visitant; May 26 to Aug. 27. Average date of arrival (for four years) May 29. Eggs: June 12 to 21. This is by no means a plentiful bird and during the summer of 1914, I was unable to locate a single nest, and only saw it on two occasions, both of which were in July. Of the five nests found so far none were placed at a height of more than seven feet above the ground, and all but one were lined with willow catkins, the contents in every case being a set of three eggs, one set containing a runt egg, size .87 × .71.

33. **Ceryle alcyon** (Linnæus). BELTED KINGFISHER.— Fairly common transient; May 3 to 22; July 19 to Oct. 7. Average date of arrival (for four years) May 11; of departure (for two years) Sept. 30. Every spring a pair of these birds frequent the marsh during May, and can generally be found perched on a stump or fence rail, from which at intervals they rise into the air preparatory to plunging down on some unsuspecting fish that

has caught their eye. In the fall they return again but strange to say never accompanied by any of their brood.

34. **Dryobates villosus leucomelas** (Boddært). NORTHERN HAIRY WOODPECKER.— Fairly common resident. Eggs: May 28. With the exception of the Pileated this is the rarest of the woodpeckers, being somewhat uncommon at all times, and only nesting so far as my experience goes in woodlands. As a rule the nest hole is somewhat high up but on one occasion I found one which was only three feet above the ground in a birch stub, containing four eggs, the entrance hole being two inches in diameter, extreme depth eleven inches and average width two and three quarters inches.

35. **Dryobates pubescens medianus** (Swainson). NORTHERN DOWNY WOODPECKER.— Common resident. Eggs: May 22 to June 9. This little Woodpecker is certainly more plentiful during the spring, fall and winter than it is in the breeding season, although it is more abundant than the Hairy at all times. I have not yet found it nesting in any of the orchards, the favourite site in this district being the decayed limb of a maple or birch tree in the woods or on the roadside, at almost any height above the ground. The average dimensions of three nesting holes examined are as follows, viz.: entrance hole $1\frac{1}{8}$ inch diameter, extreme depth 8 inches, and width $2\frac{3}{4}$ inches.

36. **Spyrapicus varius varius** (Linnæus). YELLOW-BELLIED SAPSUCKER.— Common summer visitant; April 19 to Oct. 8. Average date of arrival (for four years) April 22; of departure (for four years) Sept. 22. Eggs: May 18 to 20. During the spring and fall migrations this is certainly the most abundant woodpecker of all, and in the breeding season is not far behind the Flicker for first place. Like the latter bird it often nests year after year in the same tree (but not necessarily in the same hole) the favourite ones here being elm, poplar and butternut. In April it is particularly fond of drumming on the buckets hung on the maple trees to catch the sap. Of two nests examined the average dimensions are as follows, viz.: entrance hole $1\frac{3}{8}$ inches in diameter, extreme depth $10\frac{3}{4}$ inches, and width $2\frac{7}{8}$ inches.

37. **Phlœotomus pileatus abieticola** (Bangs). NORTHERN PILEATED WOODPECKER.— Fairly common resident. This large and handsome Woodpecker is by no means very plentiful, and covering a large area of ground in its daily round in search of food it is more or less by accident that one comes across it. During the breeding season it frequents the larger and deeper woods and as yet I have not been able to locate a nest. From my notes I find thirty-four have been observed in the past five years, and on one occasion a party of five were together, a sight not easily forgotten. Of the above number, fourteen, or nearly one half, were observed during the months of March, April and May, the balance occurring in the fall and winter.

38. **Colaptes auratus luteus** (Bangs). NORTHERN FLICKER.— Common summer visitant; April 19 to Oct. 12. Average date of arrival (for five years) April 21; of departure (for four years) Sept. 28. Eggs: May 18

to June 2. Decidedly the most common of all the woodpeckers nesting year after year in the same tree (generally a birch or maple) but not always occupying the previous year's hole, which as a rule does not exceed fifteen feet above the ground. The average dimensions of five nests examined are as follows, viz.: entrance hole $2\frac{3}{8}$ inches in diameter, extreme depth $17\frac{1}{2}$ inches, and width $5\frac{1}{2}$ inches. The number of eggs in a set varies a good deal, six about here appearing to be the most usual, although on one occasion I found as many as eleven.

39. **Chordeiles virginianus virginianus** (Gmelin). NIGHTHAWK.— Rare transient; Sept. 1 to 2. I have only seen eight examples of this bird, four on the evening of Sept. 2 of last year, and the same number curiously enough on the evening of Sept. 1 of the present year, 1915. On both occasions the evenings were very sultry and the birds were hawking over the marsh, at intervals emitting their loud nasal " peents."

40. **Chætura pelagica** (Linnæus). CHIMNEY SWIFT.— Common summer visitant; May 13 to Sept. 7. Average date of arrival (for four years) May 15; of departure (for two years) Sept. 1. Eggs: June 15. A pair of Chimney Swifts have nested for several years in the chimney stack of my landlord, which during the summer months is not used. I have also found their nest attached to the inside of the perpendicular boards at the gable end of a hay barn.

41. **Archilochus colubris** (Linnæus). RUBY-THROATED HUMMINGBIRD.— Fairly common summer visitant; May 23 to Sept. 21. Average date of arrival (for four years) May 26; of departure (for four years) Sept. 14. At the flowers of a row of scarlet runners or the trunk of a certain birch tree (well pierced with sapsucker holes) I am always sure of finding one if not a pair of hummingbirds. It is a curious medley that gathers at the latter place, butterflies, moths, beetles, flies, Yellow-bellied Sapsuckers and Hummingbirds are all to be found at this one particular tree regaling themselves on the sap that has gathered in the little holes. I have often watched the birds on hovering wings extracting the nectar or flies from the scarlet flowers of the beans, and then perch on some adjacent runner, where resting they would insert their bills into the nearest flowers and go on feeding. This is another of the few summer visitants whose nest I have so far failed to discover notwithstanding persistent searching.

42. **Tyrannus tyrannus** (Linnæus). KINGBIRD.— Common summer visitant; May 3 to Aug. 25. Average date of arrival (for five years) May 8; of departure (for three years) Aug. 22. Eggs: June 3 to July 15. Probably every orchard has its Kingbirds, a pair having nested in one near my house for four consecutive years if not longer, repairing the nest each year. In 1912 they were robbed of two sets of eggs and in desperation forsook the apple tree and took possession of an old Baltimore Oriole's nest in the top of a maple tree in front of my house, in which strange home they laid a third set of eggs and brought up a brood. The following year they repaired the old nest in the apple tree again, thus showing what a strong attachment these birds have for a nesting site once selected. The pair of birds that so

mobbed the young Red-shouldered Hawk had their nest on the top of a small stump in the center of the drowned land, and another curious situation selected by a pair of birds was right on the top of a small bush in the centre of a field. About here three and four, more generally three, seem to be the usual number of eggs in a set; five I have never found and only once a set of two. They are fond of hawking over the marsh and I have seen them strike the water like a swallow on one or two occasions.

43. **Myiarchus crinitus** (Linnæus). CRESTED FLYCATCHER.— Fairly common summer visitant; May 10 to Sept. 9. Average date of arrival (for two years) May 12; of departure (for two years) Sept. 5. Eggs: June 25 to July 10. Previous to the spring of 1914, I had not observed this handsome flycatcher, but am glad to say that since then it has been fairly plentiful, although I have only been able to locate two nests, the one on the above date in July containing the remarkable small set of two eggs only. The nest was in an old woodpecker's hole and when found the female was on the nest, the eggs being somewhat well incubated. In addition to the usual materials this nest contained a large quantity of human hair combings, but no trace of snake skins could be found, which remark also applies to the other nest, which contained a set of five eggs, and was placed also in an old woodpecker's hole twelve feet up in a birch tree in the centre of a field.

44. **Sayornis phœbe** (Latham). PHŒBE.— Common summer visitant; April 13 to Oct. 13. Average date of arrival (for five years) April 14; of departure (for four years) Sept. 28. Eggs: May 14 to June 26. Bridges not being very plentiful in this part of the country, the Phœbe has to content itself with the beams of outbuildings and ledges of verandas for nesting sites, and in the woods the sugar houses are made use of. At one farm house I counted over eight nests in close proximity to one another. This year (1915) a pair built on my veranda and a set of eggs was laid by May 14. These I took at nightfall and substituted three addled Bluebird's eggs with a view of seeing what the Phœbe would do when they failed to hatch out at the proper time. On these substitutes she sat steadily for the first fortnight, then began to leave the nest at intervals, but it was not until after June 16 that I noted a change, when both birds appeared to be taking building material again to the nest. Naturally I became very much interested but not wishing to disturb them, did not inspect the nest again until the 26th, when I found what perhaps has never before been described of this species, viz.: that it had raised the outside of the nest and had built over the offending bluebird's eggs, thus forming a two storied nest similar to a Yellow Warbler when she builds over a Cowbird's egg. At the date mentioned the Phœbe had laid a fresh set of four eggs, which hatched out on July 12, and the young birds left the nest on or about the 29th. I have two sets in which spotted eggs occur.

45. **Myiochanes virens** (Linnæus). WOOD PEWEE.— Fairly common summer visitant; May 25 to Sept. 16. Average date of arrival (for four years) May 29; of departure (for three years) Sept. 8.— This is one of the few summer visitants whose nest I have not yet succeeded in finding, but

this perhaps is not so surprising when one considers how well it harmonizes with its natural surroundings, and that the bird is by no means plentiful here, and seems to confine itself to the woods in preference to orchards and roadsides like the Kingbird and Least Flycatcher.

46. **Empidonax trailli alnorum** (Brewster). ALDER FLYCATCHER.— Common summer visitant; May 16 to Aug. 19. Average date of arrival (for four years) May 21; of departure (for three years) Aug. 17. Eggs: June 8 to July 17. It is only by nest hunting that one can gain any idea of the abundance or otherwise of this species, as the bird is most secretive and one rarely gets a good view of it in the open. It is fairly common here and I have had no difficulty in locating some five or six nests each season. A full set of eggs consists quite as often of three as four, but on one occasion I came across one of two only. In this case I had the nest under observation from the first day it was started and only took the eggs after incubation had been in progress some few days. Dr. Coues is the only author that I have noticed so far who mentions the fact of this bird sometimes laying two eggs in a set only.

47. **Empidonax minimus** (W. M. & S. F. Baird). LEAST FLYCATCHER.— Common summer visitant; May 9 to Aug. 20. Average date of arrival (for four years) May 13; of departure (for three years) Aug. 17. Eggs: June 1 to July 19. Most orchards contain their pair of "Chebecs," and one adjoining my house has been the home of a pair for the past four years. Only on one occasion have I found the birds nesting in the woods, and then it was a small one, and not far from a house. The late date of July 19 is for a second set of eggs, the first having been destroyed. In this case the bird built her second nest not only in the same tree, but in the very same fork as the first one had been placed in, surely a most unusual occurrence.

48. **Otocoris alpestris praticola** (Henshaw). PRAIRIE HORNED LARK.— Fairly common summer visitant; March 7 to June 22. Average date of arrival (for four years) March 15. Eggs: April 14 to 23. It was not until April of the present year (1915) that I discovered this interesting species breeding here, four nests being located during the month. So many new facts were noticed with regard to its nesting habits that I have written a special article (which will appear in this Journal) dealing fully with the subject, and showing a nest with "paving", a trait which hitherto I believe has only been noted with regard to the Desert Horned species. Contrary to the generally accepted idea that it never perches in trees, I have seen it do so on many occasions, but this has been dealt with also in the aforesaid article. Of the four nests located all were warmly lined with the flower heads and plant down of the pearly everlasting (*Anaphalis margaritacea*) a plant which is most abundant here. Three contained a set of four eggs each and the remaining one three young birds, this latter nest being in a very damp situation, and the paving consisting of very small flat stones instead of cow-chips as in the others, which were all in dry situations.

49. **Pica pica hudsonia** (Sabine). MAGPIE.— Very rare accidental transient; Oct. 17. Well acquainted with the Magpie in England I was pleased to make its unexpected acquaintance again on the above date of the present year (1915), when a pair passed in front of me and flew right across the marsh, thus giving me a long uninterrupted view of them. In an interesting letter received from Mr. Taverner he says "I understand that many years ago some European Magpies were liberated at Levis opposite Quebec, and I have always surmised that these scattered records (of which we have a fair number in this end of the Dominion well supported by everything but specimens) are the progeny of these birds." Unfortunately the above date was a Sunday and consequently I had no gun with me as usual, otherwise I should certainly have shot an example, which might have solved this most interesting question, although the European bird is hardly to be distinguished from the American subspecies.

50. **Cyanocitta cristata cristata** (Linnæus). BLUE JAY.— Common. resident; rare in summer, common in spring and fall, less so in winters Eggs: May 24. Evidently the Blue Jay betakes itself to very secluded spots during the breeding season, as I have only succeeded so far in finding one nest, in May of the present year (1915), and had never seen the bird before during the months of June, July and August. It is most abundant in the spring and fall, becoming scarcer during the winter months. The above nest was placed thirteen feet up in a small fir tree on the borders of a swampy wood, and consisted outwardly of twigs and rootlets, lined with fine black rootlets only, and contained four eggs.

51. **Perisoreus canadensis canadensis** (Linnæus). CANADA JAY.— Rare transient; Oct. 21. There is no doubt about the Canada Jay being a rare bird in this district, the only example I have seen in five years is that of a bird shot on the morning of the above date in the present year (1915), and shown to me in the flesh the same evening.

52. **Corvus brachyrhynchos brachyrhynchos** (Brehm). CROW.— Abundant summer visitant; March 10 to Nov. 15. Average date of arrival (for five years) March 9; of departure (for three years) Nov. 8. Eggs: April 23 to May 14. In this district the favourite nesting site is usually at the top of some thick fir tree, where the nest is well hidden from view. Apparently there is some large roost to the northeast of Hatley, as large flocks of the birds can be seen every evening during the fall wending their way there for the night. I have seen a crow descend on a hen coop, seize a young chick which was outside and fly off with it in its claws.

(*To be concluded.*)

A NEW SUBSPECIES OF HUDSONIAN CHICKADEE FROM THE LABRADOR PENINSULA.

BY CHARLES W. TOWNSEND, M.D.

Penthestes hudsonicus nigricans, subsp. nov.

Subsp. Char.— Midway in size between *Penthestes hudsonicus hudsonicus* and *P. hudsonicus littoralis*, bill as short as that of *littoralis* and as thick as *hudsonicus*. Darker than either on back and sides and much less brown.

Type. — No. 1420, coll. C. W. T. ♂ ad. Shekatika, head of inlet Saguenay County, Quebec, Canadian Labrador, July 23, 1915; collected by C. W. Townsend.[1]

Range.— So far as known, forested region of Labrador Peninsula.

Description of adult. Sexes alike. Crown, nape and back mouse-gray slightly tinged with hair brown; wings and tail dull slate-color; throat black, ear coverts, sides of neck, breast and belly white; sides brownish drab.

Measurements ♂ (type) wing 66, tail 64, tarsus 15, bill, culmen, 8.5, depth at base 4.5.

♀ wing 62, tail 62, tarsus 14, bill, culmen, 8, depth at base 5.

Remarks. The short, stout bill and dark back almost devoid of brown tint as well as the absence of a strong brown tint on the sides make this a well marked subspecies. In its dark sooty tendency it resembles other birds of the forested regions of the Labrador Peninsula such as the Labrador Horned Owl and the Labrador Jay. This region abounds in water in the bogs, lakes and rivers and its climate in summer is humid. A number of other birds of this region appear to have a tendency to darkness in plumage, *e. g.* Red-tailed Hawk, Flicker, Night Hawk and Water-Thrush.

It is probable that the Hudsonian Chickadees of the treeless or scrub Arctic and Subarctic area in Ungava Labrador and Newfoundland Labrador are *P. hudsonicus hudsonicus*. Specimens from Lance au Loup taken in May belong to this latter form. The Ungava form described by Rhoads in 1893 (Auk, X, 1893, p. 328) has the brown coloration of *hudsonicus*. I am greatly indebted to Mr. Outram Bangs for his assistance in preparing this note.

[1] I have since given the type specimen to the Museum of Comparative Zoölogy at Cambridge, Mass., and it now bears the number 69431.

GENERAL NOTES.

An Accomplishment of the Red-throated Loon.— While on the southern end of Puget Sound in November and December, 1914, and particularly on Oyster Bay, Washington, the writer had opportunity of making observations on the Red-throated Loon (*Gavia stellata*). This small Loon is noticeably handier on the wing than *G. imber*, but differs especially from that species in its ability to get under way from a position in the water. When the waves are rolling it must splatter through the crests of a number of them before it gets clear, but from still water the Red-throated Loon can spring into the air and proceed directly into normal flight, an accomplishment in striking contrast to the limitations tradition ascribes to powers of flight in the Loon kind.— W. L. McAtee, *Washington, D. C.*

The Long-tailed Jaeger in Indiana.— While collecting along the beach east of Millers, Indiana (near Dune Park), Sept. 21, 1915, I shot an adult male Long-tailed Jaeger (*Stercorarius longicaudus*). The bird was on the beach in the vicinity of a small flock of Ring-billed and Herring Gulls. The Gulls arose out of gunshot and flew out over the lake, but the Jaeger circled around inland as if unwilling to leave the locality, and on concealing myself, he soon returned and was secured. This is, I believe, the first record for this species from Indiana, and I have been unable to find any previous records from Lake Michigan. The specimen is in the collection of the Field Museum.— H. L. Stoddard, *N. W. Harris Public School Extension of Field Museum of Natural History, Chicago, Ill.*

Notes on Hybrid Ducks from Long Point, Ontario.— Among a number of ducks recently shot at Long Point, Ontario, was an interesting hybrid between *Anas rubripes* and *A. platyrhynchos*. It was an immature male, and every character which normally distinguishes the two species was about evenly merged in this bird. It was large, weighing three and a quarter pounds, and was the second hybrid of the same parentage to have been taken on these grounds. The first was a more mature bird, taken about 1912 (now mounted at the Long Point Club) showing vermiculation in the plumage, which the younger specimen lacks.

A fine adult male European Widgeon was taken here on October 12, 1914, and is also in the club collection.— Louis Agassiz Fuertes, *Ithaca, N. Y.*

Early European Widgeon on Long Island.— On Sept. 12, 1915, a European Widgeon (*Mareca penelope*) was observed by the writers on Moriches Bay under the beach meadows at Mastic, Long Island, with three American Widgeon (*M. americana*). It was examined carefully through binoculars in sufficiently good light to make out its gray dark-

tipped bill. The head was chestnut, the sides of the breast cinnamon, and as it flew the white in the wing was of course conspicuous. It was probably an eclipse male. This is a very early, so far as we know, the earliest recorded date for this rare duck. Strangely enough on Sept. 12, 1914, at almost exactly the same spot, a reddish headed bird was observed by the senior writer among about fifty American Widgeon, which were associated with a large flock of Black Duck. This 1914 bird was, however, not satisfactorily determined.—J. T. Nichols and Ludlow Griscom, *New York City.*

A Record of the Golden Plover (*Charadrius dominicus dominicus*) in the State of Washington.— This interesting species has never before, to my knowledge, been recorded as occurring in the State of Washington. It gives me pleasure, therefore, to announce the capture of an adult female at Dungeness, Clallum County, Washington. This bird was taken on Nov. 14, 1915, by Mr. F. P. McIntyre, of Tacoma, Wash., who very kindly presented it to me and the skin is now in my collection. Mr. McIntyre informs me that he saw about a dozen other plover resembling this one, but that he shot no more. It is possible that these, also, might have been *dominicus*, but the Black-bellied Plover (*Squatarola squatarola*) is a common visitor to Washington, so I think there is an equal possibility that the other birds seen might have belonged to that species.

Since obtaining the above mentioned specimen Mr. D. E. Brown, of Seattle, Wash., told me of a specimen of *C. d. dominicus* that was taken near there several years ago, but which I think was never recorded. Mr. Brown also saw what, owing to the great amount of yellow on the upper parts, he feels positive was another of this species a year or two ago on the Tacoma Flats. This was in the late spring and the bird was in full breeding plumage. Needless to say that Mr. Brown is well acquainted with *S. squatarola* in all plumages.

It seems very possible that certain of our shore birds are much more numerous as migrants in Washington than is generally believed. The Knot (*Tringa canutus*), for example, is given in the A. O. U. Check-List as rare on the Pacific coast. It is therefore, interesting to note that on May 11, 1913, Mr. Ray Gamble, of Tacoma, Wash., saw them in hundreds at Willapa Harbor, Wash. Mr. Gamble brought back quite a sufficient number to prove the truth of his report. In the spring of 1914, Mr. D. E. Brown found the Knots to be by no means rare.

Another species that has almost invariably reported as rare "on the Pacific coast south of British Columbia, except in Lower California" is the Pectoral Sandpiper (*Pisobia maculata*). I consider this species to be probably a regular fall migrant in the vicinity of Tacoma, Wash. Some years it is common, twenty or more being seen on a morning walk on the Tacoma Flats.

The same thing may be said of the Yellow-legs (*Totanus flavipes*), which is usually recorded as rare on the Pacific coast of the United States. This

species is at times a common fall visitor, Mr. D. E. Brown seeing a flock of forty-eight on Aug. 16, 1913. The earliest arrival of which I have a record is one that I collected on July 25, 1913.

The study of the *Limicolæ* has been sadly neglected in the State of Washington, partly because of adverse laws. It may be for this reason that literature on the subject is occasionally in error, but it also seems possible to me that the shore birds may have to some extent changed their route of migration.— J. H. Bowles, *Tacoma, Wash.*

Barn Owl in Massachusetts.— On Oct. 21, 1915, a fine full plumaged male Barn Owl (*Aluco pratincola*) was taken in a trap on my place at Wenham, Mass.— John C. Phillips, *Wenham, Mass.*

Display of the Purple Finch.— On May 20, while at the path between the Flume House and the Flume, Crawford Notch, White Mts., N. H., I watched an interesting display of a male Purple Finch. There were two pairs of these birds. Close by me were two males and a female feeding on the ground, and perhaps twenty-five yards away a single female, also hopping about on the ground. Very suddenly one of the males jumped up and after a short rapid flight lit about six inches from the lone female, and stood bolt upright, and facing her with extended wings. He then began to vibrate his wings rapidly, but kept them extended all the while. The motion was so fast that the wings were blurred to the eye. I have seen a cock silver pheasant display in a somewhat similar way, sitting on a perch, only the vibration of the wings did not extend over so wide an arc.

The male finch kept this up for ten seconds, with perhaps only one or two brief intervals of arrested motion. Then the second male bird charged him and put him to flight. Evidently it was a case of trespass.— John C. Phillips, *Wenham, Mass.*

Late Nesting of the Montana Junco.— On Sept. 1, 1912, while working on the western slope of the Teton Mountains of western Wyoming, I found the nest of a Junco, apparently belonging to the above species. The nest was on the ground among flowers and grass in a straggling grove of spruce trees and at an elevation of 9700 feet above sea. It contained four newly hatched young birds. As this level is only 200 feet below the average elevation of timber-line for the range, winter sets in much earlier than in the valleys of the same region. In that particular year a soft snow fell on the night of September 1 to a depth of over three inches, and at the end of twenty-four hours some of it was still left. Another snowstorm followed about five days later. I did not see the nest after the snow, but under such unfavorable circumstances it seems unlikely that the pair of Juncos was able to rear its brood to maturity. No doubt this was a case of abnormally late nesting, probably to be explained by some accident that prevented the birds from rearing broods that they may have had earlier in the summer.— Eliot Blackwelder, *Madison, Wis.*

Philadelphia Vireo (*Vireosylva philadelphia*) **in Massachusetts in Autumn.**— On Sept. 5, 1915, I shot a young male Philadelphia Vireo in Harvard, Mass. The specimen is now in my collection (No. 551).

I am indebted to Mr. Outram Bangs of the Museum of Comparative Zoölogy for verifying my identification.— James L. Peters, *Harvard, Mass.*

Additional Autumn Records for the Tennessee Warbler (*Vermivora peregrina*) **in Massachusetts.**— I have previously had occasion to record (Auk, Vol. XXXI, No. 1, p. 103), the occurrence of the Tennessee Warbler in Harvard, Mass., during the autumn migration. I now wish to add the following additional instances of its occurrence in this town since my last note was published.

Sept. 25, 1913, a young male shot (coll. J. L. P. No. 415).
Sept. 11, 1915, an adult male shot (coll. J. L. P. No. 565).
Sept. 23, 1915, an adult male shot (coll. J. L. P. No. 595).
Sept. 30, 1915, one seen.

The lack of records for 1914 is accounted for by the fact that I was out of the State throughout the autumn. I have no doubt that the species occurs sparingly with us every autumn.— James L. Peters, *Harvard, Mass.*

Orange-crowned Warbler (*Vermivora celata celata*) **in North Carolina.** — On Jan. 3, 1915, we discovered an Orange-crowned Warbler in some live oaks on Monkey Island, Currituck Sound. The bird was collected and proved to be a female. It is now in the collection of the American Museum of Natural History, catalogue No. 123,791.

Mr. T. Gilbert Pearson informs us that this is the third record for the State. The species is rare in winter as far north as Charleston, S. C.— J. T. Nichols and Ludlow Griscom, *New York City.*

Blue-gray Gnatcatcher at Groton, Mass.— On Nov. 19, 1915, a female or immature Blue-gray Gnatcatcher (*Polioptila c. cærulea*) was found dead on Hollis St., in Groton, Mass., by Master Robert F. Cressey, seven years of age, a member of the local bird club. The specimen is now being mounted for the collection of the Museum Society at Groton School.— William P. Wharton, *Groton, Mass.*

Notation of Bird Songs and Notes.— I think the importance of this difficult subject justifies patient and kindly effort long continued in suggesting methods and improvements until we approach perfection as nearly as practicable.

The common five-line music staff is good for pitch and rhythm; but it seems to me unnecessary to indicate the exact pitch of bird notes since they vary to a great extent. Besides, the notes and songs of a number of individuals of a given species differ so much that a music-staff notation of one or two birds of most species would present but a small portion of the re-

pertoire of the whole species. We might give, for instance, staff representations of twenty, or even fifty in some cases, of different Song Sparrows, and yet these would match but few of the next twenty or fifty. Most songbirds, too, have different songs and notes in autumn, mostly altered fragments of their regular spring songs. And yet again, birds of the same species vary in different parts of the country. For examples: The Ovenbird in New York says *teacher, teacher, teacher,* while in the Potomac region he never says anything like it, but instead, *tsit, tsit, tsit,* loud and sharp. The Towhee in the vicinity of Washington, D. C., sings — tr/l-l-l-l-l, the higher part with a charming metallic trill, while in the middle west his song is — tr/te-te-te-te-te, neither metallic nor trilled. The eastern Meadowlark in western Illinois in spring scarcely ever sings his characteristic tin-whistle song, but generally, while perched upon a fence-post, utters his ground buzzing, castanet rattle with up-and-down variations, prolonged to the full length of a Song Sparrow's performance in May.

Practically I often identify a bird more by the quality of style, or both, of its utterance than by the number and succession of its notes; and these, the quality and style, can only with difficulty be denoted on the five-line staff. These characteristics are generally described at length in the accompanying text. Perhaps this is the best that can be done. Of course, a system of symbols can easily be devised to be written under each note in the staff, but they would be so numerous that the learner would have to practice upon them a long time in order to be able to read them rapidly.

In my own field practice I use the system already illustrated above, with about twenty symbols underneath to indicate *timbre,* tin-whistle or fife tone, chip, chirp, chatter, trill, warble, squeal, squall, aspirated or wheezy character, etc.

The greatest difficulty imitators encounter in representing upon paper the songs and notes of birds is the fact that surprisingly few persons — only one in a hundred or a thousand, perhaps — could understand fully even the most perfect system of notation that could be devised. Phoneticians, even those of the highest order, such as are employed in the compilation of our standard dictionaries and schoolbooks, often fail to understand one another clearly; and but few people, one in a hundred or more, perhaps, are musicians far enough advanced to be able to perceive clearly what would be meant by some of the characters that would have to be employed, even when explained at length.

An elocutionist and phonetician in Chicago once showed me a very elaborate chart which he had compiled of all the phonic elements in the English language, that he was about to publish as "the greatest thing out." My glance at it was so short that I read but one item, and that was, that long *a* as in *fate* was diphthongal. I asked him whether *a* was diphthongal or a compound in the word *chaos.* That threw him into a spasm of cogitation, from which he had not recovered when I last heard from him! Some people imagine they pronounce the *r* in *harder* when in fact they say *hodda.* In listening to some Englishmen we vaguely think they pronounce the

words *more, door, you, your, yours,* etc., about right when in fact they say *maw, daw, yaw, yaw, yaws,* etc.

This most discouraging fact prevents us all from making any attempt at the compilation of a text-book of bird songs for popular use; and there are not phoneticians, musicians and elocutionists enough among bird students to justify the publication of a work of that kind.

Therefore, so far as I can see now, the best way for all bird students to learn bird songs, besides identifying the birds themselves, is to visit the wilds in company with experts. This, of course, "knocks out" the idea of notation, except so far as one may devise a scheme for his own private use.— Ewing Summers, *Washington, D. C.*

The Type Locality of *Brachyramphus craverii*.— The Island of Natividad, off the west coast of Lower California, has been considered as the type locality of *Brachyramphus craverii.* The species was originally described by Salvadori as coming from this island, and in his original description he refers to the account that Craveri has left of his visit to the Island in 1865. He speaks of it as a low island where were groups of Cormorants looking in the distance like platoons of soldiers. He says that the soil of this island was sandy, and that all of the island not occupied by the Cormorants was excavated by the Murrelets for their nests.

Anthony visited this island of Natividad in 1900, and found the Cormorants there, as described by Craveri, and found the ground honeycombed, but these burrows all belonged to the Black-vented Shearwater (*Puffinus opisthomelas*), but not a single Murrelet of any species was found on the Island, nor has any one ever found *Brachyramphus craverii* anywhere along the western coast of Lower California.

Craveri gives the latitude as 27° 50′ 12″ N., which is not at all the latitude of Natividad Island, but is exactly the latitude of Isla Raza in the Gulf of California, and it seems probable that this latter island is really the place from which the type specimen of *Brachyramphus craverii* was obtained.

Craveri was seeking for guano, and Isla Raza is a guano island, while Natividad Island does not furnish any of this product. Salvadori speaks particularly of Craveri having found the Murrelet nesting under the rocks, which is exactly what *Brachyramphus craverii* does at the present time on Isla Raza. Salvadori speaks twice of the type specimen of his bird as having come from the Gulf of California.

From the above facts it seems probably that there has been a mistake in the type locality of *Brachyramphus craverii.* It is probable that Craveri visited both Natividad Island and Isla Raza, and that Salvadori has made a mistake as to which of these islands was the one on which Craveri obtained the type of his Murrelet, and that Isla Raza is the real type locality of *Brachyramphus craverii.*— Wells W. Cooke, *Biological Survey, Washington, D. C.*

Eye Shine in Birds.— In a recent interesting and valuable article on "Nature's Transformations at Panama" (National Geographic Magazine, August, 1915, p. 176) Shiras called attention to, and gives his observations in studying, the glow seen at night in the eyes of various animals when they are facing a bright light.

The present writer is pleased to contribute to the literature of this subject an observation of his own. Not long ago, while motoring at night through a particularly dark canyon, I noticed far ahead in the illuminated road, two small glowing pink spots, which were extinguished when a bird flew from the road on the near approach of the car. The bird alighted again, some distance ahead in the road, when the pink points reappeared, and were identified as the bird's eyes; it was shot, and proved to be a Nuttall's Poorwill. This observation fits in well with those of Shiras who recorded this eye shine in Nighthawks.

It is well here to interject the question as to whether this glow in birds' eyes does come from a true *tapetum lucidum*, as is implied (or stated) by Shiras, inasmuch as Casey Wood (a highly qualified authority on comparative ophthalmology) says "The tapetum is absent in birds, although the Ostrich has a glass-like layer in the choroid of lamellated structure capable of reflecting light. This arrangement, however, is only a retino-choroidal variation, and not a true tapetum" (Am. Encyclop. Ophthalmology, Vol. IV, p. 2653).

The present writer has no desire to split hairs, but merely wishes to call attention to a point (one amongst hundreds) awaiting decision. It may be that no bird has a true tapetum, or if Caprimulgine birds have not yet been examined for this structure, it is equally possible that birds of this type *do* have a true tapetum; all this reminds one that there is plenty of material still left for original research, or to be used in corroborating or disproving earlier work.— W. H. Bergtold, *Denver, Colo.*

Weight and Contents of Birds' Eggs.— The following data have been collected during the past two years and are here presented as there seems to be but little recorded information on the subject. The eggs were weighed before and soon after blowing (when thoroughly dry). The latter weight of course, represents the weight of the shell and the difference between the two, the weight of the contents. The contents are also given in cubic centimeters. In some cases the actual contents were measured, in others the shell was filled with water and the water measured. With proper instruments it would be possible to determine the specific gravity of the contents of the egg. It would be interesting to learn if this would show any relation between eggs of species of the same family or order.

Only averages are given below for each set or series of eggs.

		Average Weight						Cubic Contents
		Full			Empty			
Loon (4 eggs)		5 oz.	5 dr.	1 scr.	2. gr.	4 dr.	3 scr. 0 gr.	147 c.c.
Common Tern	(set of 3)		5.	0.	17.5	1.	3.2	17.5
	(set of 3)		5.	0.	2.8	1.	3.2	17.3
	(set of 3)		5.	0.	6.1	1.	3.8	17.7
	(set of 3)		5.	0.	2.3	1.	3.5	17.4
Black-crowned	(set of 3)	1.	2.	1.	4.	2.	15.	26.
Night Heron	(set of 3)	1.	1.	2.	0.	2.	9.	24.
	"	1.	2.	1.	6.	2.	9.	25.
	"	1.	1.	1.	19.	2.	9.	24.
Belted Kingfisher	(set of 3)		3.	1.	16.		15.7	12.7
Kingbird	(set of 4)		1.	0.	10.		6.	3.6
Bobolink	(set of 5)			2.	6.7		2.5	2.5
Chipping Sparrow	(set of 4)			1.	5.7		1.3	1.7
	(set of 4)			1.	3.9		1.3	1.4
Song Sparrow	(set of 5)			1.	13.5		3.65	1.8
	(set of 5)			1.	16.5		2.35	2.
	(set of 4)			1.	11.		2.5	1.6
English Sparrow	(set of 4)			2.	1.1		3.6	2.5
	(set of 4)			2.	4.9		4.	2.6
	(set of 5)			1.	15.3		3.6	2.2
	(set of 5)			2.	3.3		3.5	2.2
Barn Swallow	(set of 5)			1.	9.8		1.7	1.6
	(set of 4)			1.	1.9		1.5	1.3
Bank Swallow	(set of 5)			1.	.2		1.	1.04
	(set of 4)				18.7		1.	1.05
	(set of 5)			1.	1.7		1.	1.15
	(set of 6)				18.9		1.	1.02
Tree Swallow	(set of 4)			1.	8.		2.5	1.5
Cliff Swallow	(set of 3)			1.	14.		2.6	1.8
Red-eyed Vireo	(set of 3)			1.	14.7		2.2	2.
	(set of 4)			1.	14.		2.	1.7
Ovenbird	(set of 4)			2.	5.		3.	4.
Yellow Warbler	(set of 4)			1.	2.5		1.25	1.25
	(set of 5)			1.	.9		1.25	1.4
Redstart	(set of 4)			1.	1.8		.98	1.3
	(set of 4)			1.	2.7		1.	1.6
Catbird	(set of 4)			1.	8.8		3.9	3.2
				2.	4.		3.3	3.4
Veery	(set of 4)			2.	6.		3.	2.4
Robin	(set of 4)			1.	7.1		4.8	5.3

— Lt. G. Ralph Meyer, *Fort McKinley, Me.*

RECENT LITERATURE.

Watson and Lashley on Homing and Related Activities of Birds.[1] — In 1907, Dr. J. B. Watson made some investigations on the homing of Noddy and Sooty Terns at Bird Key, Tortugas, Florida, which were published as 'Publication 103' of the Carnegie Institution of Washington and formed probably the most noteworthy contribution to the subject of bird migration that has appeared in recent years. He demonstrated among other things that two incubating Sooty Terns taken from their nests on Bird Key and liberated off Cape Hatteras returned to their nests in five days covering a distance (by water) of approximately 1081 statute miles, most of it over areas where Sooty Terns do not normally occur and where these birds had had no previous experience.

The present publication describes the continuation of this investigation, carried on during 1910, 1912 and 1913. In order to meet a possible explanation of the Hatteras flight on the ground that the birds followed the coast line southward, experiments were made by liberating birds at Galveston and at various intermediate stations in the open waters of the Gulf of Mexico. From all of these trials birds returned safely to their nests. This disposed entirely of the coasting theory. A further suggestion has however been offered that the birds followed a well-marked water-current which sweeps across the gulf from Texas to Tortugas and which differs in color from the surrounding water. This is also disposed of by the fact that a number of the returning birds were liberated at night and passed through rain, haze and cloudy weather when the difference in the water would not be noticeable — if indeed it is at any time, from the position of the flying birds.

Therefore as Dr. Watson says the fact has now been established that *Noddy and Sooty Terns can return from distances up to* 1000 *miles in the absence of all landmarks.* This materially simplifies the problem of homing and what we now need is experimental work of a definite kind to determine the sensory mechanism by means of which the birds accomplish their return flights.

This present paper contains valuable preliminary contributions along these lines. Mr. Lashley gives an account of his studies of the nesting activities of the terns in which he proves that orientation in the neighborhood of the nesting place — *i. e.* return to nest, or young, or mate — is based largely upon visual habits, placing these activities in a different category from distant orientation.

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[1] Homing amd Related Activities of Birds. By J. B. Watson and K. S. Lashley. The Acquisition of Skill in Archery. By K. S. Lashley. Papers from the Department of Marine Biology of the Carnegie Institute of Washington. Alfred G. Mayer, Director. Volume VII. Publication No. 211. [Distributed July, 1915.] pp. 1–128.

Further proof against the ability of the birds' sight being sensitive to objects far distant is given in the mathematical fact that the curvature of the earth would necessitate a bird ascending nearly a mile in the air to reach rays from a lighthouse 150 feet high and 100 miles distant, granting the absence of haze which is almost always present.

It has moreover, been proven that vision in the chick is much less acute than in man and Dr. Watson shows that neither the chick nor the pigeon are sensitive to infra-luminous rays.

In the terns he also proves that there is no special tactual or olfactory mechanism in the nasal cavity which could aid homing. The facts presented are admittedly negative but Dr. Watson says, "the task of explaining distant orientation is an experimental one, which must yield positive results as soon as proper methods are at hand." While the difficulty of explaining it by current theories is admittedly great he does not suggest "the assumption of some new and mysterious sense."

He suggests work on the sensory equipment of homing pigeons saying that "it is just possible that these animals possess on certain parts of the body (eyelids, ear covering, oral cavity, etc.), sensitive tactual and thermal mechanisms which may assist them in reacting to slight differences in pressure, temperature, and humidity of air columns."

This contribution contains also a review of the various theories that have been advanced to explain homing, as well as a wealth of detailed investigation that cannot be dealt with here. Much reliable information with regard to homing pigeons and their flights gathered from practical fliers is likewise presented — data which have been in much demand. Ornithologists would do well to read the paper in its entirety as it is a good example of the methods of the student of behavior in eliminating complicating factors and avoiding the unwarranted conclusions into which the untrained investigator rushes blindly. While the 'mystery of mysteries' still remains unsolved, Dr. Watson has made great advances in showing us what factors are *not* involved in its explanation, and in disposing of a host of theories which tended only to obscure the problem, thus leaving it clearly defined for future investigators.— W. S.

Thorburn's 'British Birds.' [1] — It might be supposed that there was not room for another work on a subject that has received as much attention as the birds of Great Britain; but anyone who examines Mr. Thorburn's work, even casually, will we think concede that he has proved the error of this assumption.

With the wealth of data which is available any competent writer may

[1] British Birds | written and illustrated by | A. Thorburn, F. Z. S. | with eighty plates in colour, showing over | four hundred species | In four volumes | Vol. 1 | Longmans, Green and Co. | 39 Paternoster Row, London | Fourth Avenue & 30th Street, New York | Bombay, Calcutta, and Madras | 1915. Large 4°. pp. i–viii + 1–143, pls. 1–20. $40 for the set of four volumes, or payable on delivery at $10 each. No volumes sold separately.

compile a good history of the birds of the British Isles, many are also able to write entertainingly of their habits, while others can produce creditable pictures of the various species.

No matter how many works may have been produced along these lines, however, there is always room for such a series of portraits as Mr. Thorburn has given us. Only an artist of great talent and one thoroughly acquainted with his subjects could paint such bird pictures as these.

We are told in the preface that the majority of the figures are based upon life studies which the artist has been making for many years past, but it is not the beauty and accuracy of the individual figures alone that attract us. While it was necessary, as in most such works, to represent a number of species on each plate, the figures in Mr. Thorburn's plates are strikingly in harmony; a judicious arrangement of the several backgrounds, and the introduction of a spray of blossoms to emphasize a desired contrast make each plate a work of art in itself, not simply a collection of several small paintings on one page. And yet where birds of quite different habits are represented on one plate the characteristic surroundings of each are well maintained. It is we think this note of harmony in almost every plate, and the masterly handling of the backgrounds which emphasize the beauty of the bird portraits and give the charm to these paintings of Mr. Thorburn.

The plates are printed on cardboard with a neutral gray background which brings out the white portions of the birds' plumage with striking brilliancy. Both of these features help to make the plates unique among bird illustrations.

We have spoken only of the plates and indeed the author says that his first intention was that the book should be "simply a sketch book of British Birds." He was later induced, however, to add a short letterpress with descriptions of the species and notes on their distribution, nests, eggs, food, songs, etc. While this is admittedly largely a compilation from the leading authorities on British birds it is a very satisfactory accompaniment to the beautiful plates, presenting clearly and concisely the facts that the general reader will desire. The publishers have done their part well, the printing of the "three-color half-tone" plates being remarkably well done.

Mr. Thorburn's work will appeal to a host of people beyond the ranks of the ornithologists or even of nature students in general, for plates such as he has produced attract the attention and admiration of lovers both of art and of beautiful books.

Volume I covers all of the Passerine species except the Larks and part of the Corvidæ, Volume II [1] treats of these as well as the Picarian families, Birds of Prey, Steganopodes and Herons. The work will be completed in four volumes, the remaining two being promised in the spring and autumn of 1916.— W. S.

[1] pp. 1–72, pl. 21–40.

Grinnell's Distributional List of the Birds of California.[1] — This is Dr. Grinnell's third list of California birds, the first appearing as 'Pacific Coast Avifauna No. 3,' in 1902; and the second, a mere nominal list of species, as 'Avifauna No. 8,' in 1912. These contained respectively 491 and 530 species and subspecies while the present list totals 541.

The plan of this work is practically that of the 1902 list with the addition of many definite records and references covering the extremes of range or other critical occurrences. In the case of rare species references to all the records are given.

As the list is solely distributional in character no data regarding migration, extent of breeding season, etc., are included. Synonyms used in works on California birds are given as in the earlier list and these are included in the index so that any of the old records may readily be referred to the currently recognized form. The three maps are a valuable aid in understanding the details of distribution given under each species and subspecies and a chapter on 'Distributional Areas' gives Dr. Grinnell's latest views on a subject upon which he is the recognized authority.

The classification is that of the A. O. U. Check-List, which was also followed in the 1902 list, but not in that of 1912, the author agreeing with the A. O. U. Committee that the benefits of uniformity in sequence with the great bulk of American ornithological literature outweighed the advantages of being more 'up to date' with a classification which itself is admittedly only temporary. Sequence of species and subspecies and nomenclature are nearly those of the A. O. U. Check-List differing in the rank accorded certain forms and in the relationship of subspecies. Species and subspecies are printed in the same type and numbered consecutively with no binomial headings for groups of subspecies and no headings for generic or higher groups, as the list, being distributional, only does not concern itself with details of classification or nomenclature.

Some forty races not admitted or not yet considered by the A. O. U. Committee are recognized by Dr. Grinnell while *Melospiza melodia morphna, Aphelocoma californica obscura* and *Falco sparverius phalæna* which appear in the A. O. U. Check-List are rejected.

We notice that the recognition of extralimital races in the case of several groups leads to the doubling of the specific name as *Ochthodromas wilsonianus wilsonianus* but this is not done in the case of *Passer domesticus* where several extralimital races are generally admitted. The A. O. U. Committee committed this same error (cf. Auk, 1913, p.) and doubtless Dr. Grinnell followed their example as he apparently did in writing '*Actitis macularius*'

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[1] A Distributional List of the Birds of California. By Joseph Grinnell. Contribution from the Museum of Vertebrate Zoölogy of the University of California. Cooper Ornithological Club. Pacific Coast Avifauna. Number 11. Hollywood, California. Published by the Club, October 21, 1915. pp. 1–217, pl. I–III [maps].

erroneously so published in the 'Pocket Edition' of the Check-List, although it appears correctly '*macularia*' in the regular edition.

Dr. Grinnell's work closes with a 'Hypothetical List' of 61 species erroneously accredited to California or recorded upon evidence which he is unable to accept as conclusive.

Altogether this list is admirably prepared and gives us the status of the Californian avifauna up to date by one whose opinion upon this subject is accepted as authoritative, although there may be differences of opinion as to the number of geographic races that it is desirable to recognize even in so diversified a State as California.

There may be expressions of regret at the absence of data on migration, nidification and taxonomy, but the author has explained in the introduction that the list is solely distributional and he has consistently adhered to his plan.— W. S.

Wood on the Eyelids of Birds.[1] — Dr. Wood here presents the results of investigations made in conjunction with Prof. Slonaker in the physiological laboratories of Stanford University, largely upon the eye of the English Sparrow, although various other species were also examined. He considers in great detail the muscular structure of the eyelids and the method of lachrymal drainage. Not only is the activity of the lids reversed from what we find in the mammals, the lower not the upper one being movable, but the whole method of closing is different. The Ostrich, Seriema and certain birds of prey have filoplumous feathers which serve the purpose of eyelashes in mammals and closely resemble them. The Sparrow's eyelashes, however, do not apparently offer any protection to the eye while the Parrots have no trace of eyelashes.

Dr. Wood's paper is a careful piece of technical work, and similar studies in the anatomy of other avian organs would be welcome.[2]

The confusion that may arise when the technicalities of two branches of science are brought together is curiously illustrated in Dr. Wood's treatise. He constantly makes use of the word 'tarsus' familiar to ophthalmologists as indicating a plate of condensed connective tissue on the edge of the eyelid, but when he addresses ornithologists who know the tarsus only as the usually exposed portion of the bird's foot above the toes, this term is somewhat confusing!— W. S.

Cooke on the Distribution and Migration of North American Gulls.[3] — In this pamphlet Prof. Cooke treats the Laridæ in the same

[1] The Eyelids and Lachrymal Apparatus of Birds (reprinted from Ophthalmology, July, 1915). By Casey A. Wood, M. D. Repaged 1–18.

[2] cf. p. 84, *antea*.

[3] Distribution and Migration of North American Gulls and their Allies. By Wells W. Cooke. Bull. No. 292, U. S. Dept. of Agriculture. October 25, 1915. pp. 1–70. (For sale by Supt. of Documents Gov't. Printing Office, Washington, D. C. 15 cents.)

way that the Anatidæ, the Shorebirds, the Rails and the Herons have received attention in previous bulletins of the Department of Agriculture.

A brief introduction treats of the economic importance of Gulls and measures that have been taken for their protection. Then follows a detailed account of the summer and winter range and dates of migration for each of the 30 species and subspecies of Gulls, Skuas and Jaegers, found in North America, with the name of the authority for each record. A map showing the summer and winter range of each species is given with several figures of the more common Gulls.

Incidentally we note that *Larus nelsoni* remains one of the rarest of birds, only four specimens having been taken, three on the coast of Alaska and one at San Geronimo Island, Lower California. There has been no record of the species whatever since the specimen obtained by E. A. McIlhenny at Point Barrow, Alaska, on Sept. 5, 1897, which is now in the collection of the Philadelphia Academy.

Prof. Cooke's publication is a welcome summary of our knowledge of the distribution of the North American Laridæ and will prove a valuable work of reference.

The title may be regarded as a little unfortunate as the Terns are much closer allies of the Gulls than are the Skuas and Jaegers which belong to another family. Limitation in the size of the 'Bulletins' no doubt prevented the inclusion of the Terns, but this fact might have been mentioned and the close relationship of the two groups emphasized.— W. S.

Gaige's 'The Birds of Dickinson County, Michigan.' [1] — This list is based upon observations made from June 30 to August 24. The region is divided into several distinct habitats and the 88 species listed are considered with regard to their distribution in these habitats, with notes on migration, food, nesting, habits, etc. An interesting feature of the paper is the consideration of the effect of a severe forest fire upon the distribution of the various species. It undoubtedly drove out many forest loving species from the area which it covered, but opened up a new breeding area to Woodpeckers, Tree Swallows, Chimney Swifts and Bluebirds, while Vesper Sparrows and Goldfinches were drawn there to feed upon the seeds of weeds and thistles which covered the burned areas, and Sparrow Hawks to devour the grasshoppers which appeared in abundance. Even migrant Shorebirds were attracted by the cedar and tamarack swamps which the fire had converted into open shallow pools.

The paper contains much of interest and value, although it cannot be expected to cover nearly all the birds of the county. The title on this account is perhaps a little misleading.— W. S.

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[1] The Birds of Dickinson County, Michigan. By Frederick M. Gaige. Reprinted from Sixteenth Report Michigan Academy of Science, pp. 74–91.

Mearns on New African Birds.[1] — In this, his thirteenth paper on new African birds, Dr. Mearns first considers the subspecies of *Turacus hartlaubi* of which he recognizes four, *T. h. medius* (p. 3) Mt. Kenia, *T. h. crissalis* (p. 3), Mt. Mbololo and *T. h. cærulescens* (p. 4), Mt. Gargues, being described as new. He also describes the following new forms, *Corythœola cristata yalensis* (p. 5), Yala River; *Cursorius gallicus meruensis* (p. 5), Meru River; *C. temminckii jebelensis* (p. 6), Lado Enclave; *Rhinoptilus africanus raffertyi* (p. 7), Iron Bridge, Hawash River, Abyssinia, and *Sarothrura loringi* (p. 8), Mt. Kenia.— W. S.

Beal on the Food Habits of Thrushes.[2] — This report is supplementary to Bulletin No. 171, which treated of the Robin and Bluebirds, and is devoted to Townsend's Solitaire and the speckled breasted thrushes of the genus *Hylocichla*. Increased material and further investigation have led to much more detailed analyses of the food of these birds than those which have appeared in other publications of the Biological Survey, but the general conclusions remain the same. The thrushes are largely insectivorous, while the vegetable portion of their food (40.72 per cent) consists mainly of wild berries, their destruction of domestic fruits being negligible.— W. S.

Miller on Three New Genera of Birds.[3] — Mr. Miller is doing excellent work in carefully examining the structural characters of various birds with regard to their generic position, as many species when first described were hastily referred to genera to which they have no close affinity and a certain number have never been removed. A case in point is the large owl *Bubo blakistoni* Seebohm and its ally *B. dœrriesi*. These Mr. Miller finds are not referable to Bubo at all being evidently northern representatives of the Fish Owls (*Ketupa*), and he establishes for them a new genus *Stringonax* (p. 515) with *B. blakistoni* as the type.

For *Hydropsalis lyra* Bp. he proposes the genus *Uropsalis* (p. 516) and for *Picus striatus* Müll. the genus *Chryserpes* (p. 517) on account of differences in relative length of quills and toes, and details of bill structure, from the genera *Hydropsalis* and *Centurus* to which they have been respectively referred. *Chryserpes* also exhibits striking peculiarities in coloration.

Mr. Miller besides erecting these new genera considers the status of allied groups already separated which is perhaps of even greater impor-

[1] Descriptions of Seven New Subspecies and One New Species of African Birds (Plantain-Eater, Courser, and Rail). By Edgar A. Mearns. Smithsonian Misc. Collns., Vol. 65, No. 13, November 26, 1915.

[2] Food Habits of the Thrushes of the United States. By F. E. L. Beal. Bulletin No. 280, U. S. Dept. of Agriculture, September 27, 1915, pp. 1–23. (For sale by Supt. of Documents, Gov't. Printing Office, Washington, D. C., 5 cents.)

[3] Three New Genera of Birds. By W. DeWitt Miller. Bull. Amer. Mus. Nat. Hist., XXXIV, Art. XVII, pp. 515–520, New York, October 20, 1915.

tance, for even if we ultimately adopt broader genera than we do today, we must know more of the interrelations of the groups of species which are included within them, and which for taxonomic purposes must be distinguished by group names of some kind, even though not recognized nomenclaturally.— W. S.

Chapin on New Birds from the Belgian Congo.[1] — Mr. Chapin who accompanied Mr. Herbert Lang on an expedition to the Belgian Congo in the interests of the American Museum of Natural History is now engaged in working up the ornithological collections which they secured during their six years' sojourn (1909 to 1915). These comprise some 6200 skins representing about 600 species, and the present paper is the first publication based upon this material. Mr. Chapin's new species are *Chætura melanopygia* (p. 509), *Apaloderma minus* (p. 510) and *Eeriocleptes* (gen. nov.) *xenurus* (p. 512) all from Avakubi, Ituri District, Belgian Congo. Further publications upon this rich collection will be awaited with interest.— W. S.

Riley on New Birds from China and Japan.[2] — From material received by the U. S. National Museum from China and Japan, Mr. Riley has described three new forms as follows: *Tetrastes bonasia vicinitas* (p. 16), and *Dryocopus martius silvifragus* (p. 162) from Hakodate, Japan, and *Eophona melanura sowerbyi* (p. 163) from Chang Kow Hsien, Hupeh China.— W. S.

Recent Ornithological Papers by Dabbene.[3]— In the 'Anales of the Buenos Aires Mus., XXVII,' Mr. Dabbene proposes (p. 76) a new genus *Neophlœotomus* for the woodpecker, known as *Phlœotomus schulzi* Cab. and also describes an allied new species *N. shiptoni* (p. 79) from the province of Cordoba, with a colored plate of the male and female.

In two other short papers he reports *Manacus m. gutturosus*, *Harpiprion cayennensis*, *Dendrocygna discolor* and *Sporophila pileata* from Argentina, all of them being new to the fauna.— W. S.

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[1] Descriptions of Three New Birds from the Belgian Congo. By James P. Chapin. Bull. Amer. Mus. Nat. Hist., XXXIV, Art. XVI, pp. 509–513. New York, October 20, 1915.

[2] Descriptions of Three New Birds from China and Japan. By J. H. Riley. Proc. Biol. Soc. Washington, XXVIII, pp. 161–164, September 21, 1915.

[3] Description d'un Nouveau Genre et d'une Nouvelle Espèce de Pic Provenant du Nord-Ouest de la Republique Argentine. por Roberto Dabbene. An. Mus. Nac. Hist. Nat. Buenos Aires, XXVII, pp. 74–81, July 8, 1915.

Una ave nueva para la Argentina. por Roberto Dabbene. Bol. Soc. Physis. I, No. 7, pp. 435–436, Dec. 1914.

Otras especies de aves nuevas. por. Roberto Dabbene. *do.* pp. 532–533, June 10, 1915.

Mathews' 'The Birds of Australia.' [1] — With Volume V, Mr. Mathews begins the consideration of the hawks and eagles. These being conspicuous land birds have long engaged the attention of Australian ornithologists, and he is able to compile a much greater amount of information regarding their habits than was possible in connection with the families of water birds which have occupied the greater part of the preceding volumes. This fact however, in no way serves to curtail the very full discussion of taxonomy and nomenclature that has marked Mr. Mathews' work. He opens with an extended historical review of the classification of the Falconiformes in which, by the way, we find no reference to the publications of Robert Ridgway upon this subject, which surely deserve mention even though they did not cover the entire field. Following this is a discussion of the generic names of Lacepede's 'Tableaux' (1799). These were accompanied by diagnoses but with no species cited. The diagnoses are not full enough to enable us to determine with certainty what hawks he had in mind. Daudin however, in the Didot edition of Buffon (1802) republished Lacepede's diagnoses and cited several species after each, using his generic names. Mr. Mathews rejects Lacepede's names as *nomina nuda* and quotes the genera from Daudin "ex Lacepede." This is an easy way out of the trouble, but we do not think it is justified. Lacepede's names are not *nomina nuda* since they are accompanied by diagnoses. They are unidentifiable if we choose to so regard them, but in that case they preclude the use of the same names by any subsequent author just as do any other unidentifiable names. It seems to us that in such cases we must accept Daudin's action as a definite identification of Lacepede's names, but the names must, if used at all, date from Lacepede, 1799. The result is of course the same as that arrived at by Mr. Mathews, but does not conflict with the International Code.

Mr. Mathews treatment of subspecies in this volume is not quite clear. He puts them in the synonymy of the species and then tabulates them in the closing paragraphs without clearly distinguishing those which he regards as valid and those which are probably not.

We note the following new names proposed: subgenera; *Paraspizias* (p. 74) for *Sparvius cirrhocephalus*, and *Ictiniastur* (p. 146) for *Milvus sphenurus;* subspecies; *Circus assimilis quirindus* (p. 23) Celebes; and *Accipiter cirrhocephalus quæsitandus* (p. 81) Cape York.

We have heard a good deal about the destruction of hawks in this country but our efforts are apparently eclipsed in Australia, where bonuses were paid in 1899 for the slaughter of 7865 Wedge-tailed Eagles, while as late as 1903, 1060 of the same species were poisoned in eight months at one station. There is some justification in this slaughter as the birds are very injurious to lambs, but let us hope that this fine bird may be saved from absolute extermination! — W. S.

[1] The Birds of Australia. By Gregory M. Mathews, Vol. V, Part 1. Witherby & Co. London. November 5, 1915, pp. 1–152, pl. 234–244.

Shufeldt's Recent Papers on Avian Osteology and Fossil Birds.[1]— Following his paper on the 'Comparative Osteology of the Limpkin' (Anatomical Record, August, 1915), Dr. Shufeldt presents in the same journal another upon that of the Rails and Cranes. While in the body of this contribution he maintains his view set forth at the end of the former paper that the Limpkin is more closely related to the Rails then to the Cranes, in his conclusions he makes exactly the opposite statement. This, he explains in a 'Correction,' was due to an accidental substitution of a page from an old manuscript which was before him at the time, and which contained his former views on the matter. In spite of this, however, his conclusions seem to be hopelessly confused, as the scheme of classification set forth is not that of his earlier paper as he himself states in a footnote. Furthermore he distinctly endorses the arrangement of the Rallidæ and Grues in the 1910 edition of the A. O. U. Check-List where the Limpkin is included under the Cranes.

A recent study of the type specimen of the remarkable fossil bird *Gallinuloides wyomingensis* described by Eastman from Green River shales of Wyoming, confirms the opinion of Lucas that the bird is 'galliform' and not 'ralliform' but Dr. Shufeldt differs from Dr. Lucas in referring it to the true grouse instead of to the neighborhood of *Ortalis*. Dr. Shufeldt proposes for it a new genus *Palæobonasa* (p. 633) in case the canons of nomenclature are altered in the future to admit of the substitution of appropriate names for misnomers! — W. S.

Richmond on Necessary Changes in Generic Names.[2] — Dr. C. W. Richmond finds the current type designation of *Bolborhynchus* to be erroneous and *Myiopsitta catharina* Bon. is established as type, *Grammopsittaca* Ridgway becoming a synonym. For *Arara aymara* D'Orb. the supposed type of *Bolborhynchus*, a new name *Amoropsittaca* is proposed.

For *Stenopsis* Cassin, *Thermochalcis* (type *Caprimulgus cayennensis*) is proposed; *Oreomyias* Berlepsch becomes *Oreotriccus* (type *Pogonotriccus plumbeiceps* Lawr.); *Oreospiza* Ridgw. becomes *Oberholseria* (type *Fringilla chlorura* Aud.). *Lamprotes* Sw. becomes *Compsothraupis* (type *Tanagra loricata* Licht.); *Odontorhynchus* Leach becomes *Odontorchilus* (type *O. cinereus* Pelz.); all these names being found by Dr. Richmond to be preoccupied.— W. S.

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[1] Comparative Osteology of Certain Rails and Cranes, and the Systematic Positions of the Super-suborders Gruiformes and Ralliformes. By R. W. Shufeldt. Anatomical Record, Vol. 9, No. 10, October, 1915, pp. 731–750.

A Critical Study of the Fossil Bird *Gallinuloides wyomingensis* Eastman. Jour. of Geology, XXIII, No. 7, October–November, 1915, pp. 619–634.

[2] Note on the Generic Name Bolborhynchus Bonaparte. Proc. Biol. Soc. Wash., p. 183. November 29, 1915.

Notes on Several Preoccupied Generic Names (Aves). Proc. Biol. Soc. Wash., p. 180. November 29, 1915.

Gordon's 'Hill Birds of Scotland.' [1] — Well written popular biographies of birds are always interesting reading and when both the birds and their surroundings have figured so frequently in literature — both history and fiction — as have those of Scotland, an additional measure of interest is present. Such are the features which characterize Mr. Seton Gordon's 'Hill Birds of Scotland.'

He treats of two dozen of the more familiar birds of the Scottish highlands, drawing upon his own experience, which has evidently been extensive, and quoting appropriate information from various historic sources. "The hills" he says in his preface "do not yield the store of their knowledge easily; it is only to him who knows them in storm as in fine weather, and in the dead of winter as well as during long days of June sunlight, that they give a measure of their wisdom." The author is evidently of these fortunate ones, and his appreciation of nature and of his bird friends particularly is well brought out in the pages of his book. His general picture of the high hill country is particularly characteristic — "The mists curling smoke-like in the deep glens before the hour of sunrise, the distant hills, heavily snow-flecked, standing sharply against the horizon, the croaking of the Ptarmigan and the flute-like song of the Snow Bunting, all these things are among the priceless memories given by the Spirit of the Great Hills."

The species treated are the Golden Eagle, White-tailed Eagle, Osprey, Peregrine Falcon, Kestrel, Raven, Grey Crow, Ptarmigan, Black Grouse, Red Grouse, Capercaillie, Woodcock, Snipe, Goosander, Curlew, Greenshank, Golden Plover, Dotterel, Oyster Catcher, Snow Bunting, Dipper Crested Titmouse, Sandpiper and Dunlin. Nine of these are identical or only racially different from North American species, and their biographies are well worthy of study by the more serious American ornithologist who is seeking data on habits and behavior as well as the pleasure which is offered by an entertaining book.

It is regrettable to read under the head of the Osprey: "To give an account of the history of the Osprey in these islands is to chronicle a succession of regrettable events, events which are responsible for the loss to us of a noble bird, that in former days added a great charm to many a lonely loch hidden away amongst the Scottish hills. . . . These factors [in its extermination] are, the migratory instinct of the birds, and the large remuneration given by misguided collectors for British-taken eggs." The same causes apparently are responsible for the disappearance of the bird from much of the New Jersey seaboard where it was formerly abundant; fortunately, however, enough remain in this State to reëstablish the old breeding localities if proper encouragement be given.

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[1] **Hill Birds of Scotland. By Seton Gordon, F. Z. S., M. B. O. U. Author of "The Charm of the Hills" and "Birds of the Loch and Mountain." Illustrated. 1915, Longmans, Green, and Co., N. Y., London. Edward Arnold. 8vo., pp. i–xii + 1–300. $3. net.**

The history of the Capercaillie is particularly interesting. This bird became extinct in Scotland in the eighteenth century apparently owing to the destruction of the ancient Caledonian forest. In 1837 however, a number were brought from Sweden and liberated, which have increased and repopulated a large part of Scotland.

Thirty-five excellent plates of birds and their haunts from photographs illustrate this attractive book.— W. S.

Job's 'The Propagation of Wild Birds.' [1] — The rearing of wild birds, both upland game birds and waterfowl, has been making great headway during the past few years, until now an occupation which was almost unknown a decade ago is demanding literature and information for its guidance. In answer to this call the National Association of Audubon Societies has established a 'Department of Applied Ornithology' and the head of this department, Mr. Herbert K. Job, issues under this title the first 'Manual of Applied Ornithology.'

Those who have read Mr. Job's bulletins upon the rearing of wild birds issued by the National Association of Audubon Societies will understand the character of the present volume — a concise presentation of facts covering all phases of the subject. These are conveniently assembled and each topic conspicuously indicated by heavy-faced type, while a general index helps one to find the information which he desires. Numerous good half-tones from photographs illustrate the work.

The volume is divided into three parts devoted respectively to 'Gallinaceous Birds,' 'Waterfowl' and 'Smaller Land-birds.'

Under Part I. the Chapter headings are: 'General Methods'; 'Quail Propagation Method as a Basis'; 'The Grouse Family'; 'The Wild Turkey'; 'Pheasant Rearing'; 'Other Foreign Gallinaceous Species'; 'Pigeons and Doves'; 'Control of Vermin.' Under Part II: 'Wild Ducks'; 'Wild Geese'; 'Swans'; 'Wading Birds'; 'Refuges and Protected Colonies.'

These two parts are largely elaborations of the two bulletins above referred to which have already been noticed in these columns.

Part III which appeals more directly to the ornithologist and bird-lover comprises four chapters: 'Preliminary Matters'; 'Aids to Nesting'; 'Making Surroundings Attractive'; and 'Artificial Feeding.' These deal with helping birds to breed in a wild state rather than rearing them in captivity although the line between the two methods is perhaps more imaginary than real. Practical advice as to nesting boxes is given — how to build them, where to place them, etc., also how to provide nesting

[1] The Propagation of Wild Birds. Manual of Applied Ornithology. Treating of Practical Methods of Propagation of Quails, Grouse, Wild Turkey, Pheasants, Partridges, Pigeons and Doves, and Waterfowl, in America, and of Attracting and Increasing Wild Birds in General, Including Song-Birds. By Herbert K. Job. Illustrated from Photographs Mostly by the Author. Doubleday, Page & Company, Garden City, New York, 1915. 8vo., pp. i–xxvii + 1–276.

material for birds which do not use boxes — flax for Orioles, artificial mud puddles for Robins, etc. Baths, fountains, berry-bearing trees and food boxes also come in for detailed consideration and go to make up a book that is fully deserving of the subtitle which Mr. Job has bestowed upon it, 'A Manual of Applied Ornithology.' — W. S.

The Ornithological Journals.

Bird-Lore.[1] XVII, No. 5. September–October, 1915.

Bird Clubs in America. By F. M. Chapman.— Followed by reports on the work of seven such organizations.

Bird Photography and Suet Stations. By A. Jacot.

The Great Destruction of Warblers: An Urgent Appeal. By A. R. Sherman.

Migration of North American Birds. By W. W. Cooke.— Treats of the crested Titmice.

The Condor.[2] XVII, No. 5. September–October, 1915.

Characteristic Birds of the Dakota Prairies. I. In the Open Grassland. By Florence Merriam Bailey.

A Walking Eagle from Rancho la Brea. By L. H. Miller.— Description of a new species from this famous deposit, *Morphnus daggetti* (p. 180).

Estimated Average Age of the Herring Gull. By J. T. Nichols.— An interesting and suggestive paper.

A Late Nesting Record for the California Woodpecker. By H. W. Myers.

Description of a New Race of Savannah Sparrow and Suggestions on Some California Birds. By L. B. Bishop.— *Passerculus sandwichensis brooksi* (p. 187), Chilliwack, B. C. Notes on 15 other species.

A Partial List of the Summer Resident Land Birds of Monterey County, California. By J. R. Pemberton and H. W. Carriger.

The Oölogist.[3] XXXII, No. 10. October 15, 1915.

Odd Nesting of the American Merganser. By I. T. Van Kammen. No. 11, contains excellent photographs of Duck Hawk nests by J. B. Dixon.

The Ibis.[4] X Series. Vol. III, No. 4. October, 1915.

Report on the Birds collected by the late Mr. Boyd Alexander during

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[1] Organ of the Audubon Societies. Edited by F. M. Chapman. Published by D. Appleton & Co., Harrisburg, Pa. (Bimonthly) $1 per year.

[2] Edited for the Cooper Ornithological Club by Joseph Grinnell. Published at The Condor office, First Nat. Bank Building, Hollywood, Cal. (Bimonthly) $1.50 per year.

[3] Edited and published by R. M. Barnes, Lacon, Ill. (Monthly) $1. per year.

[4] Edited for the British Ornithologists' Union by W. L. Sclater. Published by Wm. Wesley and Son, 28 Essex St., Strand, London, W. C. (Quarterly) £1. 12s. per year.

his last Expedition to Africa.— Part V. Birds obtained in the Manenguba Mountains (Cameroon). By D. A. Bannerman.— 43 species.

Plumages of the Male Crossbill. By C. B. Ticehurst.— The author seems to have overlooked Dr. J. Dwight's account of the molts of this species (Ann. N. Y. Acad. Sci., XIII, p. 174–176, 1900) where he will find much detailed information. Dr. Dwight is of the opinion that the brick red plumage with red rump is attained by almost all birds at the post nuptial molt. Mr. Ticehurst, however, found several assuming yellow feathers at this time.

Ornithological Notes from the Alix and Buffalo Lake Districts, Province of Alberta, Canada, 1914. By C. B. Horsbrugh.— An annotated list of 80 species. The Grackles observed must have been *Quiscalus quiscula æneus* not *Q. quiscala quiscala* [sic.].

Studies on the Charadriiformes — II. On the Osteology of the Chatham Island Snipe (*Cœnocorypha pusilla*). By P. R. Lowe.— This curious bird is shown to be a relic of an earlier avifauna, a " living fossil " and the most generalized snipe known. Dr. Lowe considers it probably an outlying remnant of an earlier widespread stock of northern origin from which the present snipe and woodcock have sprung. Similar snipe of southern South America, etc., he thinks had a similar origin and does not regard them as evidence of an Antarctic continent from which all of these primitive types came.

Note on the Nestling Plumage of the Asiatic Golden Plover (*Charadrius dominicus fulvus*). By M. D. Haviland.

On Birds collected by Mr. C. Boden Kloss, on the Coast and Islands of Southeastern Siam. By H. C. Robinson.— One hundred species are listed of which four are described as new: *Pyrotrogon erythrocephalus klossi* (p. 735), Koh Chang; *Mesobucco duvaugli orientalis* (p. 738), Ok Yam; *Criniger ochraceus sacculatus* (p. 746), Geting Bidai, Selangor; and *Myiophoneus klossii* (p. 750), Koh Mehsi.

The Avifauna of Central America: a Study in Geographical Distribution. By W. P. Pycraft.

Bulletin of the British Ornithologists' Club.[1] No. CCIX. October 28, 1915.

Dr. Hartert described as new *Cyanoderma melanothorax baliensis* (p. 2), Bali. *C. m. melanothorax* from Java is a very rare bird and was overlooked in the British Museum Catalogue of Birds.

British Birds.[2] IX, No. 4. September, 1915.

Notes on the Breeding of the Asiatic Golden Plover. By Maud D. Haviland.— At the mouth of the Yenesei.

Screened and Open Nests of Redshanks. By C. W. Colthrup.

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[1] Edited by D. A. Bannerman. Published by Witherby & Co., 326 High Holborn, London, W. C. 6s. per year (nine monthly numbers).

[2] Edited by H. F. Witherby, 326 High Holborn, London, S. W. (Monthly) 10s., 6d. per year.

British Birds. IX, No. 5. October 1, 1915.

On "Wait and See" Photography. By E. L. Turner.— Admirable pictures of Sandpipers, Wagtail, etc.

On Incubation. By Eric B. Dunlop.— Birds which incubate from the laying of the first egg do so to protect their conspicuous eggs, is the opinion of the author. He also finds great mortality among the youngest (and consequently smallest) members of such broods, due to their failure to secure as much food from the parents as do the larger, stronger, members of the family.

Gannets Breeding on Bressay. By J. H. Gurney.

British Birds. IX, No. 6. November 1, 1915.

Richard M. Barrington. By C. B. Moffat.— With portrait.

Further Notes on the Moults and Sequence of Plumages in some British Ducks. By F. W. Smalley.— Agrees with Miss Jackson (do., pp. 34–42) that re-coloring cannot occur without molt. He differs in some details from her statements, and finds that many female ducks have a spring molt and an eclipse plumage.

Notes on the Great Northern Diver. By Eric B. Dunlop.— Good account of nesting in Canada; with photographs.

The Moults of the British Passeres with Notes on the Sequence of their Plumages. By H. F. Witherby.— Corvidæ, Sturnidæ and Oriolidæ.

Avicultural Magazine.[1] VI, No. 12. October, 1915.

The Ruddy Headed Goose. *Cloëphaga rubidiceps.* By H. D. Astley.

A Wonderful Collection of Birds from Ecuador. By H. D. Astley.— Some 60 species brought alive to England. Another note records the arrival in Paris of 30 live Hummingbirds from Venezuela.

Avicultural Magazine. VII, No. 1. November, 1915.

The Red-crowned Pigeon. *Alectrœnas pulcherrima.* By E. G. B. Meade-Waldo.— With incidents of a visit to the Seychelles.

A note in this number records a Scarlet Tanager kept in captivity for over 18 years.

The Emu.[2] XV, Part 2. October, 1915.

A New Honey-eater: *Macgillivrayornis claudi.* By W. Macgillivray.— Colored figure of this recently described bird.

Notes on the Yellow-bellied Shrike-Tit, *Falcunculus frontatus.* By A. H. Crisholm.

Comparative Osteology of Harris's Flightless Cormorant (*Nannopterum harrisi*). By R. W. Shufeldt.

Nesting of the Black Cormorant (*Phalacrocorax carbo*) in Tasmania. By Miss J. A. Fletcher.

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[1] Edited by Hubert D. Astley for the Avicultural Society. Published by West, Newman & Co., 54 Hatton Garden, London E. C. (Monthly) 15s. per year.

[2] Edited for the Royal Australasian Ornithologists' Union by J. A. Leach and C. Barrett. Published by Walker May & Co., 25 Mackillop St., Milbourne. (Quarterly).

The Admission of Colour-Genera. By G. M. Mathews.— A commentary on the recent discussion before the British Ornithologists' Club.

Observations on the Nankeen Night Heron (*Nycticorax caledonicus*). By S. A. Hanscombe.

Proposals for a second edition of the Official Check-list of the Birds of Australia are presented.

The South Australian Ornithologist.[1] II, Part 4. October 1, 1915.

Birds of the North and North-West of Australia. By G. M. Mathews. No. 4.

On some Pellets or Casts of a Screech Owl (*Tyto alba delicatula*). By S. A. White.

Field Notes in the Blue Mountains. By E. Ashby.

Revue Française d'Ornithologie. VII, No. 76–77. August–September, 1915. (In French.)

Some Observations on the Birds of Sfax, Tunis. By P. Bede.

The Snipe. By M. de la Furge.— Migration in Europe, etc.

Birds Observed in Morocco. 1884–1914. By H. and A. Vaucher.— Concluded.

Revue Français d'Ornithologie.[2] VII, No. 78. October 7, 1915.

On the Young of the Cagon (*Rhinochætus jubatus*). By A. Menegaux.— Breeding of a pair in captivity.

Observations on the Life Histories of the Birds of the Kerguelen Islands. By J. Loranchet.— Continued from No. 76–77.

Ardea.[3] IV, No. 3. September, 1915. (In Dutch.)

Meeting and excursion of the Netherland Ornithological Society.

Call Notes of *Anthus pratensis*. By H. Stadler and C. Schmitt.— An astonishing combination of musical and syllabic notation.

Ostrich raising in South Africa. By F. E. Blaauw.

Proceedings of the Bavarian Ornithological Society.[4] XII, No. 3. July 25, 1915. (In German.)

Songs and Call Notes of the Wood Lark (*Lullula a. arborea*). By Stadler and Schmitt.

Observations on the Australian Avifauna. By Prof. O. Maas.

On the Ornis of Java. By Max Bartels.— Discusses *Planesticus fumidus* (Müll.), *P. javanicus* (Horsf.) and *Collocalia gigas* Hartl. & Butl.

Some New Forms from the West Indies and Venezuela. By C. E. Hellmayr and J. Graf von Seilern.— *Mimus gilvus antillarum* (p. 201), Grenada; *Myiarchus tyrannulus sanctæ-luciæ* (p. 201), St. Lucia; *M. ferox*

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[1] Edited for the South Australian Ornithological Association by F. R. Zietz and others. Published quarterly by W. K. Thomas & Co., Adelaide. 8s. per year.

[2] Edited by A. Menegaux, 55 Rue de Buffon, Paris. (Monthly.)

[3] Edited for the Netherlands Ornithological Society by L. F. De Beaufort, A. Van Pelt Lechner and E. D. Van Oort. Published by E. J. Brill, Leyden. (Quarterly.)

[4] Edited by C. E. Hellmayr, Neuhauserstr. 51, Münich, Germany. (Quarterly.)

insulicola (p. 202), Tobago; *Dysithamnus mentalis cumbreanus* (p. 203), Las Quiguas, Ven.; *Leptotila verreauxi tobagensis* (p. 204), Tobago.

New Forms from the Neotropical Region. By C. E. Hellmayr.— *Euchlornis viridis chachapoyas* (p. 206), Chachapoyas, Peru; *Phaeochroa cuvierii berlepschi* (p. 208), Baranquilla, Colombia; *Psalidoprymna berlepschi* (p. 210), Anta, Cuzco, Peru; *Dryobates mixtus berlepschi* (p. 212), Mangrullo, W. Patagonia; *Pionopsitta amazonina theresæ* (214), El Escorial, W. Venezuela.

Ornithologische Monatsberichte.[1] 23, No. 7–8. July–August, 1915. (In German.)

Observations on Some Points in the Accounts of the Propagation of Our Cuckoos which are in need of Explanation. By R. Schlegel.

Remarks on *Carpodacus erythrinus* and its Forms. By E. Hesse.— *C. e. erythrinus*, *kubanensis* and *roseatus* recognized.

New Forms. By Reichenow.— *Chlorophoneus quadricolor intercedens* (p. 120), Useguha, German E. Africa; *Pomatorhinus australis damarensis* (p. 120), Windhuk, German S. W. Africa.

Journal für Ornithologie. Vol. 63, Heft. 3. July, 1915. (In German.)

The Characteristics of the Flight Feathers of the Birds of Northwestern Germany. By H. Reichling.

A New Contribution to the Ornithology of Saghalin. By E. Hesse.— 91 species listed. *Bubo bubo borissowi* (p. 366) and *Anthus borealis* (p. 386) are described as new.

Annual Report (1914) of Bird Study at Rossiten. By J. Thienemann.

Messager Ornithologique.[2] VI, No. 3. 1915. (In Russian.)

Notice of the Birds of the Vicinity of Tomsk. By P. and J. Zalesski.

Bombycilla garrulus ussuriensis (p. 223). By S. A. Buturlin.— From Lake Khanka, S. Ussuri-land.

Bubo bubo zaissanensis (p. 224). By W. A. Hachlow.

Sterna hirundo turkestanensis (p. 226). By N. A. Sarudny.

On *Falco altaicus* and *F. lorenzi*. By P. Sushkin.

Notes on the Palæarctic Forms of Pinicola enucleator. By S. A. Buturlin.— *P. e. urupensis* (p. 239) n. subsp. from Urup Isl., Kurile. Five races recognized, but *P. e. pacata* Bangs regarded as an individual monstrosity.

Birds collected by A. P. Velezhanin in the Basin of the Upper Irtysh. By G. I. Poljakow.

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[1] Edited by Dr. A. Reichenow. Published by R. Friedländer & Son, Berlin, 6. Karlstr 11. (Monthly) 6M. per year.

[2] Edited by G. Poljakow, Gut "Sawino," Postabteilung Objralowka, Moscow Govt. Russia.

Ornithological Articles in Other Journals.[1]

Riley, J. H. Note on *Chlorostilbon puruensis* Riley. (Proc. Biol. Soc. Wash., XXVIII, p. 183, November 29, 1915.) — This recently described species proves to be a *Chlorestes* close to *C. cæruleus* of which it may be regarded as a subspecies.

DeWar, J. M. The Relation of the Oystercatcher to its Natural Environment. (The Zoologist, August–November, 1915.)

Bell, Alfred. Pleistocene and Later Bird Fauna of Great Britain and Ireland. (The Zoölogist, November, 1915.)

Clarke, Wm. Eagle. The Wren of St. Kilda: Its Status, Plumages, and Habits. (The Scottish Naturalist, October, 1915.) — A good account of *Troglodytes troglodytes hirtensis* (Seebohm).

Clarke, John M. Protection of the Sea Fowl of the Gulf of St. Lawrence (Report Sixth Ann. Meeting Comm. of Conservation of Canada.) — An able plea for the protection of the colonies at Percé Rocks and Bonaventure Island. The same volume contains articles on the same subject by C. Gordon Hewitt and P. A. Taverner. All illustrated by excellent photographs of Cormorants, Gannets, etc. The government is urged to establish these rookeries as well as Pt. Pelee as bird refuges.

Kerr, J. Graham. Notes on the Habits of the Rhea. (Proc. Royal Phys. Soc., 1915, pp. 200–203.) — In Paraguay.

Killermann, S. On the Extinct, Mascarine Birds. (Naturwiss. Wochenshrift, XIV, pp. 353–360.) — The Dodo. (In German.)

Coburn Charles A. A Study of the Behavior of the Crow, *Corvus americanus* Aud., by the Multiple Choice Method. (Jour. Anim. Behavior, V. pp. 75–114.) — *cf.* also do., IV, pp. 185–201.

Wilkinson, O. J. The Great Crested Grebe. (Wild Life, VII, No. 4, October, 1915.).— Beautiful photographs.

Selous, E. The Little Grebe. (Wild Life, VII, Nos. 2–4.) — Well illustrated.

Thayer, G. H. The End of Cory's Shearwater. (Science, September 3, 1915.) — Regards it as a synonym of *Puffinus kuhli.*

Stone, W. The End is Not Yet! (Science, October 15, 1915.) — Shows that Cory's Shearwater (*Puffinus borealis*) is not a synonym of *P. kuhli* and that whether or not it be identical with the Azores bird, *P. borealis* is the oldest name for *any* north Atlantic member of the group.

Ridgway, R. A New Pigeon from Jamaica. (Proc. Biol. Soc. Wash., XXVIII, p. 177, November 29, 1915.) — *Chlorœnas inornata exigua.*

Publications Received.— Barrows, H. R. The Histological Basis of the Different Shank Colors in the Domestic Fowl. (Ann. Rept. Maine Agr. Exper. Sta. for 1914, pp. 237–252.)

[1] Some of these journals are received in exchange, others are examined in the library of the Academy of Natural Sciences of Philadelphia. The Editor is under obligations to Mr. J. A. G. Rehn for a list of ornithological articles contained in the accessions to the library from week to week.

Beal, F. E. L. Food Habits of the Thrushes of the United States. (Bull. 280, U. S. Dept. Agriculture, September 27, 1915.)

Chapin, James P. Descriptions of Three New Birds from the Belgian Congo. (Bull. Amer. Mus. Nat. Hist., XXXIV, Art. XVI, pp. 509–513, October 20, 1915.)

Cooke, W. W. Distribution and Migration of North American Gulls and their Allies. (Bull. 292, U. S. Dept. Agriculture, October 25, 1915.)

Curtis, Maynie R. Relation of Simultaneous Ovulation to the Production of Double-yolked Eggs. (Jour. Agr. Research, U. S. Dept. Agr., III, No. 5, pp. 375–386.)

Dabbene, Roberto. (1) Description d'un Noveau Genre et d'une Nouvelle Espèce de Pic Provenant du Nord-ouest de la Republique Argentine. (Ann. Mus. Nac. Hist. Nat. Buenos Ayres, XXVII, pp. 75–81, July 8, 1915.) (2) Una ave nueva para la Argentina (Bol. Soc. Physis, I, No. 7, December, 1914.) (3) Otras especies de aves nuevas (do. I, pp. 532–533.)

Fleming, J. H. A New Turnagra from Stephens' Island, New Zealand. (Proc. Biol. Soc. Wash., XXVIII, pp. 121–124, May 27, 1915.)

Gaige, F. M. The Birds of Dickinson County, Michigan. (Sixteenth Rept. Mich. Acad. Sci., pp. 74–91.)

Gordon, Seton. Hill Birds of Scotland. Longmans, Green, and Co., Fourth Ave. and 30th St., N. Y. Edward Arnold, London. 8 vo. 1915. pp. 1–300. $3.00 net.

Grinnell, Joseph. A Distributional List of the Birds of California. (Pacific Coast Avifauna, No. 11, Cooper Ornith. Club. October 21, 1915.)

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Mathews, Gregory M. The Birds of Australia. Vol. V, Part I, November 5, 1915. London, Witherby & Co.

Mearns, Edgar A. Descriptions of Seven New Subspecies and one New Species of African Birds. (Plantain-Eater, Courser, and Rail.) (Smithson. Misc. Collns., Vol. 65, No. 13, November 26, 1915.)

Miller, W. DeWitt. Three New Genera of Birds. (Bull. Amer. Mus. Nat. Hist., XXXIV, Art. XVII, pp. 515–520, October 20, 1915.)

Palmer, T. S., Bancroft, W. F., and Earnshaw, F. L. Game Laws for 1915. (Farmers' Bull. 692, U. S. Dept. Agr., September 14, 1915.)

Richmond, Chas. W. (1) Notes on several preoccupied generic names (Aves). (Proc. Biol. Soc. Wash., XXVIII, p. 180, November 29, 1915.) (2) Note on the Generic Name Bolborhynchus Bonaparte. (*do.*, p. 183, November 29, 1915.)

Ridgway, R. A New Pigeon from Jamaica. (*do.*, p. 177, November 29, 1915.)

Riley, J. H. (1) Descriptions of Three New Birds from China and Japan. (*do.*, pp. 161–164, September 21, 1915.) (2) Note on *Chlorostilbon puruensis*. (*do.*, p. 183, November 29, 1915.)

Shufeldt, R. W. (1) Comparative Osteology of Harris's Flightless Cormorant (*Nannopterum harrisi*). (Emu, XV, Pt. 2, October, 1915, pp. 86–114.) (2) Nature-Study and the Common Forms of Animal Life. II. (Nature Study Review, II, No. 7, October, 1915.) (3) A Critical Study of the Fossil Bird *Gallinuloides wyomingensis* Eastman. (Jour. of Geology, XXIII, No. 7, October–November, 1915.) (4) Comparative Osteology of Certain Rails and Cranes, and the Systematic Positions of the Super-suborders Gruiformes and Ralliformes. (Anat. Record, Vol. 9, No. 10, October, 1915.) (5) Eggs of North American Water Birds (Part III). (Bluebird, September, 1915.) (6) The Quarrelsome Kingbird. (Our Dumb Animals, November, 1915.) (7) Red-headed Woodpecker. (*do.*, December, 1915.) (8) Don't shoot the Owls. (The Country Gentleman, October 30, 1915.)

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CORRESPONDENCE.

Editor of 'The Auk'.

Dear Sir: —

I note that in the October number of 'The Auk,' Mr. Robert Thomas Moore presents some criticisms of what I have chosen to call the graphic method of recording bird songs. Since Mr. Moore credits me with a statement that I did not make, and since many of the faults he finds are the result of misunderstanding, or exist principally in his own imagination, I should like to take a little space to answer him.

In the beginning we must realize that it is our intention to study bird songs, not from the standpoint of a musician but from that of a scientist. We care little for the fact that musicians do not consider pronunciation a factor worth dealing with. If it has no application to bird music, it makes little difference what the musician's definition of a trill is. If musicians consider that the duration of a song in seconds is of secondary importance to them, that is no reason why it is of secondary importance to the scientist. The bird-lover may care little about the amount of white on the junco's tail. All he wants to know is that it is a junco, after which he spends his time admiring the dainty contrast of its colors. But to the student of bird plumages the amount of white is important, and there may be cases where such a character becomes of extremely great importance. The same thing applies to bird song. The length of a song is one of its characters, a character that may be specific, that may have just as great, or even greater im-

portance than that the bird sings in triple time. When the bird does not sing in any particular time, the duration of the song in seconds is practically the only time character that we can record with accuracy.

Mr. Moore founds a large amount of his criticism on his evident belief that I denied the existence of rhythm in bird songs in general. When one assumes the rôle of critic it becomes his duty to read carefully that which he is going to criticise. Otherwise he is liable to waste space and time criticising errors that originated in his own faulty reading or interpretation. I was particularly careful not to deny the existence of rhythm in bird songs, for I was entirely aware that some of my records were rhythmic. What I did wish to make clear was that a great many bird songs are not rhythmic, and that for that reason a method of recording time which depends on a mathematical relation between the durations of single notes is not suited to bird songs.

Mr. Moore makes some curious distinctions between the meanings of the words time and duration, and concludes from this that I have ignored time and rhythm. Does Mr. Moore think that I measure the duration of the song as a whole, only? Does he believe that the lengths of the separate notes on the record are meaningless? This is evidently what he does think, for how else could he conclude that the graphic method does not record rhythm? How else could he get the notion that the rhythm in some of the records is obscured by the method? What difference would it make had I used the word time instead of duration? None whatever, for duration and time are one and the same factor. Mr. Moore would have us think that duration does not include rhythm. Yet he himself says that a knowledge of "the relative duration of the individual notes of a song.... would result in some knowledge of the song's rhythm." That is true. And in some cases it would result in a knowledge of the song's lack of rhythm. Mr. Moore implies that I am unable to record rhythm by the graphic method, yet he proves the contrary himself. He tells us that he has found rhythm in some of the records, particularly that of the robin. Yes, the rhythm is there, showing plainly at a glance. Mr. Moore, with his musician's mind, must needs reduce it to measures and triple time in order to see it, but those who are not so well versed in music can see it too, by the horizontal lengths of the phrases and pauses. Rhythm, when it exists, can be recorded by the graphic method just as accurately as by any other. Even when it is retarded or accelerated the stop-watch checks it up, in spite of Mr. Moore's statement to the contrary, and not only checks it, but shows just how much retardation and acceleration there is.

But it is when the song does not happen to be rhythmic that the graphic method shows its greatest utility. The old method must make the song rhythmic in order to record it. Every note of the song must have a mathematical relation in length to every other note. Now a bird may sing notes, the relative durations of which are totally incommensurable. Shall we change such a song in order to make it fit our method? Is such a proceeding scientific accuracy? Or is it the conception of a musician, so

trained in the rules and necessities of human music that he is unable to conceive of music that is not rhythmic? Is it not far preferable to change the method to fit the song?

In the matter of pitch Mr. Moore decides that the graphic method, since it requires twelve horizontal lines, is much too complicated. He uses much space telling how numerous the lines would have to be in order to record the pitch of a note with absolute accuracy. Undoubtedly there would have to be not merely a few thousand lines but an infinite number. Our accuracy in recording pitch is limited by the accuracy of the human ear in perceiving it. It is unnecessary to record the note more accurately than we can hear it.

If the horizontal lines were all that counted, five lines would be far simpler than twelve. But we must bear in mind a few of the other intricate necessities of the old system. We must begin our staff with a clef. We must decide on some key in which the bird is supposed to sing, and indicate this by anything from five sharps to five flats, carefully placed on their proper lines or spaces. We must use more of these sharps and flats, and also a few natural signs, whenever the bird happens to forget to which key the recorder has assigned his song. If the bird forgets frequently, we have the alternative of changing the key, which is slightly less intricate. We must add lines above or below the staff every time the bird strays out of the limits of the original five. We must add some more marks at the top to indicate how many octaves above middle C the bird sings. Combined with all this we must keep constantly in mind the fact that at certain places on the staff the interval between a line and a space is half a tone, while in others it is a whole tone. Five lines may be very simple, but considering all that goes with it I much prefer twelve, or even thirty-six. Yet Mr. Moore tells us that this method is more simple and comprehensive than the graphic!

To go back to the matter of time, we find here also a complicated system. A number precedes the song which tells the number of beats to the measure. Another number at the top tells the number of beats to the minute. Each separate note must be one of a dozen or so sorts, indicative of its duration in beats. At the top we must write retards and accelerations, which do not show with accuracy how much of the song is retarded or accelerated, nor how great is this change in time. The whole method, taking pitch and time together, is so intricate that, in order to use it with anything like celerity, one must be educated in its use from his youth up. The accurate recording of a bird's song in the field is a difficult matter in itself. Why complicate it by a difficult method when we may make one that is reasonably simple? This "splendid system.... evolved by ages of use" may do very well for human music, but it is clearly not applicable to that of birds.

In the matter of pitch Mr. Moore concludes that the old method is more accurate. What he means is, not that the song as it naturally is can be more accurately recorded, but that, after it has been artificially changed in both pitch and time to fit the method, the pitch of the recorded notes is

more definite. What we desire is a record of the bird's song as it is, not as we think it ought to be. We cannot fit wild bird songs to our standards of music. Then why not fit our method of making records to the bird songs? Mr. Moore would have us believe that a method which cannot record the pitch of a bird's song closer than a half-tone is more accurate than a method that can record it closer than a quarter tone. Absolute accuracy is out of the question, but relative accuracy should be as close as the human ear can make it, and not limited by the graded pitches allowable in human music.

In this matter of pitch and accuracy of record I wish to explain that it is entirely possible to use different colors for the coördinate lines, and the lines representing the song. This obviates the necessity of making the song lines heavier than the others, and thus makes the location of the pitch of each note plainer. I hoped at first to have this done with the figures used to illustrate my article. In work in the field I do this by simply using quadrille paper note-books, in which the lines for both time and pitch are already drawn in light blue. Such a note book has the advantage of being purchasable almost anywhere, either in ordinary or loose-leaf form. With such a note-book it makes little difference whether twelve or thirty-six lines are necessary to record a given song. With two colors I have been able to indicate an accented note, or other notes of greater intensity than the main song by simply making the lines, representing these notes, heavier when recorded in pencil, and broader when recorded in ink.

The factor of pronunciation Mr. Moore considers of little importance because musicians do not recognize it as a part of music. Pronunciation may have nothing to do with music, but it has a great deal to do with bird songs. The liquid l is an extremely important factor and its presence or absence is of great assistance in the recognition of a song in the field. But Mr. Moore wishes to have pronunciation classed as a sub-head under quality. What it has to do with quality is hard to see. Too many people already have quality, intensity and pitch, hopelessly confused, so why mix pronunciation with it? Quality depends entirely on the presence or absence of certain overtones, and the relative intensity of these overtones. Quality includes nothing else. Is it scientific to make it include pronunciation?

Mr. Moore tells us that the presence of marks indicating pronunciation blurs the pitch of the note. If the loop used to indicate an l sound, starts at a certain definite point and ends at that point, making no progress horizontally or vertically it blurs neither pitch nor time. This is another objection evidently originating in Mr. Moore's imagination.

Too great a musical knowledge in some cases is liable to result in too little along other important lines. It is liable for instance to make one conclude that such a term as "trill" has only one meaning. Looking up "trill" in Webster's dictionary I find that my definition is more correct for the ordinary use of the word than Mr. Moore's. The musical trill, which Mr. Moore considers the only real trill, is referred by Webster to the word "shake." The ordinary trill is defined in the dictionary as a single note, interrupted by the regular recurrence of a consonant sound.

Whether the trills of birds are caused in this way or by rapid repetition of a note is hard to say. There seem to be reasons for thinking that trills are caused in both ways in bird song. But Mr. Moore's shake must be rare in bird music, and is certainly not worth bothering our heads about. Ornithological literature abounds in the use of the word trill, describing these phenomena of bird songs. Yet our critic considers these writers all wrong because this trill is not one in the strict, narrow, musical use of the term. He further concludes that my records are rendered inaccurate for the same reason, although even to Mr. Moore, who supposed all trills were shakes, what I meant by trill was perfectly plain.

Mr. Moore objects to the term "graphic method" because the old system is also graphic. In the broadest sense of the word "graphic" he is right. But "graphic method" has become particularly associated in recent years with methods of recording various facts, mathematical and otherwise, by the use of coördinates. In that sense this title is particularly appropriate.

My aim in introducing the graphic method was to show that more accurate methods than the old system of musical notation could be devised. The old method, when applied to bird songs has been almost universally recognized as a failure. A familiar bird song, written on the musical scale, looks unfamiliar, even to the man who understands musical symbols. The result when it is played on the piano with an accompaniment of chords is absolutely ludicrous. Anyone can see that the reason for this is the inaccuracy of the old method, in its attempts to put together a method and a variety of music that were not made for each other. The graphic method does away with these difficulties, as well as the temptation to write chord accompaniments and to play the song on the piano. It records the song simply and naturally, and so graphically that anyone can see its meaning at a glance. It becomes familiar after very little study, and its use in the field is much easier than the intricate system of symbols of the old method. In a word it is far more accurate, far more comprehensive and far more simple.

I do not wish to convey the impression that I believe the graphic method perfect. Seldom if ever is a new idea brought out by one person that cannot be improved by someone else. I would gladly welcome suggestions, criticisms or improvements that are constructive in nature, and not based on misinterpretation, or evident wish to make unqualified condemnation. I believe thoroughly in the principle back of the graphic method, and I am willing to leave its fate to the test of time, having confidence that the old method with its inaccuracies and complications must go, and that in the future either this method or something based on similar ideas will be generally used by students of bird song. I hope in some future time to present more studies of bird song based on the graphic method, and after further field study to go into the subjects of intensity and pronunciation more deeply.

Aretas A. Saunders.

New Haven, Conn.
Oct. 30, 1915.

[Both Mr. Saunders and Mr. Moore seem agreed that some sort of 'graphic' representation of bird song is preferable to the syllabic method. Choice between their methods is largely a matter of personal opinion and both having been exploited at considerable length it seems hardly desirable to continue the discussion further in these columns. A note by Mr. Summers in General Notes, p. 78, *antea*, as well as Mr. Oldys' paper, p. 17, deal further with this subject. Ed.].

On the Position of the *Aramidae* in the System.

Editor of 'The Auk.'

Dear Sir: —

Your very interesting notice of my two recent osteological papers, which appeared in 'The Auk' for October, 1915 (pp. 517, 518), seems, in one instance at least, to demand a few words from me by way of defence.

Dr. Mitchell's conclusions are only known to me through my having seen the notice of his paper in the 'Abstract of the P. Z. S.' of May 25, 1915, p. 34. There I read that he read, as Secretary of the Society, "a communication on the Anatomy of the Gruiform birds, *Aramus giganteus* Bonap., and *Rhinochetus kagu*, in which he showed that *A. giganteus* resembled *A. scolopaceus* very closely in the details of its muscular and bony anatomy, and that the genus *Aramus*, in these respects, was very close to the true Cranes."

That the two species of *Aramus* are very much alike in their morphology will, of course, not be questioned; but that these birds are "very close to the true Cranes" structurally, is a statement which I contend cannot be sustained, nor does the anatomy of the several forms demonstrate it. In a paper I published as long ago as 1894 (Jour. Anat. and Phys. London, Oct., Vol. 29, n. s., Vol. 9, pt. I, art. 5, pp. 21–34, text figures), I carefully contrasted, in three parallel columns, the essential osteological characters of *Rallus longirostris*, *Aramus vociferus*, and *Grus americanus;* and this comparison demonstrated the fact that *Aramus* had more rail characters in its skeleton than gruine ones. My subsequent publications on the subject practically sustained this opinion. Finally, the paper of mine, which you kindly noticed in 'The Auk,' is entitled "On the Comparative Osteology of the Limpkin (*Aramus vociferus*) and its Place in the System," a contribution to the subject which recently appeared in 'The Anatomical Record' (Vol. 9, No. 8, Aug. 20, 1915, pp. 591–606, figs. 1–14). In this paper I thought I showed very clearly that, osteologically, the *Aramidæ* were nearer the *Rallidæ* than they were to the *Gruidæ*. Other anatomists have arrived at the same conclusion. But to discuss all of these opinions would occupy far more space than necessary in the present connection; so I shall confine myself to what one of the most painstaking and able avian anatomists had to say on the subject. I refer to the splendid work of William Macgillivray, who prepared all the bird dissections of American birds for Audubon's great work on "Birds of America." Macgillivray

paid unusual attention to the anatomy of the Limpkin (*Aramus*), which Audubon called the "*Scolopaceous Courlan*," and his studies of it appear in Volume V (pp. 184–187). There is one full-page illustration devoted to the digestive tract and the trachea or windpipe. Audubon evidently believed the bird to be a big Rail; and in so far as its habits and nesting were concerned, "very nearly allied to *Rallus elegans*." After rendering his account of it, Macgillivray's follows immediately, and among other things he points out that "this remarkable bird has exercised the ingenuity of the systematizing ornithologists, some of whom have considered it as a Heron, others a Crane, while many have made it a Rail, and many more a genus apart, but allied to the Rails, or to the Herons, or to both. It seems in truth to be a large Rail, with the wings and feet approaching in form to those of the Herons; but while frivolous disputes might be carried on *ad libitum* as to its location in the system of nature, were we merely to consider its exterior, it is fortunate that we possess a means of determining its character with certainty; — if we examine its digestive organs, we shall at once see if it be a Rail, or a Heron, or anything else. If a Heron, it will have a very wide œsophagus, a roundish, thin-walled stomach, very slender intestines, and a single short obtuse cœcum; if a Rail or Gallinule, or bird of that tribe, it will have a narrow mouth, a narrow œsophagus, a very muscular stomach, intestines of moderate width, and two moderately long, rather wide cœca."

Following this, Macgillivray states that he has before him two specimens of the Limpkin, which were shot in Florida and preserved in spirits, and he sets forth in the ensuing three paragraphs his account of their anatomy. "Now, in all this," he adds, "there is nothing indicative of any affinity to the Herons; the structure of the intestinal canal being essentially like that of the Coots, Gallinules, and Rails. Even the external parts sufficiently indicate its station, the bill, the plumage and the coloring being more like those of the Rallinæ than of any other family.

"The Prince of Musignano, who first described this bird as a Rail, *Rallus giganteus*, afterwards adopted for it Vieillot's genus *Aramus*, and considered it as belonging to the *Ardeidæ*, forming a connecting link with them and the *Rallidæ*, and 'aberrating somewhat towards the *Scolopacidæ*, as well as tending a little towards the *Psophidæ*, sub-family *Gruinæ*,' and claiming 'again a well-founded resemblance to the most typical form of the genus *Rallus*.' Finally, he reverts to his original idea, and places it at the head of the *Rallidæ*. Mr. Swainson refers it to the *Tantalidæ*, associating it with *Anastomus*, *Tantalus*, and *Ibis*, to which it certainly has very little affinity in any point of view."

Under date of September 14, 1915, I have an interesting letter from my esteemed correspondent, Herr. Prof. Dr. H. von Ihering, Director of the Museu Paulista, São Paulo, Brazil, in which he says: "Your letter of the 6th of August has given me the satisfaction to see that you are in accordance with me in separating the *Aramidæ* from the famous 'family' of *Gruidæ*. . . . .It was a very useful and necessary work of you to study the anatomy of *Aramidæ* and its allies."

After the above had been written my attention was invited to a peculiar conformation of the trachea in *Aramus vociferus* by Dr. Edgar A. Mearns at the U. S. National Museum. He tells me that several years ago he collected a *male* specimen in Florida, and that he observed in it that the lower part of the trachea, above the bronchial bifurcation, formed a loop or convolution, which extended posteriorly to rest on the outer surfaces of the pectoralis major muscles, much as we find it in *Ortalis*. Dr. Mearns prepared this specimen and presented it to the United States National Museum, and a few days ago I made an effort to locate it through the kind assistance of Dr. C. W. Richmond. We were unsuccessful in our search, and so the matter stands at present.

I mention above a dissection of Macgillivray of *Aramus*. He had both a male and a female bird at hand when he wrote out his anatomical notes on this species for Audubon; but he evidently did not observe this peculiarity of the windpipe in the male bird. He figured the trachea of the *female*, in which sex the aforesaid convolution does not take place, and he doubtless used the male specimen for other purposes.

Dr. Mearns also collected a female Limpkin, and the skeleton is in the National Museum collections. I have examined it there, and I find that no such looping of the windpipe is present in it. Possibly this structure may have been described somewhere or other and I have never run across it; in the event it has not been described, however, Dr. Mearns is fully entitled to the credit of having first discovered it.

If this letter chances to be read by any one interested in the anatomy of birds in Florida, I would be very glad to communicate with him and arrange to have a male specimen of an adult Limpkin sent me, in that I may figure and fully describe this condition.

In closing I would invite attention to the excellent paper by Dr. F. E. Beddard on the osteology of *Aramus scolopacus* (*Ibis*, (8) II., 1902, pp. 33–54, numerous figures), which is a valuable contribution to this subject.

As this communication goes to you, another article of mine appears in 'The Anatomical Record,' entitled the "Comparative Osteology of Certain Rails and Cranes, and the Systematic Positions of the Supersuborders Gruiformes and Ralliformes." (Vol. 9, No. 10, Oct. 20, 1915, pp. 731–750, figs. 1–9). A very unusual and remarkable slip has taken place in this article; for, at the time I was engaged upon its preparation, and had completed it for the press, two manuscripts were before me, namely, the old one, published years ago when I considered that the *Aramidæ* was a family belonging among the Cranes and their allies (*Gruiformes*), and the remodeled one, in which my present views were set forth. In assembling the pages, the *old* page, upon which the Classification and some of the remarks under "Conclusions" appeared, was accidentally substituted for the new one carrying the new classificatory scheme upon it. In this shape it was handed over to be typewritten. When galley proof came to hand, I was extremely busy with other work, and it was therefore turned over to an expert proofreader and most carefully corrected. This proofreader

knew nothing of the classification of birds, however, and so the galleys went forward with the result now to be found in "The Anatomical Record" (Vol. 9, No. 10, Oct. 20, 1915, pp. 749–750).

In so far as my present views are concerned with respect to the position of the *Aramidæ* in the system, they are correctly set forth in "The Anatomical Record" of August 20, 1915 (Vol. 9, No. 8, pp. 591–606).

Faithfully yours,

R. W. Shufeldt.

NOTES AND NEWS.

Systematic zoölogy occupies a peculiar position in the field of science, in that its publications are to a certain extent privileged — *i. e.* protected by laws which do not pertain to other scientific publications. The latter are judged on their merits and an author who is guilty of slipshod careless writing, or whose publications are ambiguous or insufficient, is ignored; the merits of his work discounted, and his conclusions questioned. In other words he loses caste in the scientific world. Not so the describer of new species. No matter how bad or inadequate his diagnosis or how unnecessary the naming of the species, a name once proposed has nomenclatural status, and is a part of systematic science — for this matter is governed by the rules of nomenclature.

These rules were formulated mainly for the purpose of dealing with the earlier literature of zoölogy where names were proposed by writers who did not realize their responsibilities and did not consider the importance of making their descriptions adequate for the future. Obviously if we are to have stability of nomenclature on a basis of priority all of these earlier names must be considered and hence the rules.

It probably never occurred to the framers of any of the Codes of Nomenclature that present day systematists would take advantage of these rules to save themselves trouble, and publish new names with just enough description to save their status under the rules; and yet this is precisely the situation that we face today in ornithology — and possibly in other branches of zoölogy and botany.

Hundreds of new birds have been named in recent years with diagnoses limited to one or two lines. These birds are not described, no one could identify them from the meagre diagnoses but in each case a type specimen and a type locality are cited and in that way the law is complied with and we are prevented from rejecting the name as unidentifiable! The author has another species to his credit, he or the institution he represents has another type specimen, but other ornithologists are put to the trouble

of borrowing his type or journeying to his collection to see it, before they can tell what he is talking about and the advance of ornithological science is impeded.

Usually a very little additional labor on the part of the author is all that is necessary to avoid all this trouble. Let us take a concrete example: A new form "b" is named and described as "similar to 'a' but larger" and a type specimen and locality are added. We have a specimen from another locality which is also "similar to 'a' but larger." We cannot tell whether it is identical with "b" or not. It may really differ more in size from "b" than the latter does from "a."

Now the describer of "b" must have measured both "b" and "a." If he did not his work is so careless that he had no right to describe the new form at all. If he *did* measure them it would be very little trouble to add the measurements to his diagnosis. When an author has decided that a form is new, nine-tenths of his work is done, and it is a duty he owes to science to complete the work by presenting all the data that governed him in naming it.

Some years ago a plea was circulated among scientific journals asking them to refuse to publish new genera unless a type species was designated. It would seem that some similar radical step must soon be taken with regard to these inadequately described new species and subspecies.

It is not necessary to draw up long verbose descriptions, often a few words embodying definite measurements and definite color values are all that are necessary, combined with a comparison with nearly allied forms.

If authors would realize that the advancement of science should stand ahead of the greed for names or types we should have no more of this inexcusable, slovenly work.

Let it be hoped that in future it will be generally recognized that an author who is guilty of such work invites a reputation for carelessness and inaccuracy and that a journal which lends itself to such publication lessens its dignity. There are comparatively few ornithologists who are offenders but they set a very bad example. Let us hope that they may realize the evil of this sort of work and that all ornithologists and editors will stand together in strenuous opposition to its continuance.

The Congo Expedition of the American Museum of Natural History has reached a most successful conclusion; and Mr. Herbert Lang, its leader, returned to New York on Nov. 12 last, after more than six years of uninterrupted work in the Congo Basin. His assistant, Mr. James P. Chapin, had preceded him by some 7 months. All their collections, in spite of the dangers and difficulties caused by the struggle in Europe, have arrived safely at the Museum; and it speaks well for conditions in the Belgian Congo that the party can boast of not having lost a single box of collections, even during the very long overland stages in the Congo, where not a few of them were carried for a distance of 50 days march.

This enterprise was carried on with the coöperation of the Belgian

Government, and a part of the zoölogical material is to be turned over to the Congo Museum at Tervueren.

Messrs. Lang and Chapin sailed for the Congo in May, 1909, and have collected across the entire breadth of the Belgian Congo. After ascending the river as far as Stanley Falls they continued eastward up into the great Ituri Forest, and then northward to the Upper Nile as far as the Lado Enclave and the Bahr-el-Ghazal.

Conditions of transportation necessitated returning by much the same route, and on the return journey much additional material was secured. The greater part of the time was thus spent in the northeastern part of the Congo, one of the most remote, most primitive, and most interesting portions of the continent.

The collections comprise not only magnificent representatives of the big game of the region, the Square-lipped Rhinoceros, the Okapi, the Derby Eland, the Bongo, and the Ituri Forest-Hog, but also extensive series of the mammals in general, birds, reptiles, amphibia and fishes, many thousands of invertebrates and a great deal of ethnological material, with numerous plaster-casts of faces from many different tribes, including the Pygmies. All this is supplemented by Mr. Lang's remarkable collection of photographs comprising some 7000 negatives.

The vertebrate specimens alone number some 20,000, but we shall only consider in detail the results of the work in ornithology. The specimens of birds collected number over 6200, representing — it is estimated — some 600 different species. They are accompanied by a collection of nests and eggs, and many interesting notes on food, habits, voice, and migration. These results will assuredly constitute an important addition to our knowledge of the avifauna of the Congo, and it is hoped that a general report on them will be published.

For the present, the new species discovered are being described in the 'Bulletin of the American Museum of Natural History'; among them is a very distinct new genus, Cerioclepteles, a Honey-Guide. The study of the bird collection has been entrusted to Mr. Chapin, junior member of the party, whose long field experience should prove extremely valuable.

Above all Messrs. Lang and Chapin were fortunate in maintaining themselves in good health for such a long period in a country justly famous for its disagreeable climate, insidious fevers, and sleeping sickness.

A NATURAL history survey of the Yosemite National Park is now absorbing the attention of several of the staff members of the California Museum of Vertebrate Zoölogy. In fact, during most of the past year, one or more representatives have been in the field, gathering specimens and information which will be used as basis of a scientific report and of a semi-popular account. Director Joseph Grinnell, Dr. Walter P. Taylor, Curator of Mammals, and Mr. Tracy I. Storer, Assistant Curator of Birds, are conjointly engaged in compiling the reports. They, with several student-assistants, have already been associated in the field-work.

The objects of the work have been to ascertain the nature and extent of the life-zones, and the life-history, systematic status, and inter-relationships of the constituent species of birds, mammals, reptiles, and amphibians. As regards the birds, many extensions of range have been established, as also some interesting habit-relationships.

Mr. George K. Cherrie one of the American Museum's representatives on Col. Roosevelt's Brazilian trip has for the past three months been engaged at the Museum in preparing for publication a report on the important collections of birds made by him while a member of that expedition. At the completion of that work the Museum plans to send Mr. Cherrie back to Brazil to investigate more thoroughly the bird-life of certain promising sections through which the Roosevelt party passed. This expedition will be made under the joint auspices of Col. Roosevelt and the Museum.

The Academy of Natural Sciences of Philadelphia has recently obtained the extensive collection of Guatemalan birds made by Messrs. Samuel N. Rhoads and Earl L. Poole on an expedition conducted by Mr. Rhoads during the early part of 1915. Mr. Rhoads is at present engaged in preparing a report on the collection.

For some years past it has been customary to provide numbered 'identification buttons' for members attending the A. O. U. Meetings. There has, however, been a demand for a more permanent A. O. U. badge which could be used at meetings in connection with a ribbon furnished by the local committee containing the identification number, etc.; or as an ornament suitable for wear at any time.

To meet this demand a blue and gold enamel pin has been specially designed as shown in the accompanying cut, which will be mailed postpaid to any Associate, Member, or Fellow of the A. O. U. for fifty cents (cost price).—Address Dr. Jonathan Dwight, 134 W. 71st St., New York City.

In an obituary notice of Graf Hans von Berlepsch in the October Auk there was an unfortunate confusion with Baron Hans von Berlepsch. The latter is still living and it is he who has done so much for bird protection not the late Graf.

Just as we go to press, we learn with sorrow of the death, at Cannes, on November 28, of Henry E. Dresser, one of the original Honorary Fellows of the A. O. U. A notice will appear in the April 'Auk'.

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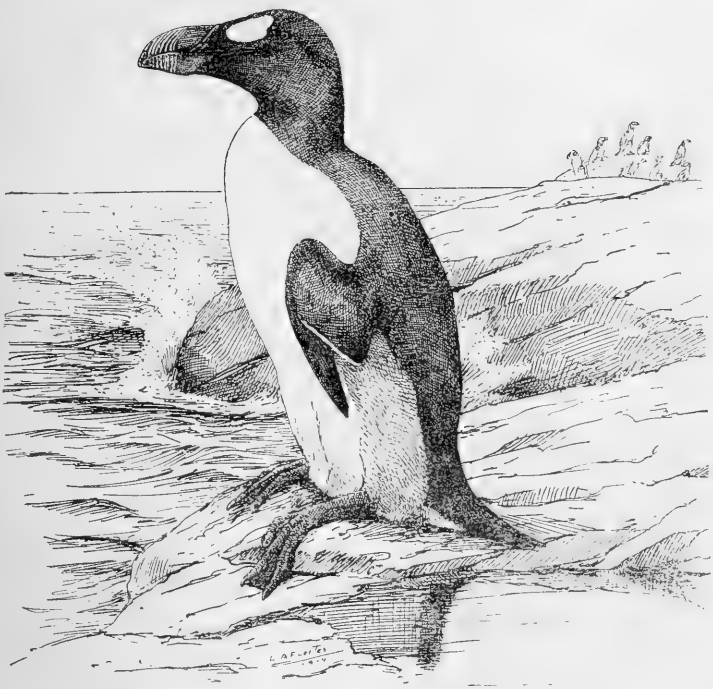

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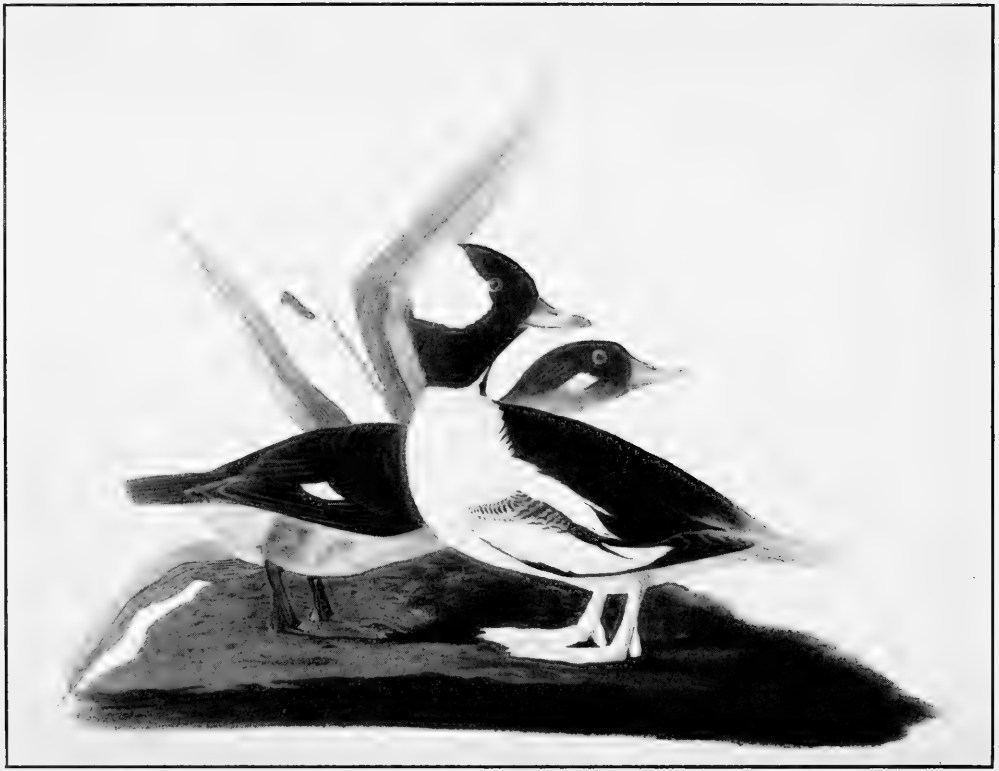

BUFFLEHEAD.

FROM AN ORIGINAL WATERCOLOR BY JOHN JAMES AUDUBON.

THE AUK:

A QUARTERLY JOURNAL OF

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AUDUBONIANA.

BY JOHN E. THAYER.

Plates III–VI.

I HAD the good fortune recently to secure some very interesting Audubon iana, formerly the property of Dr. George Parkman of Boston. There are four original water-color paintings, representing the Butter-ball, Golden-eye and Merganser and the Golden-crowned Kinglet; also the original specimen of Parkman's Wren mounted on a twig, in a paper box with a glass front. The box is six and three quarters inches tall, four and a half inches wide and three inches deep, and the bird is in excellent condition. Two letters containing some references to the bird complete the collection.

The paintings are reproduced on the accompanying plates and the letters are printed in full below. The inscriptions on the paintings are as follows:

PLATE III.

Henderson March 19, 1815
No 71 44 The Spirit or Butterball — Bufflehead

PLATE IV.

Weight of female 1lb. 2/16
Length 16½ inches

Breadth $27\frac{1}{2}$ inches
Tail feathers 16 inches
French name
Louisiana Gademe
Golden Eye

PLATE V.

Longueur total 26 pouces
Pesa (?) 3 lb. 13 onze
Ano (?) gure 36 p^{ed} (?)
J'Enleve avec beaucoup de Deficulté
de l'eau ou il naga trés profond.—
Chute de L'Ohio 17 December *1809.* J. A.
No. 144
64 Malaga Shell Drake. Goosander.
Mergus Merganser A. W.

PLATE VI.

Golden Crested Wren A. W.
Sylvia Regulus
154 Shippingport, Kentucky
Jan'y 28, 1820.
drawn by J. J. Audubon
Mistletoe on Black Walnut

This last is the most beautiful of all the original Audubon drawings that I have.

Parkman's Wren was one of the species discovered by J. K. Townsend on the Columbia River and Audubon describes it in Vol. V of the 'Ornithological Biography' p. 310, among "Species found in North America but not figured in the 'Birds of America.'" He states that Townsend secured but a single specimen and adds at the end of his account

"Feeling perfectly confident that this species is distinct from any other, and not finding it anywhere described, I have named it after my most kind, generous, and highly talented friend, George Parkman, Esq. M. D. of Boston, as an indication of the esteem in

which I hold him, and of the gratitude which I ever cherish towards him."

The first letter was evidently written when Audubon was engrossed in his work on the quadrupeds and while he and his sons were issuing the octavo edition of the "Birds of America." In this the Parkman's Wren was figured and as the part containing it appeared in 1841 it is probable that it was one of those which Dr. Parkman distributed in Boston for Audubon. After the plate was drawn it is evident that the type specimen was mounted as a gift for Parkman. The two letters follow.

New York, June 20th 1841

My Dear Friend.—

I intended having written to you yesterday by Miss Shatuck, who was good enough to spend the day with us, but I was so deeply engaged on a drawing of Rocky Mountain Flying Squirrels, that the time for her departure came suddenly and I could merely ask of her to say to you, that your last letter and remittance had reached us in safety, and with the unexampled promptness shewn by you on the three occasions you have been troubled with the delivery of 46 parts of our work to 46 of our Boston subscribers; and for which as I have said before I am very sorry to have nought but our sincerest thanks and gratitude to you for this, so remarkable friendly proceeding. May our God reward you and yours for all your generous actions.

I thank you also for your memorandums about the quadrupeds in the Boston Museum as I see that our animal there may save me the trouble of going to the State of Maine for it. When I was last under the hospitable roof of our Friend Docr Shattuck, I saw in George's room a No. of the "Penny Magazine" in which there is a plate representing a family of Beavers at work, that reminded me greatly of what I have seen in the ponds of Indiana some thirty years ago, and which I should like to have for a few days to assist in part in the making of the background to my Drawing of these animals, drawn from the Individual you procured for me. I will take good care of the No. and will return it safely very soon.

Should George Shattuck have forwarded that No. to Mr. B. of Baltimore, pray ask him to write to the later to send it me as soon

as convenient. If per chance you could procure for me a live *Hare in the Summer dress* (It is pure white in winter) pray do so and do not mind the price or the cost of its conveyance to me. This animal is abundant in the northern portions of your State and is fully double the size of the common *Hare* called the "Rabbit"

With sincerest regards and kindest remembrances to all around you and our mutual Friends,

believe [me] yours always

John J. Audubon

The "Parkman Wren"
well mounted will soon be
on your chimney mantle!

New York, August 13th 1841.

My Dear Friend,—

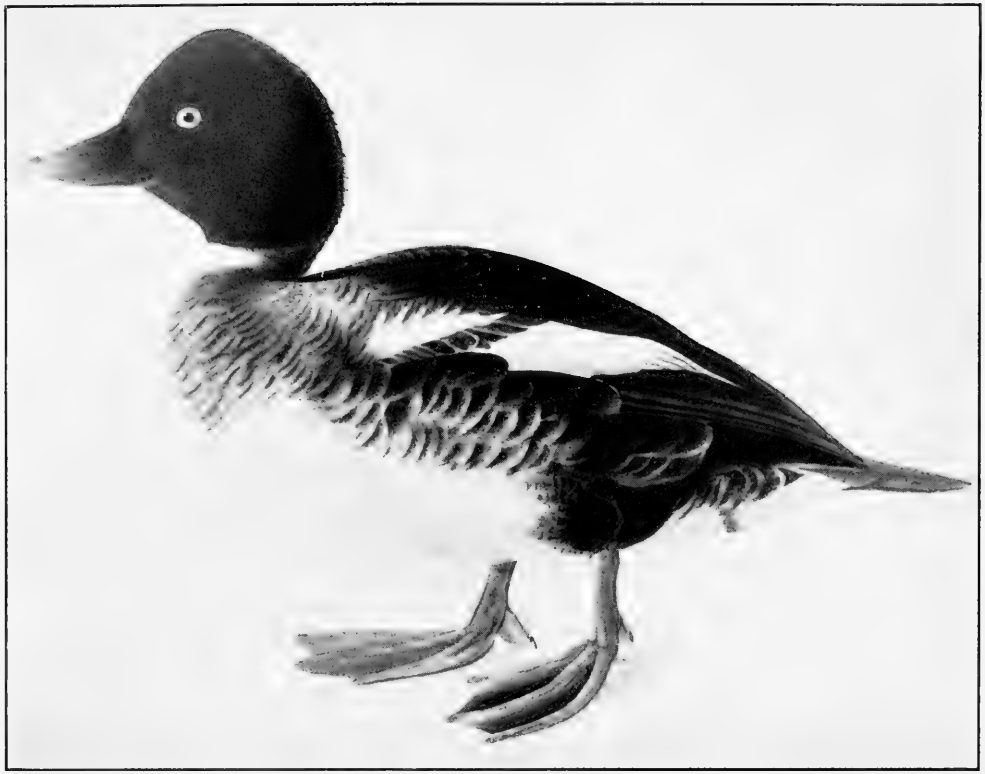
By Mr. Legaré who revisits your City, I have the pleasure of sending to you, the "*Parkman's Wren*" and I hope you will receive it in good order. We found it necessary to recaste the position of this little fellow on account of the many shots that passed through its neck when killed.

I also send you the numbers of the little work wanted by General Lyman which please have delivered to him with my best regards. I should like you to receive the money for those numbers, so as not to cause confusion in our accounts with Messrs. Little & Brown. I had the pleasure of introducing Mr. Legaré last year and therefor you will remember that Gentleman.

With sincerest good wishes to all the Dear ones around you, believe me always

Your attached Friend and Servant,

John J. Audubon.



GOLDENEYE.

FROM AN ORIGINAL WATERCOLOR BY JOHN JAMES AUDUBON.

SOME AUDUBON LETTERS.

BY GEORGE BIRD GRINNELL.

FOR many years I have had in my possession a lot of Audubon papers, among them the two letters printed below from John James Audubon to his son Victor. For me these letters possess unusual interest — personal rather than ornithological — because of the light they throw on the naturalist's family life, and the suggestions they give as to his business methods and the progress of the great work. Then, too, the first was written just as he was leaving New York to start on his famous Labrador trip and the other just after his return. The letter here printed, however, is not the last one written to Victor before leaving for Labrador, for Miss Maria R. Audubon quotes from one dated May 16, 1833, which we may fairly assume was written from Boston.[1]

The two sons, Victor and John, were at this time very young. Victor was about 23, and John only 20. John, in fact, had been so boyish as to cause his father some uneasiness. Yet on this expedition he showed that he possessed qualities which already made him of great service to his father. Later he became a painter of whom his father was proud, and it was John who gathered much material concerning North American mammals, which was published in the "Viviparous Quadrupeds of North America."

The young men referred to in the second letter were, of course, Joseph Coolidge, George C. Shattuck, William Ingalls, and Thomas Lincoln. John Woodhouse Audubon was the fifth.

My father was for many years a near neighbor of the Audubons. I attended a school conducted by Madam Audubon in the Victor Audubon house, where she lived, and as a boy I often saw Victor. I remember him as bedridden from an injury, and he died, I think, in August, 1860.

John Woodhouse I knew very well in the way that a small boy may know a middle aged man. I used to play with the sons of Victor and John Woodhouse about the houses and barns of the

[1] Audubon and His Journals, I, p. 67.

Audubon family, and John Audubon as a friend of my father's was often at my father's house. He was a bluff, gruff, but friendly man, and was always willing to talk about birds, mammals, or, indeed, any natural history object, to any boy who asked him questions. It was to him that I took a small "pigeon" which I had killed near our home, which he identified as a ground dove (*Chamæpelia passerina*). I noted the taking of this bird many years afterward.[1]

John Woodhouse Audubon died in 1862.

The Audubon family and many of their kinsfolk were, of course, well known to their near neighbors. I used to see some of the Berthouds, Bachmans, Talmans and Mallorys, the latter being relatives of Mrs. Victor Audubon, Victor's second wife, who was Georgine R. Mallory.

Miss Eliza Mallory gave me the letters here printed. A room in the Victor Audubon house was being cleared out, and the old papers burned, and Miss Mallory suggested that as I was interested in birds, I might like some of these papers. They were bundled up and given to me, while the others fed a bonfire.

Among the papers which I have are many sheets which appear to be the printers' copy from which the "Viviparous Quadrupeds of North America" was set, a long letter from Thomas Lincoln, dated November 17, 1846, describing some of the larger mammals of Nova Scotia, and a half a dozen drafts of bird biographies in the handwriting of John James Audubon, material which no doubt was afterward put into good English by Audubon's great assistant, William MacGillivray. Among this material are also two or three sheets in the handwriting of Prof. Spencer F. Baird, whose association with Audubon was close for some years.

The letters follow.

New York April 28th 1833 —

My Dear Victor —

On opening the box containing the numbers last sent to this place for distribution, we found the contents Wet and of course some of them damaged. We have however dried them and made of them that could be done and they will all go on Monday (to-

[1] The Nuttall Bulletin, III, p. 147.

morrow) to their Several destinations — In future I recommend that Each parcel of numbers for the diferent individuals are rolled up in separate Parcel, inclosed in good stout brown Paper, and each directed outside, enumerating the numbers therein contained — then put all the Rolls in a Box — in this manner they all will be less liable to Injury, will not need to be undone here for we have no trouble at all at the Custom House, and it will Save the handling of the Plates at the Compting House.—

N. Berthoud rendered me his account yesterday I send you inclose a Copy of it — and I also send you a Copy of a general & particular memorandum left with him, by the assistance of which the Business is clearly exibited, so that each Subscriber's Standing with the Work Shows at once.—

The Balance in our favour in N. Berthoud's hands is $1358.91 — We have due *South of this* $1834.48. and at Boston $1220.00 — altogether $4413.39. — The Boston amount will be ready for me when I reach there on Thursday next.— I take from N. B's hands here $800:00.— 300 $ of which I give to your Dear Mother — when at Boston I will take 500 $ more and send the Balance to N. Berthoud — he will then have about $1278.91 of cash out of which he will send you 100 £ say 480 $ leaving still with him about $798.91. besides what he will collect from the South the amount which is mentioned above, *all of* which I hope will be collected ere I return to this Place, as early as I can without losing the opportunity of doing all that can be done.

You will easily perceive by all this, that we have been extremely fortunate of late on this Side of the Water, and the 400 £ forwarded to you will fully enable you to meet the demands of Havell &^{c} for the 20 Volumes you have to send here & other emergencies.— We have at Present 51 Subscribers in the U. States, without the name of Doc^{r} Croghan from whom not a word has been heard, and also without that of *Baron Krudener* who is now at Washington City, but who has not taken any cognisance of the letter I sent him. N. Berthoud is going to write to him and I hope the Baron will take the work.— he certainly ought.

I found the Plates sent here better coloured than usual and with your present assistance I greatly hope the goodness of the Work will still improve.— Nicholas will forward you Two very beautiful Numbers — the Plates are as follows,

N° 37.	Plate 181.	Golden Eagle..... Figures	1
	" — 182.	Ground Doves.....	5
	" — 183.	Golden crested Wren.....	2
	" — 184.	Mangrove Humming Bird.....	5
	" — 185.	Bachman's Warbler.....	2
N° 38.—	" — 186.	Pinnated Grous.....	3
	" — 187.	Boat Tail Grackle.....	2
	" — 188.	Tree Sparrow.....	2.
	" — 189.	Snow Bunting.....	3.
	" — 190.	Yellow bellied Woodpecker.....	2

I should have sent you 2 more Numbers had I The Two large Plates for them, but hoping that I may meet with something Large & perhaps New I Shall not do so, until I return which will be Still time enough.— I am very anxious to See the 2d Volume finished and for this reason invite you to push the Work, as much as you can & have it very well executed meantime.

The State of Maryland is Subscribed to by D. Ridgely M. D. Librarian of that State. he desires the 1st Volume and the following numbers forwarded as soon as can be.— Send it here — as he has authorized N. B. to draw on him for Payment.— Miss Harriet Douglass also desires to have her Number sent here for the Future.

I hope the Copies for Col Perkins & others at Boston & vicinity, as well as for Wm Oakes, & John Neale will soon arrive.—

April 30th — Since the above, I have obtained Two more Subscribers — the names of whom are

1. Richd F. Carman. New York
1. L. Reed ——— Do Do.—

I was told last night that the State has also Subscribed, but cannot tell until I see this day's Paper — Whilst at the Lyceum of Natural History last evening, I was promised their Subscription on Monday next — being the Society's day of business.

I have concluded to send the 2 Numbers of Drawings by this Packett — The Tin case containing them, will be given to the especial care of the Capn on whom you will do well to call immediately.— I have *given* a 1st Volume to Nicholas Berthoud; there are many enquiries made to see the Work and it answers that purpose well.

John & I leave for Boston either this afternoon or tomorrow — perhaps tomorrow as we have much to do.— It is not probable that Ed[d] Harriss will join us at East Port and go to Labrador with us — I shall write to you by every opportunity as these may occur, and doubtless from Halifax.

M[r] Inman has painted my Portrait in Oil, and *I say* that it is a truer portrait of me than even the Miniature.— Now my Dear Victor exert yourself in the having all the Volumes compleated which I have written for — See that they are carefully packed with Paper between each &[c] &[c] &[c] I shall not close this until I have given the Box to the Cap[n] and when I hope to add the Subscription of this State.—

2, o'clock — I have just returned from the bustle of the Lower part of the City — *the State has* Subscribed! Therefore add that valuable one. There is no Packet for London Tomorrow, therefore the Drawings will go off on the 10th of May by the Cap[n] in whose particular care they will be given.— These 10 Drawings have been insured this morning against *all Risk*, for 2,000 $ at $\frac{1}{2}$ per Centum — I hope you will receive them in perfect order; they are carefully packed by myself in a Tin Box securely sodered &[c] &[c].

We have now 54. Subscribers in America.

M[r] Inman is going to Paint the Portrait of your Dear Mother, and I have not a doubt that it will be "good & true"

The Weather is extremely Warm — the Thermometer ranges at nearly 72. The Martins are flying over the City and Tomorrow I shall fly toward the Coast of Labrador — If fortunate I shall bring a load of Knowledge of the Water Birds which spend the Winter in our Country and May hope to Compete in the study of their Habits with any Man in the World.

My Good Friend Charles Bonaparte as (I am told) taken unbrage at a Passage in My Introduction (first Volume) Which proves how dificult it is to please *every one* — I am going to write to him by Duplicate to try to *correct* that Error *of his* — God ever bless You my Dear Son and May We all meet Well & Happy

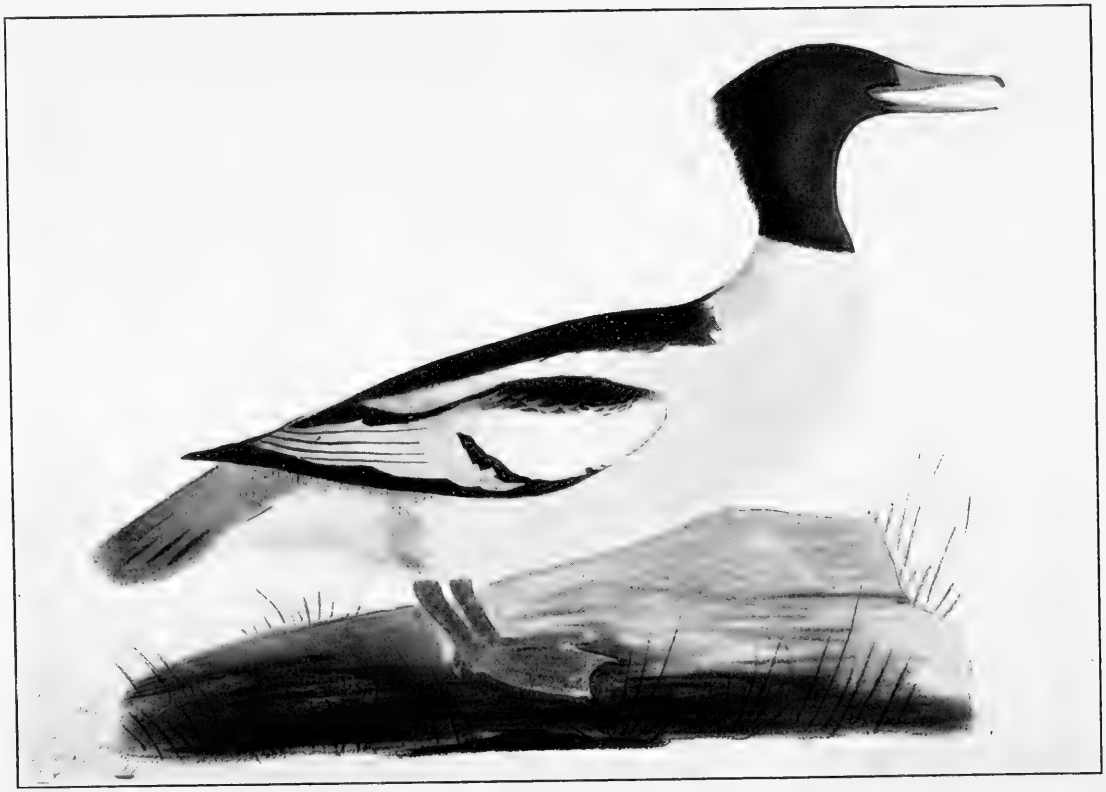
Yours ever affectionately,

John J. Audubon.

New York 9th Sept[r] 1833 —

My Dear Beloved Victor.—

John and myself returned here in excellent health, day before yesterday, and had the good fortune to find our Dearest friend your Mamma quite well also — indeed, the whole family here are well.— before I answer or note the contents of your many valuable letters, I shall give you a sketch of our Voyage and a list of the new Birds &c which we did procure.— We sailed from Eastport on the 6th of June, followed the coast of Nova Scotia to the entrance of the Straights of Cansso through which we passed and were much pleased with, as it is truly beautifull resembling somewhat the Hudson River.— we made towards the Madgalane Islands, visited them, found them poor, no birds &c and proceeded to the famous Gannet Rocks and there saw a grand sight of Gannets & other water birds engaged in incubation.— went on to the Island of Anticotte and on the 11th day from our departure at Eastport anchored in an harbour at the Esquimaux Islands on the Coast of Labrador in Company with several fishing vessels. The aspect of the Country of Labrador was ás new to us as it proved itself to be Wild, Rocky, Barren of Large Trees, covered with the deepest and richest coloured mosses and the richest of dwarfish vegetation peeping out of the mosses that one can Imagine — on first landing the whole appeared to us delightfully curious, but no sooner did we attempt to proceed in Search of Birds that we found our progress over the Country so dificult and so Irksome that our Spirits became much dampened, the more so indeed when we discovered that very few Birds were there to be found — to walk 10 miles per day was as much as the strongest of our party could well endure, and we all returned every evening as much fatigued as if we had walked 60 Miles on a Turnpike road.— for three hundred Miles of that Coast which we visited the Country was always the same; few trees of a very small size, Deep swampy moss ever and anon growing over hard, dark red looking Granit, supported by the constant foggy dampness of a chilling atmosphere without scarce an Inhabitant and becoming Wilder and Wilder as we proceeded; we landed first at latitude 51. visited, [some] hundreds of Sea Islands; Some hundreds of Inland lakes all Supplied with melted Snow waters — Snow laid deep in every Valey unexposed to the Sun and



MERGANSER.

FROM AN ORIGINAL WATERCOLOR BY JOHN JAMES AUDUBON.

we had to keep constant fires and clothe ourselves as we would do at Eastport in Winter — Yet the Musquitoes, and Black flies & Horse flies were as troublesome as they are in the swamps of Florida — we had storms almost every other days and rain in aboundance — Yet we never gave up the task before us, that of procuring New Birds and ascertaining the habits of all the species which resort to that dreary Country during Summer to breed. We fell in Company with the British Surveying Schooner the Gulnare, commanded by Captain Bayfield R. N.— Lieut. Bowen, &c. and Doc^{r} Kelly — all these persons being highly Scientific and Gentlemanly, were most agreable Companions to us, and we enjoyed their Society much.— we gradually reached the Straits of Belle Isles about the 20th of August.— on the 15 July this passage was still much encumbered with floating Ice and Icebergs. on the 15 of August we had an Iceberg within 2 Miles of us fastened to the bottom, and looking most beautifull.— The season closing upon us we returned sailing along the Northwest coast of NewFoundland which we found stil more elevated, rugged and Wild looking than the Labrador coast; we anchored at the head of St. Georges Bay, Spent there a Week and ransacked the Country as much as the dificulty of walking would permit, and sailed for Pictou (Nova Scotia) near which we landed and from thence sent the Ripley round to Eastport where She arrived safely 2 days before us. We crossed Nova Scotia by way of Truro, Halifax and Windsor; at the latter place we saw the tide rise 60 feet — took a steamer to St John's, New Brunswick and arrived at Eastport all well and without having met with a single accident of note, or felt a moment of sickness except that occasionned by the motions of our vessel Whilst tossing over the Gulph of St Lawrence; the vilest of seas.— The Young Gentlemen under my care proved all to be excellent and useful Companions, and I frequently felt as if all belonged to our family. Yet I was glad to give my charge over, for my anxiety was truly great and often raised to a high pitch, when ever we encountered a storm out of Harbour.—

We have secured 8 New Birds which have given us 2 Superb large plates, and 6 Small ones.— The New Species consist of 2 Falcos, 1 Finch, 1 Titmouse, 1 Cormorant, 1 Curlew, 1 Fly catcher, — The other I cannot recollect just now. I made 25 Drawings,

all of which are not finished; but I have more than enough to Compleat the 2[d] Volume to my entire satisfaction.— The 2 large plates are one, a covey of the Willow Grouse, male female & Young, very beautifull. The other the *Labrador Falcon* male & female, large & beautifull, John killed both these.— The knowledge I have acquired of the Water Birds and of those of the land which visit us only during Winter, is most valuable and I have Written *all I saw* — Our voyage has been very costly.— about 2000 Dollars; but I am glad I went, it will give me and the Work a decided superiority over all that has ever been undertaken or perhaps ever Will be of the Birds of Our Country.— Now I will give you an account of my plans for the present Year, and indeed for the next, *adopting however Whatever you* My Dear Son will say in return to this Subject I wish to Leave New York in about Ten days for the express purpose of procuring Subscribers, a good number of which I hope can be procured in the U. S.— and to proceed by way of Philadelphia to Baltimore, remain there a fortnight or So — then to Washington City where I expect to have the heads of the diferent dep[ts] to Norfolk, Richmond & Fredericksburgh in Virginia and to Charleston and Savannah further South — at Charleston your Mamma and John to remain the Winter at our friend Bachman's who invited her to do so when he was here this Summer. Could I procure an additional number of 50 it would be a most valuable Journey, and I would besides [acquire] some information about Birds if not any New such.

Havell's last letter to us, shows I think a good disposition to continue the work on the same terms he has heretofor done it, and I think that the letter which I am going to write to him and of which I send you a copy inclose will restore him to his proper senses.— I feel confident that he does not lose *by our Work*, whatever he does in other speculations, and *I think* that should we remove it from his hands into any other persons that his name would soon suffer as well as his business.

I am truly delighted at the contents of all and every one of your letters my Dear Victor.— I am indeed proud to have such a son — I look on your prudence, your improvements and your Industry as unparralled in a young man of your age, in a Word I look upon you as on a true friend and a most competent partner in the completion

of the arduous undertaking before us.— I cannot say any more, than that I and your Mother are quite Happy at the knowing that you are so well able to do all for us and for yourself that we could possibly desire.— to go on in the same manner is all we can wish, and we feel perfectly confident that you will do so.—

We are all anxiety to hear from you after your return to England from your visit to the Continent, and [should] you not have procured a single subscriber, it is well to [have] ascertained the fact that none were there, besides the knowledge which you have acquired of the Nations you have visited — a knowledge which no description can ever convey.— to speak the French Language alone will be of great import to you.— We hope that you Draw Some, and also that you study music at your leisure hours, however few these hours may be.—

When at Philadelphia I will ship direct from that City the Bird skins, shells &c not belonging to our private Collection for you to dispose of as opportunities offer.—

I am greatly in want of *One dozen or So* of the best French water colour brushes of assorted sizes made in Paris —

Pitois can send them to you. They cost from 5 to 8 Francs each and are made good only by Vial Lebault, successeur de Cherion, Fabricant de Pinceaux N° 61. Quai de l'horloge du Palais, pres du Pont Neuf, a Paris. *Some very large, none very small.*

In the first volume of the "Birds of America" there exists 2 repetition of species, "The Female Turkey" and "the black and Yellow Warbler" — and in the 2d Volume one repetition — "the Young of the White headed Eagle" This renders the numbers of actual species less by three than 200 the proper number intended these Volumes should Contain — I now think that the character of the work, and the fame of the author, would be greatly enhanced, by *giving* 3 extra small plates in the last number of the 2d Volume; it would be fulfilling to the very letter the promises to subscribers contained in *The Original* Prospectus, and would the more enable us to enforce the taking in of the Work by all those who have affixed their own signature to the original list of subscription, and have so unwaranttedly abandoned it since the time they subscribed.— The extra cost of these three plates would certainly be considerable, but it would I think work well and exibit an unpre-

cedented Generosity in Works of Any Description — Think of this, talk of it to our most excellent friend Children, and write to the Rathbones also on that subject and let us know all — Meantime I shall send you the Drawings for the 2 last numbers, the very last consisting of 8 Drawings instead of 5.— These numbers surpass all that have been published in point of Interest and beauty.— although there will not be any more labour for the Engraver or Colourers than previously.—

I would regret indeed to be obliged to remove the Work from Havell's hands unless forced to do so by not meeting with another person equally competent and at the same prices which we now pay, it would have to be done; for between us, I think it very ungrateful in him to have even mentioned such an Intention.— He says you both agree very well *now* — I hope it will be long the same thing, and I am quite sure that your diligence at overseeing the Work was a great source of discontent on his part — but we have to look for and to think of our own Interests quite as much as any other in this boisterous World of ours.

Present my thanks to Friend Bell of the London Atlas and ask of him to publish the long paragraph in the paper which accompanies this — I am writing to the Duke of Sussex — deliver the letter yourself.— Remember me most kindly to Cuthbertson who is indeed a most excellent friend of ours.

When you have a good opportunity, see if the 2 first Volumes could be printed *in Colours* and bound in Paris, the Price &c, You furnishing *English Paper* for which I think *no duty* would have to paid in France, for Such a work —

I would like to go to England the 1st of June next to publish the 2d Volume of Biography, and yet I would like to remain in the U. S. one Year more to compleat the Water Birds as far as in our power. Send us your Views on all subjects and we will [decide] as may be best from your letters —

Tell Havell that the Water Birds will not be more troublesome than the Land Birds and that although some Landscapes or portions of backgrounds will be attached to each Drawing; these will not be more than equivalent to the Plants &c of the Land Birds. I am glad that what you say of *the Young Engraver* there coincides with my opinion of him — Keep Kidd at work as much as possible

and take away from him the Paintings and Drawings when ever a good opportunity offers, those would be better in your possession than in his at any time.— I do not like to send the original list of subscribers to you now — it has a considerable effect in the eyes of those who think of subscribing here, but I can send you the names of *all who have signed it* and shall do so: —

Now our Dear friend and Son, I will speak of your Dear Brother John — I have been extremely pleased with his Industry, and the loss of many of his boyish habits — indeed it was a great consolation to have him for my right hand man on all occasions — he lost no time whilst on this voyage, and I am glad to say that I have discovered in him, such dispositions to instruct himself — his memory is excellent and his powers of observation equally so — he needs only to be constant in his application to study, to render him as yourself are, the purest Source of this Life's comfort — never did music sound sweeter to mine ear, than the soft strains of his Violin which most fortunately was taken with us into the Dreary regions which we visited.—

I will now put this aside and write to Havell — This goes tomorrow and I may find more to say — indeed I will speak of the subscribers here, at Boston &c although not at length as I have an immense quantity of other letters to write at present and in a hurry —

Should you prefer writing to Mr Musson who probably will be in Paris do so, for the Pencils or brushes — or to Mr Green.

I have read your answer to that crazed man Watterton — it is good, but I am of opinion that to say nothing in reply to all such nonsense is the best way of punishing both the writers and publishers.—

Whilst at Boston I received the amount up to this date [due] by Wm Oakes and Mr Arnold, the rest remained unpaid and [I put the] collection in the hands of Docr Parkman who is as much [as ever] a most excellent friend of ours.— Nuttal is now engaged in the Publication of his Water Birds and I am going to give him a few small, matters, which he will publish as my own and has a tendency to keep our name before the Scientific World — he is I think a good and true man — Now my Dear Son I will close this and write again very shortly — God bless and prosper you — John

and Mamma join me in those wishes and I remain for ever Your affectionate Friend & Father —

John J Audubon.

Tell our Friend Children that I shall soon make a Shipment of Insects to him.

MORE LIGHT ON AUDUBON'S FOLIO 'BIRDS OF AMERICA.'

BY SAMUEL N. RHOADS.

THE following transcript of a clipping, which, from the character of what is printed on the reverse side, appears to have been cut from a New York City newspaper of January, 1838, I recently found laid within the leaves of an old book. It confirms my belief, long entertained, that the estimates placed by bibliographers and historians on the number of published copies of the first (Elephant Folio) edition of Audubon's 'Birds of America' were much too small.

Mr. Ruthven Deane, whose researches in Auduboniana cover a long period, writes me that "it was believed from creditable information that the number of copies published was *seventy-five*," and that "the Audubon family [descendants] believe that was about the number."

My experience in the old-book business during the last fourteen years, in which time I have examined or personally known of the sales of forty or fifty copies of this folio edition in America alone, was sufficient reason for placing the probable number of copies issued at considerably above one hundred. In the past twenty years it is probable that one New England print-dealer has broken up thirty or forty volumes of this magnificent work, selling the plates separately for framing and other illustrative purposes. The newspaper clipping is as follows:

GOLDEN-CROWNED KINGLET.
FROM AN ORIGINAL WATERCOLOR BY JOHN JAMES AUDUBON.

"THE BIRDS OF AMERICA. BY J. J. AUDUBON, F. R. S., &C.

When only a few numbers of this Work had been published, Mr. Audubon was informed that many gentlemen, as well as a considerable number of Natural History and other Societies, Libraries, &c. were desirous of possessing it, but that the time to be occupied in the publication, (16 years) was so great, the casualties of life so many, and the probability of its ever being finished, therefore, so remote, they determined to wait its completion before they subscribed.

With respect to many Societies, moreover, the rules preclude them for the above reason, from subscribing to any work of this kind published periodically.

Mr. Audubon, therefore, feels desirous, for the information of such persons or Societies, to announce that seventy-eight numbers have now appeared, and that with seven more it will be completed. He confidently expects to present the last number to his subscribers on the 1st of April or May next.

As a comparatively small number of persons only are acquainted with this work, for the information of others, it may be well to observe that the whole of the Birds (about 470 Species) known to inhabit North America with the exception of those of Mexico and Texas, are exhibited.

The figures are all of the size of life, after drawings made from nature, during the last thirty-five years; and the Birds are accompanied by a very large number of Botanical Specimens, some of them not figured in any other work.

This Publication was commenced in 1826, and the Prospectus then issued anticipated a period of sixteen years as necessary for its completion; of that term only twelve years have elapsed, and in six months more it will be terminated.

In addition to the fidelity with which every Bird and Plant is represented, this work has another great attraction, from the circumstance that it forms a complete history of the Birds of America, and will in after times be a point from which to institute a comparison for the purpose of ascertaining what changes civilization produces in the Fauna of our great continent.

It was contemplated that eighty numbers would finish the Work; but in consequence of new and rare species having been recently discovered by the author, and also received, from the Prince of Musignano, Thos. Nuttall, Esq. Dr. John Townsend, and others, eighty five numbers will be required (in which will be included the Eggs of many of the Species).

The particulars of the plan of the work may be reduced to the following heads:

The size is whole sheet double elephant, the paper being of the finest quality.

The Work appears in Numbers — each consisting of five Plates.

The price of each Number is $10, payable on delivery.

The number of perfect copies at present subscribed for does not exceed 190, of which upwards of 80 are subscribed for in America; and the expense of getting them up is so great, that not more than ten or fifteen copies above the number subscribed for, will be prepared,

The Establishment necessary for its publication will be broken up when the last Number is colored; and any application for the Work must be made to N. Berthoud, Esq., New-York; Dr. Geo. Parkman, Boston; Rev. Jno. Bachman, Charlestown, S. C.; James Grimshaw, Esq. New-Orleans, or W. G. Bakewell, Esq., Louisville; before the 1st of May next, as after that time no subscription can be received. New York, Jan. 11, 1838. jall eed8w"

THE CALL-NOTES OF SOME NOCTURNAL MIGRATING BIRDS.[1]

BY WINSOR M. TYLER, M.D.

No matter how carefully we watch the land birds in our vicinity during the latter part of the summer with a view of ascertaining when they leave their breeding-ground to begin their southward journey, we rarely see any evidence of migration in Eastern Massachusetts before the middle of August. Our first intimation, perhaps, that a species has left us is within a few days of August 15. The Yellow Warbler's song then drops from the summer chorus. This species is common and sings freely until a certain day,— generally between the 10th and 15th of August; after this date we no longer hear the song and we no longer find the bird in the vicinity until weeks later, when a few migrants pass through this region in September. Although the Least Flycatcher's song period is over some time before that of the Yellow Warbler, this bird (the Flycatcher) lingers on its breeding-ground apparently, for it is not uncommon to find a silent Chebec on any day in August, and, like the Yellow Warbler, Chebecs, as migrants, occur occasionally in September. But before even the Yellow Warbler has left our garden shrubbery, the autumnal migratory flight has been long

[1] Read on Jan. 17, 1916, at a meeting of the Nuttall Ornithological Club.

under way. Every night early in August, or even late in July, we may hear hundreds of bird-calls from nocturnal migrants, as they pass over head southward in the quiet and darkness.

For the past few years I have been much entertained and fascinated by listening from my sleeping-porch to the notes of these migrating birds. Being practically out-of-doors, my attention was naturally drawn to the frequent clear-cut "chips" and whistles; they were so distinct and sharp, and apparently so near, but withal so mysterious and baffling as to arouse my curiosity. One is at first impressed by the fact that most of the call-notes which he hears over and over again, often in great variety, are notes which he has never heard before, and consequently can ascribe to no known bird. Again, after a few years of observing, one realises that each year the notes (at first strange and unfamiliar, but finally perfectly recognisable from one another) occur in a definite order; as the season advances, one note after another makes its appearance, becomes frequent, and later drops out to be heard no more. Here then is a basis to work on. From the known times of migration of certain birds, is it not possible to identify the authors of some of the common nocturnal notes, or at least to surmise their identity with a fair degree of certainty?

During the very first nights of the autumnal migration (July 29 is my earliest date) the notes are always the same,— high and sibilant, with a sharp, ringing quality. The sound is represented so closely by the letters "ks" that I have called this note the "x" note. This call contains no vowel sound,— it is so short, indeed, that it cannot contain one — it is over almost as soon as it begins. In spite of the necessarily vague idea one receives from reading a description of so indefinite and fleeting a sound as a bird's "chip," this note is perfectly recognisable; after one has once become familiar with it, he can distinguish it readily even when it occurs, later in the season, with many other calls. The "x" note, as I have said, is the first note heard in the autumnal migration. It is commonest during the first half of August, when it is heard on favorable migration nights almost incessantly, evidently from thousands of birds, and it disappears soon after the first of September. From these facts we might deduce, that the species which uses the "x" note as a migration call is a nocturnal migrant which

breeds in large numbers to the north and northwest of us, that the species breeds also in eastern Massachusetts (for even when we hear the "x'" note most frequently, we find in this region no species which have not bred here) and finally that its southward migration through this vicinity is pretty well over by the middle of September. I regret to say that, with all these data, I did not surmise the identity of the author of the "x" note until I saw and heard the note uttered in the daytime by the Oven-bird. Then it seemed self-evident that of all the possibilities, this species best supplied the conditions. The discovery also explained the early disappearance of our resident Oven-birds.[1]

It may appear strange that the Oven-bird should give its nocturnal call by day (the call is distinctly different from any call used by the young or adult of this species) but under certain conditions, birds of several species add to their regular diurnal vocabulary a note absolutely novel, and in a few cases I have been convinced that they were using their migration call-note. Usually the birds uttering these notes are migrants,— either birds like Thrushes, remaining over a day or two between their night-flights, or Warblers, flitting southward through the trees, continuing, as they feed, their migratory progress. But birds about to migrate, as well as those already under way, signal to each other in a like manner.

Perhaps the most familiar example of this phenomenon is furnished by the Chipping Sparrow. Soon after the second brood of young is fledged, our local Chipping Sparrows gather into families or groups of a dozen or more. At this time, long before their departure in October, we hear from our open windows a bird-note which we have not heard during the early summer from the Chipping Sparrows which have bred within hearing. It is a note which to our ears suggests migration, both from its general resemblance to the indefinite "chips" which many migrant birds utter as they pass southward by day and by night, and also from the fact that the note is usually given when the bird is in flight. The Chipping Sparrow utters this note only when flocking, and it serves probably to maintain the unity of the flock. The effect of the migration calls, too, is to keep the companies together, but perhaps a more

[1] I have heard the "x" note only once in spring,— during the night preceding the arrival of the Oven-bird in Lexington.

important use of the call-notes is to express the feeling of migration and spread it, so that other birds may catch the contagion. In other words, we must not assume that a bird utters its migration calls with a definite purpose either of guiding its companions or of inquiring their whereabouts. Both of these results, however, are doubtless accomplished by involuntary utterances excited by the restlessness which culminates in migration. In any case there would be as much occasion for the notes which accomplish these results at the very start of migration, or even before the start, as at the subsequent steps of the journey.

It is possible that the migration calls are largely uttered by young birds and take their origin from the first note which the nestling makes,— the food-call. It is an easy transition from the food-call of the nestling to the call which the fledgling utters to inform his parents where to find and feed him, and this call, modified somewhat as the fledgling grows older, might well persist as an expression of emotion and become finally the migration call.

Some time in the second week of August, a new note makes its appearance, — a clear, but softly modulated, mellow whistle. This note is so loud and striking that one would expect that it would have attracted the notice of anyone who chanced to be out-of-doors at night. But, as far as I know, none but ornithologists have interested themselves in the sound.

For a long time this call-note remained a mystery to Mr. Faxon and Mr. Brewster, until finally Mr. Brewster, by a most fortunate chance, solved the problem. He was lying at dawn in his cabin on the shore of the Concord river, when he heard, far in the distance, the familiar whistle of the unknown migrant. The bird, still calling, flew nearer and nearer until it alighted in the shrubbery close by the cabin. Here it continued to call, but gradually changed the character of the note until, little by little, it grew to resemble, and finally became the familiar call of the Veery. This observation proves beyond any doubt that the Veery is the author of one of the whistles which we hear in the night during the times of migration and that the Veery's migration call is quite distinct from its notes heard commonly in the daytime. I should add that a small number of these calls (perhaps one per cent.) are identical with the Veery's diurnal "wheeoo" call.

One other observer has published some evidence on this subject.

Henry H. Kopman (Auk, Vol. XXI, 1904, pp. 45, 46) heard the Veery utter by day a note which had puzzled him for years as he heard it from nocturnal migrants. It is evident, however, that he may not have differentiated this note from the calls of other Thrushes, for, although he had heard "countless hundreds" of the calls, he had noted less than a score of Veeries in ten years of observation, while he had met the Gray-cheeked and Olive-backed Thrush "in astonishing numbers" at the very season when he heard the nocturnal whistles.

The Veery call is most common in late August; my earliest and latest dates are August 12 and September 5. On some nights the calls come so frequently that, at times, there are but a few seconds between them; on other nights there is scarcely one to be heard,—a point of difference from the comparative regularity of the "x" note.

After the Veery call ceases for the season, there is generally an interval of about a week before a second whistle is heard. Although of the same general character as the Veery call, this late September whistle is pitched higher. It is of somewhat less duration, and is inflected downward very little, if at all, and lacks the terminal roll or roughness characteristic of the Veery call. My notes for the past four years indicate the migration period of this later bird to be between September 8 (an extremely early date) and September 27. I may say that these two "Thrush whistles" and the note next to be considered are so nearly identical that, for two or three years, I did not distinguish between them clearly, hence, I cannot use the dates contained in my earlier records. The late September call is a very frequent note on nights of heavy migrations,—so frequent as to indicate that it is uttered by a very common migrant. For this reason I believe that it is the call-note of the Olive-backed Thrush, in spite of the fact that of all diurnal bird-notes, it most resembles the whistled "hear" of *Hylocichla a. bicknelli*. An article in 'The Oölogist' (Vol. XXXI, 1914, pp. 162–166), by Paul G. Howes deals with the migration call of Swainson's Thrush. Mr. Howes' studies were made during the autumn of 1912 at Stamford, Conn. He describes the migration period as materially longer than my records indicate, his last bird passing southward on October 17. Mr. Howes was fortunate in being

able to watch the Thrushes drop from the sky into a small wood where he could afterward examine the birds at short range. He secured five specimens. Although I have gone out-of-doors in the morning twilight repeatedly in August on days when I have heard the whistles in great numbers before daylight, I have never seen the birds (Veeries at this date); as soon as it has grown light enough to make out a bird in the air, the calls have stopped and no more birds have flown over.

The Thrush calls heard during October, generally in the latter part of the month, are very similar to the Veery whistle. This third Thrush whistle is heard very irregularly,— on most nights none at all, but on a few nights in very great numbers. At this season of long evenings, it is not uncommon for the birds to start on their night flight as early as six o'clock. In tone of voice this note, a soft nasal whistle, resembles the Bluebird's call. It has, however, but one syllable and is inflected downward in pitch very slightly,— often not at all. The letters "Per" or "Ter" suggest the call. On October 29, 1913, I saw a company of half a dozen Hermit Thrushes repeat this note frequently as the birds flitted about in a gray birch wood. When they uttered the note they did not open the beak (at least at short range I could not see them do so), but at each repetition the feathers of the throat were slightly raised. During the previous night there had been a considerable flight of Hermit Thrushes and just before sunrise (a misty morning with a light S.E. breeze) I had heard numerous Thrush calls from birds passing overhead.

These three whistles heard respectively (roughly speaking) in August, September, and October account satisfactorily, I think, for the Veery, Swainson's, and the Hermit Thrush. The two other Hylocichlæ, the Gray-cheeked and Bicknell's, are of comparative rarity in Eastern Massachusetts and their periods of migration here coincide practically with the passage of the Olive-back. It is very probable therefore that I have not distinguished the calls of these rarer Thrushes because their voices vary little from the calls of the abundant Olive-back.

During the month from mid September to mid October there are more nocturnal bird-notes to be heard than any other time. The majority of these calls to my ear are identical to the common

diurnal note of *Dendroica striata*, viz. "tsit." On account of this correspondence and from the fact that at this season, Black-polls are passing through Eastern Massachusetts in numbers which at times seemingly surpass all other birds combined, I think it is no unfair assumption to ascribe this, the commonest note of autumn, to the Black-poll Warbler. As the season advances, many of the notes are more sustained than the abrupt "chips" which suggest the warblers, and resemble the "tseep" note which is used in the daytime by several of the smaller sparrows. These notes become progressively more frequent, reaching their maximum abundance, perhaps, toward the middle of October, and are the last notes heard in the autumn before the migration ceases. That these notes represent the passage of various species of Sparrows, I think there is little doubt. The frequent occurrence of these notes during the evening of March 28, 1908, at the height of the sparrow migration that spring increases the probability. As to the identity of many other notes heard during this period, I do not hazard even a guess. As an indication of the real individuality of some of the nocturnal bird-notes and of the actual ability of an observer to distinguish between them, I may say that during the remarkable flight of Cape May Warblers which passed through this region in September, 1914, I heard a note absolutely novel to me. I heard it before I saw any of the Cape Mays and of course had no idea what it was until I noticed that the Cape May Warblers used this note when they flew from tree to tree.

The migration note of the Bobolink is diagnostic; it is used by day as well as by night, but in my experience it is rarely heard at night, although it is a common note in the very early morning, after daylight, when the birds may be seen flying in flocks. My explanation of the rarity of this note at night is that the birds generally fly so high that their notes are nearly or quite inaudible from the ground. At other observation stations the Bobolink's note may, very likely, be heard more frequently. I was fortunate, one spring, to see numbers of Fox Sparrows start on their night flight soon after sunset. The birds flew northward, at first from one tree to another, uttering, while in the air, a note not dissimilar from one of their sibilant "chips." I heard this note that evening from birds flying through the darkness against a cold northwest

wind (April 4, 1908). Weather, indeed, appears to have little influence on the migration of birds, as evidenced by their call-notes, except that on fair nights the birds evidently fly high; the calls are fainter and appear to come from far away, whereas on nights when the sky is overcast (or when it is raining) the birds seem very near.

In watching birds during the seasons of migration or in listening to their call-notes night after night, it soon becomes apparent that, quite irrespective of the weather, certain nights are chosen to move northward or southward; there is either a migration or there is not. The birds appear to recognise the migration nights in advance as if the individuals of one (or related) species possessed the knowledge in common. My notes give a striking illustration of this point. "On October 11, 1914, in the late afternoon when Mr. Walter Faxon, Mr. Lewis Dexter, and I were crossing the Ipswich sand-hills, Myrtle Warblers continually flew over our heads, all in a southerly direction. In ten minutes we counted twenty birds, flying at the height of a tall elm tree. We were standing among the dunes about a quarter of a mile from the sea. To the south was a small wood of pitch pines surrounded by sand, and as the birds were flying toward these trees, and as they appeared to fly lower as they approached them, we thought at first that the birds were seeking a roosting place. But when we entered the wood, we saw that, although the Warblers often dipped toward the tree-tops in their flight over the wood, they did not alight, but continued on toward the south. After watching the birds fly over for half an hour in a steady, if rather straggling, procession, we felt certain that they had begun a migration flight which they would keep up all night. We first noticed the birds between half past four and quarter to five, in broad daylight (sun set at 5.11). The birds were rather widely separated from each other as a rule, but occasionally one approached another and swooped at him. Once, when a bird was attacked in this manner, he came down into a thicket of bayberries, closely followed by his pursuer. The two birds remained in the shrubs but a moment, however, before rising and continuing their southerly flight. As the birds passed over head, they gave their characteristic "*tcheck*," and almost as frequently, the sibilant call heard most often when they take short

flights. As I have never heard the "*tcheck*" note during the night from migrating birds, I presume that Myrtle Warblers make use mainly, if not solely, of the sibilant note as a migration call, once the flight is well under way.

"On the afternoon of the 12th (the next day) the behavior of the Myrtle Warblers at twilight was very different. Mr. Faxon and I had spent the afternoon at Coffin's Beach, Gloucester, and toward dusk we crossed a broad area of level land, just back of the beach, grown up thickly with bayberry bushes, with a sprinkling of blueberry and a few pitch pine trees. This growth made a dense tangle of branches not rising more than six feet from the ground (except in the case of the pine trees) and over the whole expanse one spot was pretty much like another. Throughout this space, Myrtle Warblers were hopping about restlessly, chipping excitedly, and taking short flights. As it grew darker, the birds quieted; they remained longer in a bush when they found one to their liking and hopped among the branches, evidently searching for a comfortable and safe perch to sleep on. They allowed us to step very near them before they flitted away to a neighboring shrub. The birds did not appear to gather into flocks or companies; two or three, to be sure, might be examining the same bush, but everywhere over the area of forty acres or so, as far as our eyes could see, scattered birds were settling for the night; evidently there was to be no Myrtle Warbler migration. We noted these birds between 5 and 5.15 P.M. At this time there were no birds flying into the field as there would have been if the Warblers were assembling from a larger area."

It is not always possible to estimate the magnitude of a flight by the number of bird-notes heard during the night. Extensive migratory movements often occur in spring during a night when few, if any, notes are heard, and conversely, one is often surprised in the autumn to find the country practically barren of bird-life after a night during which birds' "chips" have been heard in great numbers.

This latter condition may be easily explained, I think. During the night the birds are passing in hundreds or thousands, but at dawn each bird or flock settles near wherever it happens to be. Hence in any one locality, once the stream is stopped, there will be

comparatively few birds,— only those which were nearly overhead at sunrise. As a matter of fact, some birds do not alight until long after sunrise, and some others continue their northerly or southerly progress after alighting in the trees, but the explanation above accounts for the seeming diminution of the number of migrating birds when the night's flight is over. To explain the heavy spring flights when no nocturnal notes are heard, it must be understood that bird-notes are very rare on any night in spring. The contrast in this respect between spring and autumn is so striking, that we are led to believe that during the spring nights, we do not hear notes from migrating birds because they do not utter them. If the birds do call during their northward journey, practically all of them fly at a great height, thus adopting a very different manner of migrating from their habit in autumn.

Although the problems presented by the two migration trips must be essentially the same to the birds, it should be remembered that the personnel of the migrating horde differs in one important respect; — whereas, in the autumn more than half of the migrants have never made the journey before, in the spring, every individual has safely accomplished at least one trip. We have surmised that the migration-call may be an outgrowth of the young bird's food-call. Taking into account the frequency in autumn of the migration calls, as opposed to their comparative absence in spring, may we not further surmise that it is chiefly the birds of the year which we hear calling during their initial migration and that these young birds, returning over the path they travelled six months before, and flying with the assurance and self-confidence which experience has given them, do not need migration calls for guidance or encouragement and therefore do not utter them?

BIRD-WATCHING AND BIOLOGICAL SCIENCE.

SOME OBSERVATIONS ON THE STUDY OF COURTSHIP IN BIRDS.

BY JULIAN S. HUXLEY, B.A.[1]

THERE is to-day, most unhappily, too often a gap between the amateur naturalists and the pure field-workers on the one side, and the trained biologists on the other. The blame, as usual, cannot be laid to the account of either, for both are guilty. On the one hand the professionals fight shy of amateurish methods and failure to see principles behind facts, while the amateur dislikes (often with justice) the other's dogmatism and his reliance on purely laboratory methods.

It is the purpose of this paper to try and show how, in ornithology at least, this gap may be bridged. There is a vast army of bird-lovers and bird-watchers to-day in existence, whose enthusiasm needs only to be properly directed to lead them into most absorbing fields, and at the same time to provide all-important material for fundamental problems of biology.

Three things only are needed: —A knowledge of what to search for, a method to guide one's searching, and instruments to use in the search. The instruments lie ready to our hands. It was, I believe, Charles Dixon who was one of the first to realize that the prismatic binocular had so enormously enlarged the potentialities of field observation. The possession of one of these instruments, though not absolutely indispensable, is of the utmost importance. In selecting a glass three chief points are to be considered. The first is high magnification, which enables the observer to catch the details of attitude and expression which are so important. The second is high light-gathering power and definition, which depend on the size of the object-glasses. Without this, high magnification is a snare and a delusion, involving strain on the eyes. The third is quick adjustment of focus, for following the action of moving birds. Many glasses are made with independent focusing adjust-

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ments for the two eyes; these are useless for the bird-watcher. Some form of simultaneous adjustment is necessary, and in many ways the old pattern Goerz-Trieder longitudinally-moving focusing-head was preferable to the transversely-moving heads now in general use.

A magnification below six diameters is of little use; eight or ten is probably the best for general purposes, although even 12 will give satisfactory results. Besides a binocular, a telescope is often useful, especially for the larger and more wary birds. One with an object glass of at least two inches, and a magnification of about 25 diameters can be highly recommended. The price is comparatively small, and a little practice is all that is needed to handle it; one soon becomes so proficient that it is easy to follow even Swifts or Swallows in their aërial evolutions.

The efficiency of both the telescope and binocular can be considerably enhanced by a suitable stand. One that I devised for myself consisted of a camera-tripod with a kodak ball-and-socket joint attached; this in its turn screwed on to an apparatus composed of two pieces of wood lined with leather and joined by a long screw which holds the binocular in place. A special heavy ball-and-socket joint is also made by opticians for use with telescopes. By this means the fatigue and strain of holding the glass in place is done away with, and one's hands left free to take notes.[1]

Before we go any further into the practical details of what to look for and how to look for it, it will be necessary to make what will perhaps appear a long digression on the theoretical side. The main biological problems demanding solution seem to me to be connected with the courtship of birds, and to that subject I shall here confine myself.

However, as I myself very soon discovered when I began working at the problem of Courtship, to get a real insight into it one must have a working knowledge of the theories of Evolution, the theories of Sex, and the theories of the Animal Mind. On these subjects I must refer the reader to the general works of Darwin, Weismann, Morgan and Washburn cited at the end of this paper. Here I will merely say that all my observations have gone to root

[1] See Huxley ('14), p. 529.

deeply in me the conviction that birds have a mind of the same general nature as ours, though of course more rudimentary: if they are automata, then so are we. Prof. Washburn's book reaches the same conclusion. As far as the problems of sex are concerned, bird-watching has lead me to important ideas, and has gradually made me believe that in birds at any rate an individual of either sex contains within itself the characters of the other sex in a latent condition.[1] With which preface let us plunge *in medias res.*

It is an old idea, and a favorite of Sir Thomas Browne, that

[1] This is not the place to discuss the theoretical aspects of the problem of sex. However, it will be well to mention one or two ideas to which such studies as these have led me.

Morgan, in his recent book just cited, brings forward various facts, largely as the results of castration experiments, to show that the *mechanism of sex determination* is entirely different in birds and in mammals (and again in insects). This is an important and notable fact, but in considering its bearings we must not be led to forget another equally important fact that emerges especially as the result of a comparative observational study — namely, that all the determinants for the sexual characters of both sexes are present complete in each individual of either sex (with certain exceptions when the male has different sex-chromosomes from the female), that this holds good for both birds and mammals, and that the different results in the two groups are due to differences in the *method* by which in any individual the right characters are brought out, the unneeded ones inhibited. This is shown very well by the fact that the requisite mechanism for the copulatory actions of both sexes appears to be present in individuals of both sexes. For instance, I learn from my friend Mr. W. M. Winton that he has personally seen two cases of bitches where ovariotomy was followed by the acquisition of male actions. Similar actions in non-operated female animals are familiar in cows (Muller, Sexualbiologie), and are recorded for rabbits (Washburn, *in litt:*). Pearl and Surface have recently recorded (Science, April 23, 1915) a most interesting case where a cow assumed not only the behavior but also the appearance of a bull, owing to cystic disease of the ovaries. These examples alone will show that in mammals the female carries within herself the determinants for the characters of the opposite sex, just as Morgan's results show the converse of this to be true.

In birds, the facts assembled by Morgan show at once that the female carries the determinants for male characters. For the converse proof, I have myself assembled some records where the male performs female actions (and *vice versa*), in my paper on the Grebe (Huxley, '14). The case of the Phalarope is, from a different point of attack, proof positive that the determinants for female characters are present in the male. In all species of Phalaropes (Phalaropodidæ), while both sexes assume special plumage during the breeding season, and while this breeding-plumage is of the same general pattern in both sexes, and is obviously a recent acquisition in evolution, yet the female is larger and much brighter than the male, and in addition does all the courting. The only interpretation of these facts appears to me to be that, just as in most sexually dimorphic birds the male has acquired certain colors and structures, and that these have come to be shared by the female in lesser degree (Cardinal and many other Finches, Bob-white and most other Odontophoridæ, many Woodpeckers, Yellow-headed Blackbird, Dickcissel, Scissor-tailed Flycatcher, etc.), so here sexual selection has helped the female towards her bright plumage, and the male has automatically come in for his share. The results are best interpreted if we suppose (as is cytologically reasonable) that the determinants for the characters, even though the characters themselves are acquired primarily by one sex only, at once come to be present in the germ-plasm of both sexes. Suppose it to be the male which acquires the secondary sexual characters. After this there are two possibilities. Either the inhibition in the female will not be sufficient to restrain some appearance of the new characters in her, even from the start: or else in some unexplained way the inhibition will gradually weaken and the female come in the

man is a microcosm, exhibiting in miniature all the activities of a universe; and as far as marriage customs go, the idea is a true one. In the single species Man are found many varieties of marriage — promiscuity, polyandry, polygamy, and finally monogamy in all its phases of refinement — in origin largely a hateful economic necessity, yet in the outcome proving itself divinest of possibility. Almost every variation that is found as a mere fluctuating phase in the history of man exists separately, as a rigid law, for some species of bird. Bateson, in one of his lectures, gives us an imaginary conversation between a Pigeon and a Barndoor Fowl. The Pigeon rebukes the immorality of the Fowl's polygamous estate, while the Hen retorts that the Pigeons neglect the welfare of their race by confining themselves to a single mate. The Fowl and the Pheasant have Harems of the Orient, one cock owning more wives than another less successful bird. The Blackcock's system in some ways recalls that imaginary one of Plato's, for here there is no marriage, but the males have their appointed station, and their duties are over when the hens have come and chosen out the best. Still more mixture of promiscuity with polygamy is found in the Ruff. There are savage combats in the Thrushes, tournaments and jousts in Redshank and Blackcock. The chase is as frequent an adjunct of courtship as it was, if we are to believe the poets, with the Greek gods and nymphs, and as it is in many savage tribes to-day. And if one watches a pair of Red-winged Blackbirds or Mockingbirds in such a pursuit, he is inevitably driven to the conclusion that sometimes at least there is in it a thrill of pleasurable excitement for the female, of which she is fully conscious, even to the extent, I think, of sometimes provoking the chase.

When there is a monogamous union, it may be a temporary one, for the season only, as in most birds, or a true life-marriage, as in most Crows and Hawks.

Some birds lay down that "a woman's place is in the home," and the hen exclusively undertakes the duties of incubation. An extreme case of this deprivation of freedom of the female is seen

course of time to resemble the male more and more closely. Whether or not this second process actually takes place, we do know of course that the inhibition can vary in extent, as is shown by the Reindeer, where both sexes now share a primitively male character, or the Pheasant, where the female shows practically total inhibition of the male characters, for the purpose of protective coloration. The decision between these two possibilities must at present be left open.

in the Toucans, where the cock walls up the sitting hen in her nest-hole in an old tree; there she remains, fed by him, till the young are ready to fly. Other birds come more near to the ideal of the women's movement of to-day; in them both sexes share the duties of the pair more equally, and in all activities realize themselves equally and to the full. The Grebes, the Herons and the Swans will serve as examples. Sex-difference and sex-consciousness in these seem to be less, and as a result, just as in Man in similar case, there is in their courtship and the whole of their mutual relation, not so much emphasis on the less real, less great things that depend on sex-difference — coyness, timidity, helplessness in the female, eagerness, vain display, superior physical prowess in the male — and more emphasis on the things that are more fundamental, because belonging to the race instead of to one half of it alone — enjoyment of what is to be enjoyed, sharing of what is to be shared, joint action, mutual help. Let anyone study the relation of the sexes in such birds and compare it with the sex-relation in species with marked sexual dimorphism; then think of what is meant by the logical outcome of the chivalric, mediæval idea of woman's place, and compare that with the ideal behind the better part of the woman's movement of to-day, and I believe he will understand what I have in mind, difficult though it be to put into words.

Restricting ourselves to facts rather than interpretations, it will be found that the majority of passerine birds are monogamous, pairing for the season only,— temporary marriage. The duration of this tie is very variable; it may last until the nest is built, until the young are hatched, until the young are fledged, or it may be merged in a family life lasting through the winter.

Some of the monogamous species are dull-colored altogether; in others the cock is more brilliant and does most of the courting; while in still a third group *both* sexes are adorned with colors or structures that are employed in courtship.

Other birds have true marriage; they pair for life. Such are the majority of Falcons and Hawks — in whom, however, the problem is made interesting owing to the fact that the hen bird is larger, more powerful, and more active than the cock.[1]

[1] See F. Heatherly, ('13), where a magnificent series of observations and photographs on a single pair of birds is recorded.

At the other end of the series we get such birds as the Ruff (*Machetes*) which is polygamous, but still shows a certain degree of promiscuity as well.[1]

Other polygamous birds, such as the Peacock and the Pheasants, have more definite harems; while in the curious and beautiful little Phalaropes, the whole normal relation of the sexes is reversed, the hens in bright-colored plumage courting the cocks, who in their turn undertake all the duties of incubation.

Enough has been said to show the variety and interest of these relations alone. By collecting all available data we shall first of all be able to correlate the marriage-habits with the classification. Since the classification is by now fairly natural, or in other words, since it groups together those species of birds which are related by descent, we shall then be able to trace the evolution of the various customs and instincts — to see what was the most primitive condition, and to trace out whether polygamy and other specialized habits have arisen once only, or independently many times over.

This is important from the purely zoölogical point of view; it will also throw light on various problems of Evolution, notably on the question of Parallelism or the repeated origin of one adaptation from different ancestral stocks.

It is obviously of great interest to the Sociologist, since here he can trace the beginnings of all sex-relationships, in creatures where emotion is not yet complicated by reason. And if we study the details of each history carefully enough we shall, I hope to show, be able to interpret the phenomena of consciousness — the emotions and desires that lie behind the actions, — with sufficient accuracy to bring much grist to the mill of the comparative psychologist. Do not think me fantastic if I say that, even in birds, I believe that the finest emotions and most comfortable happiness are, as in man, associated with that form of monogamy in which male and female bear approximately equal parts. To support my opinions I will refer the reader to those of Selous ('13, pp. 298–299) elicited by his watching of Wild Swans.

Three years ago such words would have been almost without meaning to me; it was not until I had spent weeks watching the

[1] See Selous' exhaustive paper in the Zoologist for 1906.

behavior of a single species [1] and more weeks trying to think out the meaning of my observations, that there came to me the point of view — a combination of the evolutionary, the psychological, and the physiological — which made that statement possible. It was forced upon me by the facts I saw; and those who wish to penetrate into those arcana and mysteries of science where the beginnings of Consciousness are being shaped and added to Life cannot do better than observe the behavior of a single species of wild bird or mammal, and, having observed, try to understand.

But this is a digression. Let us return to our consideration of the question of courtship. First and foremost comes the need for facts. It is important for the professional biologist to have many new facts. To get these he must turn to the naturalist and the bird-watcher; and for these latter it is enormously important to have the old facts summarized and correlated into principles, for otherwise they will be unconsciously biased by preconceived notions. In such questions as these of sex-relations, we tend to have an unconsciously-held theory of our own, based upon every-day experience of our own species and of domestic animals; and not merely that, but since the questions are in Man associated with morality, we tend to see what we want to see, even in animals.

Our first duty as scientific observers is to try to get a clear idea of the usual sequence of events. The majority of birds are monogamous, and among them the majority again pair for the season, the two members of the pair separating during the autumn and winter, and pairing again, usually with new mates, before the next breeding season. Such species can then be considered typical, and we will begin by describing what may be called the "Annual Love-History" of such a species.

The pairing-up occurs remarkably early, often months before any eggs are laid. St. Valentine's Day is the traditional day for birds to pair; but in many species pairing-up may occur before this. Then follows a long period before consummation — a true engagement — in which the pair is constantly together and various displays by one or both of the sexes take place. Later, well on in the spring, comes the true marriage, when sexual consummation

[1] Huxley ('14).

takes place. At the same time nest-building starts, and very shortly the eggs begin to be laid; and then follow in turn the period of incubation and the period when the young are still unfledged and must be constantly fed. Then the nest is left, and a period of family association starts, during which the fledged young are being taught to find their own food and fend for themselves. This family life may break up very soon (*e. g.* in August; the English Robin) or may last right on through the winter until the next pairing-season (many Paridæ).

Most of this is common knowledge. Recent work, however, is extending our knowledge in two ways. First, it is becoming clear that in many species pairing-up is even earlier than was supposed, sometimes even in November or December, and also that in a good many species which were supposed to pair for the season only, the union is really for life, the pair preserving its identity through the winter, sometimes even when flocks are formed.[1]

In the second place, we are beginning to understand the relation of the so-called "Courtship-actions" — the displays and dances and songs — to the annual history. For example; there is often no display at all previous to the period of pairing-up; then — most interesting point of all — there may be a long period when "Courtship" (in the sense of active display by one or both sexes) may be very much in evidence, although the birds have already paired-up into couples, but coition has not yet taken place.

However, I think that it will be as well to look at some concrete examples of the various sorts of sex-relationship found in birds. I will take three, all more or less non-typical, to illustrate the great variety that exists in this matter of courtship.

I make no apology for beginning with a life-history which I have myself investigated — that of the great Crested Grebe [2] — for here I am sure of every fact.

In this aquatic species the two sexes are almost identical. Both are adorned with a beautiful crest, composed of two black ear-tufts and a ruff of chestnut, black, and pure white; this crest is very slightly less developed in the hen than in the cock, but is used exclusively in courtship, and used equally by both sexes.

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[1] *e. g.* the Dabchick (*Podiceps fluviatilis*), as reported by Mr. Mottram in a letter to me.
[2] Huxley ('14).

The birds generally go to the sea in winter, in small flocks or alone, returning to inland waters to breed in January or February. There, in February, pairing-up takes place — a process not yet wholly disentangled, but certainly associated with a great deal of flying and chasing (it probably resembles what happens in the Killdeer; *vide infra*). After this the pairs are very faithful — there is strict marriage for the season, preceded by a long engagement, for coition never takes place except on the nest, and nest-building does not begin till April. Quite soon after pairing-up, courtship activities begin, so that here, at least, pairing-up precedes any employment of the courtship structures (ruff and ear-tufts).

There are two entirely different sets of ceremonies gone through by the birds — ceremonies of mutual display, and ceremonies connected with coition.

The ceremonies of mutual display are extremely elaborate. There are three main divisions. The first is the simplest. Two birds that have been feeding or resting near each other will suddenly be seen to approach and to start shaking their heads at each other in a most peculiar manner, stiffly and formally, having first erected their crests and stretched their necks upwards to their fullest extent. After shaking for a certain time — a few seconds to a minute or two — they desist, and resume normal life.

The next form is amazing to see. It resembles the first in that it takes place as a mere interlude to the duties of every day, but is more elaborate. It starts with a bout of shaking which differs from the ordinary only in that it is prolonged to twice the usual length of time, and is followed by the remarkable diving for waterweed and the breast to breast collision which I have called the "Penguin-dance."[1]

After this performance (which, I think, was the most thrilling sight I have ever seen while watching birds, with the possible exception of a Heron turning a succession of somersaults vertically downward from a height of several hundred feet to near the ground) they simply once more relapsed into ordinary existence.

The third form of display is mainly used when the two members of a pair have been separated. One will call for its missing mate. When the mate recognizes the call, it will swim in that direction,

[1] See Huxley, '14, pp. 499–500.

and finally dive. On this the calling bird changes its whole demeanor, spreading its wings out to display the white bar upon them, erecting its ruff, and drawing back its head, now rayed like the sun, on to its breast, white and puffed out. The diving bird approaches just below the surface, raising a ripple as it comes, and finally emerges just behind its mate in a strange stiff attitude: — "He seemed to grow out of the water. First his head, the beak pointing down along the neck in a stiff and peculiar manner; then the neck, quite straight and vertical; then the body, straight and vertical too; until finally the whole bird, save for a few inches, was standing erect in the water." From this extraordinary position the bird will gradually settle down on the water; its mate meanwhile turns round, and the two finish with a bout of shaking.

The most noticeable thing about all these ceremonies is that they are "self-exhausting" — they do not lead on to anything further. Looked at from the psychological point of view, they seem to me to be nothing but "expressions of emotion": the birds act thus because they are impelled to do so, because they enjoy it. Looked at, on the other hand, from the evolutionary point of view, they seemed to have been developed as a bond to keep the pair together.

In the other set of ceremonies, those connected with coition, the crest is not employed at all. The whole thing is more or less symbolic, the birds expressing readiness to pair by going into the extraordinary attitude adopted by the female during the actual act of pairing, when the bird "lies along the water" with neck outstretched to its fullest extent. The chief point to be remarked is that both cock and hen may adopt this attitude; indeed the proper qualities of either sex seem in this bird to have been in large degree carried over to the other.

There is one further interesting point to mention, namely, that *flirtation* is found in this species; by which I mean that one member of a pair (either cock or hen), if its mate is absent or unresponsive, will go off and perform the courtship ceremonies with a stranger. For further details, and for the jealousy thus produced, I must refer the reader to my original paper, merely remarking that we find some parallels to human affairs that give much food for thought.

In this species, then, we have elaborate Structures used only in

courtship, elaborate Courtship-actions gone through by both sexes, as a form of enjoyment (like a dance). We have Engagement and Seasonal Marriage, not exempt from Flirtation; we have special Coition Ceremonies, again shared equally by both sexes. We have in fact a Courtship which to one, like myself, who was familiar only with the facts adduced by Darwin and his followers, was a complete revelation — something entirely new and unexplained.

We will now turn to a modern investigation of a species which has figured prominently in the sexual selection doctrine from Darwin's time to the present. In the Blackcock (*Tetrao tetrix*, fam. Tetraonidæ) Selous [1] has made a series of careful observations, which show how totally different is the series of events in a species which exhibits marked sexual dimorphism combined with polygamy. The main unquestioned facts may be briefly stated. The cock birds are magnificent in a plumage of sheeny bluish-black with beautiful lyre-shaped tail. On the wing and tail are patches of pure white, while over the eye is a streak of scarlet. The female is so different as to merit a distinct name, the Greyhen; she is much smaller and of a dull reddish brown color speckled with black — a purely protective scheme of coloration. In these birds *the pair does not exist as a unit.* In April and May the cocks assemble early in the morning at regular meeting-places and go through various remarkable courtship-actions. The hens visit these assembly-grounds, and there coition takes place, several hens often mating with one cock. These are the main facts; their interpretation, as always, has depended on the closest watching of the details. Selous finds that what really happens is as follows. The cocks have definite stations or territories of their own on the assembly-ground, which they do not leave except under the influence of violent excitement, such as jealousy. Their actions fall into three main categories: — the ecstatic *dance*, not executed specially before the hen; a *display* performed directly to the hen and battles (which, however, are in reality but jousts, or sham-battles) between cocks.

The dance has often been described; at its most violent, it must be an amazing spectacle. The tail is spread out and erected, the wings a trifle drooped, the head alternately raised and lowered.

[1] Selous ('09).

In this attitude they run and leap over the ground, often turning partially round in the air, getting more and more violent as they go on, until, like Dancing Dervishes, they have made the dance an ecstasy of violent motion. Selous only once saw this dance in its perfection; but there are always rudimentary stages of it to be seen, when the birds, in the position described, would walk or run quickly over the ground, with now and then a little leap. The whole process, especially in these incipient stages, seems to be merely an outlet for the strong sexual emotion of the cocks, for they perform in this manner even when no hens are on the ground.

At intervals, hens visit the assembly-place; it is very rare for many to be there together. The arrival of one is usually signalled by a general commotion among the cocks, all leaping and dancing as above described. As, however, she walks from one part of the ground to another, each cock displays before her as long as she is within the limits of his particular territory. This display is entirely different from the dance. Instead of being a wild expression of passion, it is pompous and slow, and is adapted for showing off all the colors and contrasts of the cocks' plumage. The tail is again fanned, the wings drooped and spread to a considerable extent, the head held down and forward. In this attitude the cock passes first on one side of the hen, then on the other, and as he passes he tilts his body so that the brilliant upper surface of body and wings is towards the hen.

The hen may "reject" her suitor, by simply walking on to the station of the next male; the males have no means of enforcing their desires if she does not show her approval, which she signifies by stooping and finally crouching in the position for coition. A hen may be courted unsuccessfully by several cocks and then choose (*choose* is the only correct word) another; or she may leave the ground without favoring any of them. From Selous' observations (for the details I must refer the reader to the original) it is quite clear that the hens come to the ground for a definite purpose — to be stimulated sexually, to put it in the most physiological way — and if the stimulus is not sufficient they leave the ground without coition taking place. The stimulus is given by the display of the cocks, and one may be successful where another fails; success depends therefore on the variations in the males, or on the whim of the female, or, most probably, on both combined.

The fighting, finally, is very curious. There are a great many warlike preliminaries, a good deal of sparring and feinting, but only once in a long while any real hard fighting, such as many smaller birds indulge in — Tits and Thrushes, for instance. The whole business comes to be half ludicrous, half contemptible to watch. Selous' idea is that it has degenerated from real fighting and is now fixed as a ceremonial action. At any rate it appears never to decide anything — nor does it seem to have any influence whatever on the hens. In this species, then, we have a fine "expression of emotion" in the shape of the Dance, but here it is confined to one sex instead of existing in both, as in the Grebe. We have also a Display as a direct stimulus to coition, and working out in such a way as to make Darwinian Sexual Selection operative; and we have sham Fights, whose downward development has probably gone hand in hand with the upward development of the Display.

As a third, and again very different form of history, let us take that of the majority of the Old-world Warblers (Sylviidæ) so thoroughly worked out by Eliot Howard ('07). These birds include a number of famous European songsters, such as the Black-cap, Garden Warbler, and Marsh Warbler. They are mostly of very sober plumage, with little or no sexual dimorphism (though to this the Black-cap is an exception). The majority of the forms are migratory, and it is to these that we will confine our attention.

The course of events is similar in almost all the species. In March and April the birds come over to England from the South, in flocks and bands, which, following the river valleys, gradually split up as they spread over the country. The influx of migrants occurs in successive waves, and an important point to notice is that the arrival-period of any species takes a considerable time. The average immigration period lasts for about four weeks, but in some species it is only about three, while in others, like the Chiff-chaff it may extend to seven (and in some species of the closely related Turdidæ, even to 9 or 10 weeks).[1] Nests with eggs are usually found before the migration is complete.

[1] See Annual reports on the immigration of summer residents, published in Bulletins of the Brit. Ornithol. Club from 1906 onwards.

In all the species, the male arrives a week or more in advance of the females; this week is spent in the acquisition of a definite Territory, or sphere of influence; each cock probably returns to the place where he was hatched and reared, and this inevitably gives rise to disputes. From Mr. Howard's observations it is quite clear that this "Territorial System" is here, as in many other birds, of the greatest importance in the affairs of the species, and if trespassing takes place, violent conflicts ensue until one bird is in undisputed possession, which fact he proclaims by his song. Then the females arrive; they too presumably re-traverse the routes they followed southwards in the previous autumn, they hear the songs of their mates, and come down to the nesting-sites thus already staked out for them. It would appear that, while the cocks fight for the occupation of a territory, the hens fight too — for the right of entry into the territory once it has been gained by the cock. In these female combats the cock seems to take very little active interest, so that pairing-up is apparently scarcely influenced at all by individual likes or dislikes (a primitive condition, and very unlike what occurs in the Grebe) — there is simply an impulse to sing and so to attract mates in the male, in the female an impulse to pair-up with any male in possession of territory. It is only after this that "courtship" begins. Nest-building, coition, and courtship all start almost immediately after pairing-up. The courtship has the form of a display by the cock, who hops about in front of the female in the display-position found in so many birds, with head low and outstretched wings drooped and extended, tail fanned and raised; often too he holds a leaf or twig in his beak.

The female will often remain absolutely unmoved by these displays, feeding as unconcernedly as if the cock and his frantic ecstasy were a hundred miles away; but when coition takes place it seems to do so as a result of the hen being first in a receptive condition, and then being stimulated by this display of the cock.[1]

[1] Critics of such a view as that here adopted to explain the habits of the Warbler, and adopted in general by Pycraft ('13), would do well to remember that in all the higher animals the *condition of the brain* very largely determines action. The cock is more eager than the hen. Her mere presence will inspire him with the desire to pair, but only at intervals; when this desire is present, he expresses it in the display actions. These actions in their turn inspire the hen with the desire to pair — but again not every time that they are exhibited.

Display and coition go on until all the eggs are laid, and incubation then begins. This is usually a duty of the hen bird, and the cock generally continues singing till the young are hatched. As far as the race is concerned, the cock's song is to attract a mate and then probably help stimulate her; but as far as the cock bird himself is concerned, song is simply an outlet, and a pleasurable one, for nervous energy; thus, provided certain internal physiological conditions are fulfilled, he will continue to sing in all moments of excitement or exaltation, non-sexual as well as sexual.[1] After hatching-time however, it is necessary that he help feed the young, and his nervous energy being thus diverted, his song ceases.

In these birds, it appears to me that we are being shown some of the primitive things of courtship. In this, Mr. Pycraft and myself are, I think, agreed; to both of us the "display" of the male Warbler is nothing but a *direct* expression of sexual excitement, scarcely, if at all, modified by Darwinian Sexual Selection — nothing but the way in which nervous disturbance caused by sexual excitement happens to liberate itself. General nervous discharge will cause general muscular contraction; and something approaching this is here seen — rapid hopping, extension and fluttering of the wings, spreading of the tail, bristling up of the feathers on head and throat, and the utterance of a series of quick sounds. This expresses a condition of readiness to pair, and doubtless to the female comes to be a symbol of the act of pairing. Hence, as far as the female is concerned, the act of pairing has come to depend upon this stimulus (acting of course on a suitable internal physiological state). This is no more strange in the bird than it is that in ourselves thoughts and emotions of love well up at the sight of some tangible object connected with the beloved. The main difference between the Grebe and the Warblers in this respect is that in the Grebe both sexes are equal in their affection and also in their eagerness, while in the Warblers the hen, as evidenced by her behavior, is most obviously less eager than the cock.

An extremely similar form of courtship, especially as far as the

[1] As is well known, many birds sing under the influence of anger (*e. g.* the Reed-warbler, *Acrocephalus streperus*), or as a result of a sense of general well-being (*e. g.* Song-thrushes, *Turdus musicus*), on warm days in winter.

relations of display and coition are concerned, is found in such birds as most Finches. These are monogamous, and the male only goes through a display. But here there is almost always sexual dimorphism, the cocks often being very brilliant, and the brilliant colors are so arranged that they are especially well shown during display. Here then some agency must have been at work, adding to the primitive display of the Warblers, and making it more effective as a stimulus to the hen.

These three different courtships give us, as I believe, the key to the general problem of courtship in birds. To me, that key consists in this: — that under the one term "Courtship" are included two entirely different sets of activities. In the first place, there are such activities as are shared equally by the two sexes — ceremonies and actions, often elaborate, performed for the pleasure and the joy of the performance; and secondly, there are ceremonies of the nature of a display by one sex only. I would prefer not to have to give special names to these two distinct sets of activities until I have more facts and more fully-digested facts; but to distinguish between them, I propose here to give the name of *Display Courtship* or *Darwinian Courtship* to the second set of activities; and to the first, which has scarcely received any of the attention it deserves, either from Darwin or subsequent authors, I shall give the name of *Mutual Courtship.*

As far as I can see, the underlying physiological bases for these two forms of courtship are to be found in the inherited sexual temperaments, if one may so call them, of the two sexes. In some birds, the male is much more eager than the female, and it is in these that Display Courtship has developed. The basis for Mutual Courtship lies in a similarity of sexual temperament in both sexes — neither markedly more eager nor more reserved than the other.

Furthermore, the immediate function of courtship is twofold. Either form of courtship may have both functions; it may serve, first, as a stimulus to coition (in Mutual Courtship the pair is worked up, in Display Courtship the male works the female up to the necessary point of exaltation); and secondly it may serve as a bond to keep the pair together.

In mutual courtships, the tendency is to drop the first function

(as in the Grebe); in Display Courtships, to drop the second (as in the Warblers). As a special development of the Display Courtships we get courtships like those of the Blackcock.

It is interesting to note the relation of Darwinian Sexual Selection to these various categories.

Darwinian Sexual Selection obviously does not operate in primitive display courtships like that of the Warblers, nor in Mutual Courtships. On the other hand, Selous' work shows that it does operate, with almost diagrammatic clearness, in the Blackcock. In the case of monogamous birds in which the males only have brilliant colors, I should like to reserve judgment. But there is another point; all courtship, it is here maintained (as also by E. Howard and by Pycraft) has had its origin in posturings and actions that are merely the direct outcome of sexual excitement, so that one finds birds without any special sexual structures or colors going through actions that are of the nature of courtship, be it mutual or be it Darwinian (take as example the Gulls on one side and the Sylviidæ on the other). Then it is clear that the development of special colors and structures employed in courtship must be a later addition, due to some separate influence, and this holds true both of structures (like the Grebe's crest) used in mutual courtship, or those (like the crest of the Ruby-crowned Kinglet) used in display courtship. These latter, as I say, may perhaps owe their origin to Darwinian Sexual Selection. The former cannot, so we must revise our theories in the light of this new conception of Mutual Courtship.

Mr. Selous has a very interesting chapter on this subject. (Selous, '05. "Inter-sexual Selection," pp. 261–283), to which, however, my attention has only just been drawn. My own conclusions, though similar in many ways, were reached entirely independently (Huxley, '14, pp. 523–525).

It is necessary to observe that in most birds, as in Man himself, the two forms of Courtship are inextricably interwoven. Man is one of the most complicated of all, for while much is absolutely reciprocal, yet there is much that is not mutual, and it is almost impossible not to believe that here at least there has been a double action of Darwinian Selection, the ancestral appearance of both man and woman having been modified in different ways through its agency.

The facts given above and their discussion will serve to make clear some of the general principles and problems of courtship in birds. Our next business is to get an insight into the interpretation of observations on birds. The connected descriptions I have given of the life-histories of various birds have only been made possible, first by the collection of a great many facts, and secondly by the interpretation of those facts; and the second is as important as the first.

It is indeed almost impossible to collect valuable facts unless one has some idea of how they are to be interpreted, and to those who are interested in this subject, I would say this: — remember the multifarious aspects from which any fact of bird-behavior can and should be looked at.

Take the case of any elaborate courtship action, such as the 'shaking' of the Grebe, or the dance of the Blackcock. There are two main points we want to understand; what is the meaning to-day? and what has been the origin in the past? And to answer these we have first to ask, and answer, the following questions: —

First, can we see any utility in it? if so, is it of use (a) simply to the species as a species, or is it of use (b) to the individual, (c) the pair, or (d) the family, and so indirectly to the species?

Secondly, can we see anything which is not of definite biological utility in the character? if so, what is the reason for the presence of this non-utilitarian factor? Is it (a) purely accidental? (b) determined through the inheritance of characters once useful, but now no longer so? (c) a matter of physiological correlation — that is to say, dependent on the general structure and working of the rest of the body? (d) dependent on the structure and working of the mind — a matter of psychological correlation?

Let us analyse the above examples in the light of these questions. The mutual head-shaking of the Grebe is apparently of use, like all the other mutual courtship actions, in keeping the pair together during the breeding season. It is then of direct biological use to the pair regarded as a unit of the race, and to the next generation. Besides this, it may be of some slight advantage to the individuals as liberating the energy of the sexual period in a harmless and pleasurable manner; but as far as origin is concerned, the survival value of the character — the handle by which Mutual Selection

can seize hold of it — is given entirely by its value to the pair and to the offspring.

On the other hand, many of the details of the ruff itself, and of the mode of shaking, are non-utilitarian. To carry out its function successfully, any courtship-action must stimulate the senses in a way which must be either pleasurable or startling, or a combination of both, and to this condition the erected ruff of the Grebe conforms — it affords a brilliant combination of black, chestnut and white, which, in addition, is only revealed when the ruff is erected. The general principles of the action are thus determined; but the origin of many of the details we can only look upon as accidental. As far as the position and color of the ornament is concerned we can only say that the Grebe family "shows a tendency" to develop crests and ruffs on the head, and that any brilliant pigmentation they possess runs to black, warm browns, yellows, and whites, while that of other birds runs to other colors — in the Woodpeckers to scarlet, in the Parrots largely to greens and yellows, and so forth. These things are "accidents," in the sense that they are determined by unknown peculiarities in the constitution of the species.

The *form of the action* itself, however, is largely a matter of correlation. Many water-birds can be seen to shake their heads from side to side at intervals, especially after preening themselves, and from observations on the curious connection between this courtship-action and actual preening in the Grebe, I have no doubt that it is a specialization of the casual head-shaking after preening.[1]

Finally there is a modification of the typical action of shaking which is seen under the influence of jealousy, and is characterized by exaggeration of all the normal behavior (Huxley, '14, p. 511). This is a matter of psychological correlation — take a Sensori-motor arc connected with mental processes; increase the intensity of the mental processes, and you increase the intensity of the actions which are the end, *i. e.* result of that activity.

To get an example of an action which is determined through inheritance alone, we must go to another species. The Ringed

[1] Huxley, '14, p. 515. In a similar way the elaborate courtship ceremonies, as seen in the Grebe and many other species, in which twigs are used and held in the bill, doubtless take their *origin* in nest-building.

Plover, for instance, (*Ægialitis hiaticula*) usually breeds on the seashore, and there lays its eggs among the stones. A certain number, however, breed on inland heaths, but even these pave their nests with small stones (Newton, '93, p. 482).

Such a discussion will make it easier to comprehend that it is possible to answer in various ways that question "why does such-and-such a species of bird perform such-and-such an action?" "Why do the Grebes shake their heads at each other?" The Evolutionist answers that the cause lies in Mutual Selection, which has developed the action for the good of the race. The Physiologist sees the reason in the activity of the gonads; these exert by chemical means a stimulus on the nervous system, which in its turn is arranged in such a way as to cause the stimulus to run down and set the appropriate muscles to working. The Psychologist sees in it a self-exhausting psychological process accompanied by a pleasurable expression of emotion — the bird does it because it enjoys doing it. In reality, all are right — in their degree; and it is from a failure to get a sufficiently broad point of view, a failure to distinguish between ultimate cause, immediate cause, and mere necessary machinery, that so much of the barren disputes of biology are due.

(*To be concluded.*)

LABRADOR BIRD NOTES.

BY WELLS W. COOKE.

MORE than a century ago Cartwright lived at Sandwich Bay on the eastern coast of Labrador and left a journal which contains many notes on the arrival and departure of the birds. Scarcely any migration notes on the birds of this district have been published during all these subsequent years. The coast has been visited by various ornithologists — Coues, Turner, Stearns, Bigelow, Townsend, and Allen — but these men arrived there in the early summer after the close of spring migration and left too early in the fall to note more than the beginning of the return movement. Hence while the birds have been studied during the breeding season, but scant records have been made of their arrival and departure.

In the fall of 1912 Mr. Clarence Birdseye, of New York City, went to Labrador as resident manager for a fox farming company. The winter of 1912–13 was spent at Battle Harbor. The following summer a permanent site for the fox farm was selected near Sandwich Bay, and the two following winters were spent at this place. During each winter long trips were made by dog sledge up and down the coast, and each summer he was absent for a few weeks while making a trip to New York City. Several years of field work for the U. S. Biological Survey had given Mr. Birdseye an excellent training for accurate observation, and during his residence in Labrador he has made copious notes on the bird life. He has turned over all these notes to me with a request that I publish the more interesting records. It must be understood, however, that watching the birds was a mere incident in a life filled full with exacting duties in other lines and that, therefore, the bird notes are not so numerous as his inclinations would have prompted.

The additions to the list of the birds of eastern Labrador are: *Chen hyperboreus hyperboreus, Zenaidura macroura carolinensis, Mniotilta varia,* and *Dendroica virens,* while the second records on this coast were obtained for *Marila marila, Branta bernicla leucogastra, Dendroica æstiva æstiva,* and *Regulus calendula calendula.*

Only two previous records had been published for *Fulica americana* and *Colaptes auratus luteus*. The known range of *Cyanocitta cristata cristata* on the south coast has been extended a long distance eastward.

The fox farm is at Dykes Bay, near the entrance to Sandwich Bay, about four miles southwest of Cartwright, about 150 miles north of the eastern end of the Strait of Belle Isle, and about 70 miles southeast of Rigolet, near which place Dr. Coues made many of his Labrador observations. The Sandwich Bay records refer to the fox farm. The settlement called Paradise where Cartwright spent much of his time, and which was often visited by Birdseye, is at the southwestern corner of Sandwich Bay, some fifteen miles from the fox farm. Battle Harbor is on St. Lewis Sound about 40 miles north of the Strait of Belle Isle. Flowers Cove, Newfoundland, and Forteau, Labrador, are at the west end of the Strait of Belle Isle; West Ste. Modiste and Red Bay are in the middle of the Strait; Chateau Bay and Pleasure Harbor are just north of its eastern end; Caribou Island and Lewis Bay are near Battle; Hawke Harbor is 50 miles north of Battle; Seal Islands and Spotted Islands are 50 miles east of Cartwright and Table Bay half that distance; Woody Point and West Bay are on the coast between Cartwright and the mouth of Hamilton Inlet, while Ticoralak is on the north shore of Hamilton Inlet near Rigolet.

1. **Gavia immer.** LOON.— Battle Harbor, May 15, 1913; Ticoralak, October 12, 1912.

2. **Cepphus grylle** or **mandti.** GUILLEMOT.— Several at Woody Point, December 30, 1912, and at Lewis Bay, February 15, 1913.

3. **Larus marinus.** GREAT BLACK-BACKED GULL.— Unusually early arrivals were seen near Romaine, March 26, 1914, and at Rigolet April 9, 1915. The species was still present on the Seal Islands November 2, 1912.

4. **Larus argentatus.** HERRING GULL.— The last at Battle Harbor was noted October 22, 1912.

5. **Puffinus gravis.** GREATER SHEARWATER. — Seen at Hawke Harbor, August 19, 1912.

6. **Mergus serrator.** RED-BREASTED MERGANSER. — Arrived at Cartwright, May 2, 1915, which is probably about an average date.

7. **Anas rubripes.** BLACK DUCK.— First seen at Caribou Island, May 1, 1913, and at Sandwich Bay, May 2, 1915.

8. **Nettion carolinense.** GREEN-WINGED TEAL.— This is a rare species on the Labrador coast, but the wing of one was seen which had been shot near Ticoralak.

9. **Marila marila.** SCAUP DUCK.— Two young males were shot at Ticoralak, October 11, 1912. The only other record for the whole coast of Labrador is that of one shot near Nain in October, 1899.

10. **Harelda hyemalis.** OLD-SQUAW.— The first fall migrant appeared at Pleasure Harbor, September 16, 1912.

11. **Somateria mollissima borealis.** NORTHERN EIDER.— The breeding eider of this part of the coast of eastern Labrador is *dresseri*, but the winter birds are undoubtedly the northern species since Battle Harbor is at the extreme northern limit of the breeding range of *dresseri*. In the fall of 1912 the Eider Duck shooting began near Battle Harbor on September 20, but at that time the birds were scarce and only a few were obtained. Even a month later, October 24, the gunning season had not yet reached its height, and seven men in one day killed only about 80 birds. Later the numbers increased and the birds remained as long as they could find any open water. At West Bay on January 31, 1913, after the simultaneous discharge of six guns, 140 eiders were picked up and many more were lost. A flock of not less than 400 was seen at Rigolet March 14, 1913. The first northward migrants were noted at Battle Harbor, May 1, 1913, and on May 23, they passed by the thousand in companies of a hundred or more.

12. **Chen hyperboreus hyperboreus.** LESSER SNOW GOOSE.— Snow Geese are only stragglers on the Labrador coast; indeed a single doubtful record at Okkak is the only one for the whole coast. One was shot at Independent Harbor about October 1, 1914, where none of the inhabitants could remember seeing a white goose. Its skin is now in the U. S. Biological Survey collection and, strangely enough, it turns out to be the small form from western North America.

13. **Branta canadensis canadensis.** CANADA GOOSE.— The first were noted at Battle Harbor, May 1, 1913, and at Sandwich Bay, April 30, 1915. These dates agree closely with those given by Cartwright, who records the first as arriving near this same locality on May 4, 1775, April 30, 1776, May 1, 1779, and May 8, 1786.

14. **Branta bernicla glaucogastra.** BRANT.— There is no certain record of a Brant anywhere on the Labrador coast, except the one shot at Nain in October, 1899. One is reported to have been taken at Ticoralak the fall of 1912 and the record is probably correct.

15. **Botaurus lentiginosus.** BITTERN.— This species is known from Cape St. Francis only a few miles to the south of Sandwich Bay, and hence the report that it breeds near this latter place is probably correct.

16. **Fulica americana.** COOT.— One was shot at Table Bay in October, 1913, and is now in the collection of the Biological Survey. The only other records for the whole east coast of Labrador are of one taken near Nain in 1880 and one at Sandwich Bay in August, 1899.

17. **Phalaropus fulicarius.** RED PHALAROPE.— A late record for the coast of Labrador is that of several Red Phalaropes seen at West Ste. Modiste, September 13, 1912.

18. **Gallinago delicata.** WILSON'S SNIPE.— It may be well to record

two Wilson's Snipe seen at Flowers Cove, Newfoundland, September 10, 1912, for this is near the northern limit of the range of the species.

19. **Pisobia maculata.** PECTORAL SANDPIPER.— Those individuals that were still present at Ticoralak October 12, 1912, were remaining later than usual.

20. **Pisobia fuscicollis.** WHITE-RUMPED SANDPIPER.— This species remained still later than *P. maculata*, for single birds were seen at Battle Harbor to October 29, 1912, while in August they were abundant in flocks of hundreds.

21. **Pisobia minutilla.** LEAST SANDPIRER.— This species migrates so late that the first was not seen at Battle Harbor until June 1, 1913. Migrants returned to Battle Harbor August 7, 1912, and remained for about three weeks.

22. **Totanus melanoleucus.** GREATER YELLOW-LEGS.— The first were seen at Battle Harbor May 14, 1913, and at Sandwich Bay June 4, 1915. These places are near the normal northern range of the species. Several were noted September 15, 1912, at Chateau Bay and the last were seen October 12, 1912, at Ticoralak.

23. **Numenius borealis.** ESKIMO CURLEW.— Though this species may become extinct in the near future, it still existed in 1912, and during that year a few were seen August 17 on Caribou Island; one was recorded at Cartwright in September and four at West Bay during the same month.

24. **Zenaidura macroura carolinensis.** MOURNING DOVE.— The most northern previous record on the Labrador coast for the Mourning Dove is at Red Bay in the Straits of Belle Isle. The known range can now be extended to Battle Harbor where one was seen October 20, 1912, and one found dead on the beach at Spotted Islands during August of the same year. One was shot near Battle Harbor in September, 1912. A close observer of bird life who has lived at Sandwich Bay for fifty years says that during all that time he has seen Mourning Doves only twice, once in 1909 and once the following year.

25. **Pandion haliaëtus carolinensis.** OSPREY.— To the very few records of this species on the eastern coast of Labrador may be added that a pair was seen at Sandwich Bay May 28, 1915, and again the next day. The species breeds on both North River and White Bear River which flow into Sandwich Bay.

26. **Nyctea nyctea.** SNOWY OWL.— "Many of the people at Sandwich Bay set steel traps on isolated stumps for owls. These birds are usually very fat and are good eating. The fat is not at all strong" (Birdseye).

27. **Colaptes auratus luteus.** NORTHERN FLICKER.— This species is probably not so rare as its few records for the eastern coast of Labrador would indicate. One was taken at Sandwich Bay in August, 1908, and one at Okpatok Island, Hudson Strait, October, 1882. These are the only published records for eastern Labrador, but a man who lived at Sandwich Bay and had taken a specimen there the spring of 1909 said that they nested in that neighborhood. In confirmation of this two individuals were heard there June 5, 1915.

28. **Otocoris alpestris alpestris.** HORNED LARK.— The last one noted in 1912 was at Ticoralak October 12, and the first returning migrant was seen at Sandwich Bay, April 22, 1913.

29. **Cyanocitta cristata cristata.** BLUE JAY.— The known range of this species was decidedly extended by the capture of a specimen in 1912 at Harrington on the south coast of Labrador near Romaine. It had not been previously recorded east of Mingan.

30. **Euphagus carolinus.** RUSTY BLACKBIRD.— The last one seen in 1912 at Flowers Cove, Newfoundland, was seen on September 10. It is there a common breeder.

31. **Plectrophenax nivalis nivalis.** SNOW BUNTING.— This species is an abundant migrant at Battle Harbor, but does not breed there and is rare through the winter. During the spring migration great numbers are killed for food, as many as twenty being taken at a single shot. After November 6, 1912, the only ones seen were one on December 29, 1912, and one on February 15, 1913. The first song was heard May 1, 1913, when the species was abundant, but most left the latter part of that month, the last seen being three on May 31, and one the next day.

32. **Calcarius lapponicus lapponicus.** LAPLAND LONGSPUR.— Neither breeding nor wintering at Battle Harbor, the first spring arrival of the Lapland Longspur was noted there May 13, 1913.

33. **Passerherbulus sandwichensis savanna.** SAVANNAH SPARROW.— The last record made of a Savannah Sparrow at Battle Harbor was on September 12, 1912, when the species was still common. The first arrived the next spring on May 15.

34. **Zonotrichia leucophrys leucophrys.** WHITE-CROWNED SPARROW.— An abundant breeder on the Labrador coast. The last was seen at Forteau September 11, 1912, and the first at Battle Harbor May 22, 1913, and at Sandwich Bay May 28, 1915.

35. **Zonotrichia albicollis.** WHITE-THROATED SPARROW.— There seems to be no published record of the occurrence of the White-throated Sparrow on the Labrador coast north of Battle Harbor. It is rare there, and the first arrived May 19, 1913, and several were heard May 22. The last was heard in 1912 at Forteau on September 11.

36. **Spizella monticola monticola.** TREE SPARROW.— This species was abundant in migration at Forteau, September 11, 1912. It seldom nests on the coast, but is a common breeder in the wooded country inland, nesting for the most part on the ground and occasionally in the trees. The first arrived at Battle Harbor in 1913 on May 15.

37. **Junco hyemalis hyemalis.** SLATE-COLORED JUNCO.— Labrador is much too cold for the Junco or "snowbird" to winter and in the Sandwich Bay district it is not common at any time. One was seen at Lewis Bay August 13, 1912, and one at Rigolet September 30, 1912. The following spring a single bird appeared at Battle Harbor on the unusual date of April 16, and a few were seen for ten days; then they disappeared and were not noted again until their usual time of arrival the middle of May. In 1915 the first appeared at Sandwich Bay on May 12.

38. **Melospiza lincolni.** LINCOLN'S SPARROW.— The last one seen at Forteau in 1912 was on September 11.

39. **Passerella iliaca iliaca.** FOX SPARROW.— The last were seen at the head of Chateau Bay September 15, 1912, and on the coast of Newfoundland, near Flowers Cove, September 10, 1913. The first was heard on Sandwich Bay, May 5, 1915.

40. **Mniotilta varia.** BLACK AND WHITE WARBLER.— The first record for Labrador is that of one seen at Sandwich Bay June 2–4, 1915. It was undoubtedly a straggler for the species had not previously been known northeast of Anticosti Island.

41. **Dendroica æstiva æstiva.** YELLOW WARBLER.— The only previous record of a Yellow Warbler on the eastern coast of Labrador seems to be that of the one taken on Hamilton Inlet, Spetember 1, 1905. To this record can now be added that of a pair seen at Sandwich Bay June 6, 1915.

42. **Dendroica coronata.** MYRTLE WARBLER.— The earliest warblers to appear at Sandwich Bay the spring of 1915 were about a dozen Myrtle Warblers that arrived May 24.

43. **Dendroica striata.** BLACK-POLL WARBLER.— The first were noted at Battle Harbor, June 6, 1913, and at Sandwich Bay May 27, 1915. This is a good example of the fact that a late migrant advances on the average more miles per day than an early migrant. The Black-poll Warbler arrived at Sandwich Bay in 1915 only three days later than the Myrtle Warbler, though it arrives at Washington, D. C., on the average more than thirty days behind the latter. It is also interesting to note in this connection that, assuming May 5 as the average date of arrival at Washington, the Black-poll Warbler occupies about twenty-five days in passing over the fifteen hundred miles thence to the Labrador coast, an average of about sixty miles a day, while the Black-poll Warblers that are to nest in Alaska are averaging more than a hundred and fifty miles a day during this same part of May and by the end of the month reach Kotzebue Sound a thousand miles farther north than Sandwich.

44. **Dendroica virens.** BLACK-THROATED GREEN WARBLER.— The list of the known birds of the east coast of Labrador has been increased by the addition of the Black-throated Green Warbler, a specimen of which was seen at Battle Harbor June 6, 1913. The most eastern previous record was that of one at Eskimo Point.

45. **Anthus rubescens.** PIPIT.— The last was seen at Ticoralak in 1912 on October 11, and the first arrival the following spring at Battle Harbor on May 16.

46. **Regulus calendula calendula.** RUBY-CROWNED KINGLET.— One was seen at Sandwich Bay May 26, 1915. There seems to be only one previous record of the species on the coast of eastern Labrador and that was at Rigolet on August 6, 1860.

47. **Planesticus migratorius migratorius.** ROBIN. — The last was seen at Forteau September 11, 1912, and the first at Sandwich Bay May 1, 1915

FIVE YEARS PERSONAL NOTES AND OBSERVATIONS ON THE BIRDS OF HATLEY, STANSTEAD COUNTY, QUEBEC — 1911–1915.

BY H. MOUSLEY.

(*Concluded from p. 73.*)

53. **Dolichonyx oryzivorus** (Linnæus). BOBOLINK.— Abundant summer visitant; May 9 to Aug. 16. Average date of arrival (for five years) May 13; of departure (for three years) Aug. 14. Eggs: June 6 to 16. The Bobolink here seems to be increasing in numbers as during the past two summers, I have found it nesting not only in its former haunts, but in many other places where I had not noticed it previously. The males usually arrive about a fortnight in advance of the females, the exact dates this year (1915) being, males May 11, and females May 25.

54. **Molothrus ater ater** (Boddært). COWBIRD.— Rare summer visitant; April 16 to June 30. Eggs: June 27. It is with feelings of regret that I have now to include the Cowbird as a summer visitant, after four years of its inclusion as a transient only, as previous to the present summer, 1915, I had only seen four examples of the bird in April, 1913. This summer however, two pairs could generally be seen in the neighbourhood from April 24 to the end of June, with the result that at least one Yellow Warbler and Red-eyed Vireo were victimized, an egg being found in the nest of the former and a young bird in that of the latter. Mr. L. M. Terrill's experience at Bury about 35 miles northeast of Hatley, somewhat coincides with mine, as writing in the ' Ottawa Naturalist ' November, 1904, he says: " I did not find any Warbler's nests containing eggs of the Cowbird, in fact the only individual intruded on was a Bluebird." In my limited experience of the bird I have found the females to arrive with the males.

55. **Agelaius phœniceus phœniceus** (Linnæus). RED-WINGED BLACKBIRD.— Abundant summer visitant; April 6 to Aug. 17 (Sept. 24, Oct. 21, Nov. 1). Average date of arrival (for five years) April 8; of departure (for three years) Aug. 15. Eggs: May 13 to June 15. During the spring and summer of 1912 this bird, always a plentiful one, fairly swarmed and nested in many new localities which have not been tenanted since. The favourite situation here for nests is low down in the large cat-tail beds, only on three occasions have I found them in small bushes. By the middle of August all the birds have generally disappeared, the late dates in September, October and November being for two to four birds only on each occasion, which dropped into the cat-tail beds in the marsh late in the evening. The males usually precede the females by several

weeks, the exact period in 1915 being one month, males March 25, females April 25. Four eggs in a set seem to be the usual number; only on two occasions have I found five, and these out of fifty-seven nests examined.

56. **Sturnella magna magna** (Linnæus). MEADOWLARK.— Rare summer visitant; April 11 to Oct. 25. I have only seen fifteen examples of this bird altogether, and these, with the exception of two, were some miles away from my house, two in June of 1913 near Massawippi, which were evidently breeding, one having building material in its beak, nine at Compton in October of the same year, one again at Massawippi in May, 1914, and one in June, 1915, near Coaticook. The remaining two were seen close to my house, one in April and the other in May.

57. **Icterus galbula** (Linnæus). BALTIMORE ORIOLE.— Fairly common summer visitant; May 11 to Aug. 25. Average date of arrival (for five years) May 14; of departure (for three years) Aug. 22. Eggs: June 8. The usual nesting site selected here is near the top of some fair sized tree, generally a maple. The nests vary somewhat in depth, which in some cases may be as much as six inches, whilst one built in a maple opposite my house only measures three and one half inches. After the young leave the nest, all the Orioles seem to disappear, and are not seen again until towards the beginning or middle of August on their way south for the winter. The males generally precede the females by some few days, the exact time in 1915 being a week, males May 16 and females May 23.

58. **Euphagus carolinus** (Müller). RUSTY BLACKBIRD.— Rare transient; Oct. 1 to 27. The only example I had seen of this bird (previous to the present year, 1915) was that of an immature shot on the morning of October 21, 1914, and shown to me in the flesh the same evening. This year however, a flock of 25 visited the marsh on October 1 and remainded in the neighbourhood for some weeks.

59. **Quiscalus quiscula æneus** (Ridgway). BRONZED GRACKLE.— Common summer visitant; April 14 to Oct. 20. Average date of arrival (for five years) April 16; of departure (for four years) Oct. 10. Eggs: May 29. The Bronzed Grackle is not nearly as plentiful here as the Red-winged Blackbird. At one time a few of them used to nest in hollow stumps in the marsh but lately all seem to have taken a liking for evergreen trees, more particularly fir and pine, in which they construct their somewhat bulky nests. They are interesting birds, showing great development along many lines, but their egg robbing proclivities makes it undesirable to have many of them about. Speaking from memory only, I fancy I have always noticed the males and females arriving together like the Cowbird.

60. **Hesperiphona vespertina vespertina** (W. Cooper). EVENING GROSBEAK.— Occasional but rare winter visitant; Feb. 12. The above date in 1913 is the first on which I had the pleasure of seeing a small flock of nine of these rare birds at close quarters, as they were feeding on the buds of the row of maple trees that runs through the centre of the village of Hatley. The weather at the time was very cold, the thermometer registering 2° below zero. On the following day a male was observed amongst a

flock of Pine Grosbeaks about a mile and a half south of the village, but although a careful lookout was kept for some weeks, this was the only other occasion on which any were seen.

61. **Pinicola enucleator leucura** (Müller). PINE GROSBEAK.— Irregular winter visitant; Jan. 23 to March 28. My first acquaintance with these interesting birds was made on February 8, 1912, when small flocks visited the apple and maple trees round my house, feeding on the old apples still remaining on the former and doing considerable damage to the buds of the latter, before they left on March 28. The following winter they arrived on Jan. 23 and it was not until March 21, that I saw the last of them. Most of the flocks consisted of females and young birds with only a few red ones amongst them as a rule.

62. **Passer domesticus domesticus** (Linnæus). HOUSE SPARROW.— Common resident. Eggs: May to July. This great pest luckily is not very abundant here so far, many of the farms having none at all, and at those where they have taken up their abode they do not seem to increase in numbers very materially, nor do the villages seem to be particularly overburdened with them.

63. **Carpodacus purpureus purpureus** (Gmelin). PURPLE FINCH.— Fairly common summer visitant; May 2 to Oct. 25 (Nov. 28). Average date of arrival (for four years) May 10; of departure (for three years) Oct. 17. This is quite a common bird at migration times, but during the summer months its numbers are very limited, and I have not yet been able to locate a nest, although two or three old ones found in the fall would seem to belong to this species judging from their situation and construction. The late date in November is for a single female only, which was in the company of a large flock of Goldfinches.

64. **Acanthis linaria linaria** (Linnæus). REDPOLL. — Irregular winter visitant; Nov. 30 to April 13. So far as I have been able to judge the Redpoll is decidedly an irregular and erratic visitor, and the largest flock that I have come across consisted of only forty birds.

65. **Astragalinus tristis tristis** (Linnæus). GOLDFINCH.— Common summer visitant, sometimes in winter; May 3 to Nov. 28 (Dec. 18, 31, Jan. 4). Average date of arrival (for four years) May 15; of departure (for two years) Nov. 28. Eggs: June 3 to Aug. 20. Notwithstanding careful searching I have not observed the Goldfinch during the winter and early spring months, until the present year 1915, when a pair of birds were seen on each of the dates in December, and five on Jan. 4, 1916. The very early and hot summer of 1911 was no doubt responsible for the unusually early date of June 3 for a set of eggs. Out of ten nests examined two contained a set of six eggs.

66. **Spinus pinus** (Wilson). PINE SISKIN.— Irregular winter visitant; Nov. 7 to May 25. My first acquaintance with the Pine Siskin was in December of 1914, and from then on to May 25, 1915, I encountered them almost daily in flocks of from 5 to 25 birds. They were especially fond of a little swampy cedar wood upon the seeds of which they could be

found feeding almost any day. From the actions of a few scattered pairs I felt sure they were breeding, but it was not until May 12 that I had the satisfaction of twice seeing an adult bird feeding a fully grown young, and on September 18 on the outskirts of a large wood (at a spot where I well remember having seen a pair of birds on two or three occasions early in April), I found what I feel sure was a nest of this species. It was situated 25 feet up in a tall fir tree well concealed and saddled on to a branch at its junction with the main trunk, and is different from any other nest I have ever found here before. The foundation consisted of a platform of small fir twigs and a few grass stems 5½ inches in width, upon which rested the nest proper. This was composed of very fine strips of bark and grasses, warmly lined with animal fur, thistledown and some horse hair, the whole structure looking remarkably large and flat for such a small bird. The other measurements as near as I could get at them, seeing that the nest had been occupied, and was some few months old, are as follows, viz: outside diameter 3¾, inside 2 inches, outside depth 1¼, inside ⅞ of an inch. A good deal of the young birds' droppings still remained attached to the fir twig foundation. No doubt the eggs had been laid very early in April.

67. **Plectrophenax nivalis nivalis** (Linnæus). SNOW BUNTING.— Irregular winter visitant; Oct. 28 to March 18. Most of the flocks so far observed of this interesting Bunting have been small ones, consisting of from eight to twenty birds, the only exception being on Jan. 2, 1913, when one which must have numbered well over a thousand birds paid us a visit and remained in the neighbourhood for the best part of the day.

68. **Pocœcetes gramineus gramineus** (Gmelin). VESPER SPARROW. — Common summer visitant; April 16 to Oct. 12. Average date of arrival (for four years) April 22; of departure (for four years) Sept. 25. Eggs: May 20 to July 15. This sparrow can generally be found nesting in most of the fields, but more especially those that are sparsely covered with grass and weeds. It is not a very abundant breeding species at any time, and during the present season (1915) has really been scarce, only one nest having been located. It is the only sparrow of which I have not yet found a set of 5 eggs, as out of 17 nests examined nearly all contained four eggs, which would appear to be the usual number for this district. At migration times in common with most of the other sparrows it is seen in greatly increased numbers.

69. **Passerculus sandwichensis savanna** (Wilson). SAVANNAH SPARROW.— Fairly common summer visitant; April 16 to Oct. 12. Average date of arrival (for four years) April 25; of departure (for four years) Oct. 7. Eggs; May 24 to July 14. This is the rarest of the breeding sparrows here, only a few pairs nesting in a very restricted area, in fact two fields overlooking the marsh are the only ones in which I have found their nests so far. These in my experience, with one exception, are always well sunk in the ground, the rims being flush with the surface and generally long grass covers the top, which makes them very difficult to locate. Out of ten nests examined two only contained a set of five eggs, and one had

moss in its construction, a somewhat unusual material for this bird to make use of. The bird when flushed from a partly built nest or one containing one or two eggs, invariably deserts it, at least this has been my experience on several occasions.

70. **Zonotrichia leucophrys leucophrys** (J. R. Forster). WHITE CROWNED SPARROW.— Rare transient; Oct. 16. The above date in 1914, is the only one on which I have seen an example of this handsome sparrow. The bird was on a wood pile in my garden and when first noticed had the feathers on the top of the crown erected which drew my attention to it more especially, and forms a minor means of identification when one can catch the bird in the mood. However irrespective of this I had ample time to notice the other marks which separate it from the White-throated species.

71. **Zonotrichia albicollis** (Gmelin). WHITE-THROATED SPARROW.— Common summer visitant; April 23 to Oct. 25. Average date of arrival (for four years) April 29; of departure (for four years) Oct. 16. Eggs: May 25 to July 19. This most aristocratic of sparrows is by no means very plentiful, although a pair can generally be found in most suitable openings in the woods. The nest is quite distinct from that of the other sparrows breeding here, being a larger and more substantial structure, and generally in my experience having skeleton leaves as part of the foundation, and green moss in the outer rim, the latter never being absent, and forming an invariable clue to the owner.

The average dimensions of nine nests are as follows, viz.: outside diameter $4\frac{2}{3}$, inside $2\frac{1}{2}$ inches; outside depth $2\frac{2}{3}$, inside 2 inches. Out of 20 nests examined only 3 contained a set of 5 eggs, 4 being the general number. Like the Savannah it is a particularly sensitive bird and flushing it from an incompleted nest or one containing one or two eggs, generally results in its being abandoned. I have heard two of these sparrows singing as late as September 25 at six o'clock in the evening.

72. **Spizella monticola monticola** (Gmelin). TREE SPARROW.— Fairly common transient, April 22, Oct. 4 to Nov. 13. Avérage date of arrival (for two years) Oct. 14; of departure (for two years) Nov. 10. It was not until October 4, 1914, that I first noticed one of these little sparrows, and then no more were seen until the end of the month, when they became fairly common in the cat-tail beds in the marsh, on the heads of which they were fond of perching in contrast to the elusive ways of the Swamp and Savannah Sparrows, whose one object in life seems to be to keep out of sight. On the date in April of the present year, 1915, only two examples were seen, but during the fall migration they have been far more plentiful than last year.

73. **Spizella passerina passerina** (Bechstein). CHIPPING SPARROW. — Common summer visitant; April 20 to Oct. 12. Average date of arrival (for five years) April 24; of departure (for four years) Oct. 6. Eggs: May 22 to July 17. This small sparrow can usually be found nesting not only round every farm house, but generally all over the country side. Curiously enough the first nest I ever found contained a set of six eggs, a

very unusual number, and one I am not likely to duplicate, and this remark applies also to one of three eggs, which to all intents and purposes are all immaculate. In addition to these out of 43 nests examined I have found three sets of five, which are uncommon, four and three being the most general number and about equally divided.

74. **Junco hyemalis hyemalis** (Linnæus). SLATE-COLORED JUNCO.— Common summer visitant; abundant transient; April 1 to Nov. 13. Average date of arrival (for four years) April 6; of departure (for four years) Nov. 11. Eggs: May 20 to July 17. If only one tenth of the birds seen at the spring migration stayed behind to breed they would more than equal the Song Sparrow in abundance. As it is, only a limited number of pairs remain as a rule, but during the present season (1915) quite a change has taken place, more pairs being noted and nests located than ever before. Out of a total of 21 nests examined only three contained a set of five eggs, and all were on the ground with the exception of one which was ten inches up in a cedar bush.

75. **Melospiza melodia melodia** (Wilson). SONG SPARROW.— Abundant summer visitant; April 1 to Nov. 8. Average date of arrival (for five years) April 8; of departure (for four years) Nov. 1. Eggs: May 17 to July 29. This is certainly the most abundant sparrow here. Their nests are invariably placed on the ground in this locality, only four having been found in low bushes from two to six feet above the ground, one in May and the others in June and July, these latter evidently being second or third broods. This sparrow would appear to lay five eggs in a set more generally than four, as out of sixty-two nests examined, 32 contained sets of five as against 20 of four.

76. **Melospiza georgiana** (Latham). SWAMP SPARROW.— Fairly common summer visitant; April 9 to Oct. 25. Average date of arrival (for four years) April 20; of departure (for four years) Oct. 23. Eggs: May 23 to June 14. This sparrow although it can generally be found in a few favoured localities is not by any means very plentiful (except at the fall migration) and during 1914 was really scarce, careful searching only revealing one nest as against three or four of previous years. In the case of the Song Sparrow the number of nests containing five eggs was just over fifty per cent, with this species it is just a little under, as out of twelve nests examined five contained the full complement only.

77. **Passerella iliaca iliaca** (Merrem). FOX SPARROW.— Rare transient; Oct. 16, Nov. 5. The above dates in 1914 are the only ones on which I have observed this large and handsome sparrow, and then only one example was seen on each occasion.

78. **Zamelodia ludoviciana** (Linnæus). ROSE-BREASTED GROSBEAK.— Rare summer visitant; May 24 to Sept. 2. Eggs: May 31. The Rose-breasted Grosbeak is decidedly a rare breeding bird about here, only one nest and eggs having been so far located in five years. This was a frail affair placed in a small tree about six feet above the ground at the side of a much frequented road, and contained three eggs upon which the

male was sitting. In addition to this bird, only fourteen other examples have been seen, two each in May and July, nine in August and one in September. In connection with the peculiar and interesting distribution of this bird in Maine and the suggestion of the late Mr. Ora W. Knight in his 'Birds of Maine' 1908, p. 441, that the northern representatives of the species enter the State from the west and pass across it by some regular migration route; and also the previous surmise of the late Mr. Henry A. Purdie (Amer. Naturalist, Vol. 3, 1869, p. 331) that some birds not common on the central and southern Maine coast may reach the northeastern coast of Maine by the St. Lawrence and Maine Central water route, I would here like to venture the opinion that if this is so, the birds enter Maine from the west and the St. Lawrence, by way of the river St. Francis, the following of whose course would eventually bring them in the vicinity of Lake Megantic at which place or near abouts they probably enter the State of Maine. Much further study however will be necessary before this interesting problem can be solved, but in the meantime I feel sure that apart from this theory the river St. Francis as already suggested elsewhere, does form a minor if not a principal highway of migration for birds passing through Hatley.

79. **Passerina cyanea** (Linnæus). INDIGO BUNTING. — Rare summer visitant; June 22 to June 27. Eggs: June 27. This is another rare breeding bird, only a pair having been seen and their nest located in five years. This was placed in a small shrub about four feet above the ground at the side of a little frequented road, and contained the remarkably small set of two eggs only. I found the nest soon after it was commenced and had it under observation every day, not taking the eggs until incubation had been advanced a few days. It was not until the nest was completed on June 22 that I became aware of the owners, never having been able to catch either of them near the site when I had visited it previously. The female was very secretive in her manner never rising above the underbrush. If it had not been for the location I could almost have assigned the nest in the first instance, as belonging to an Alder Flycatcher; which in outward appearance it greatly resembled.

80. **Piranga erythromelas** (Vieillot). SCARLET TANAGER. — Rare transient; May 15 to June 1. I have only seen four examples of this handsome bird in five years, a male and female in June, 1912, and two males in May of the present year, 1915.

81. **Petrochelidon lunifrons lunifrons** (Say). CLIFF SWALLOW.— Common summer visitant; May 6 to Sept. 1. Average date of arrival (for four years) May 12; of departure (for three years) Aug. 29. Eggs: June 2 to 21. The Cliff Swallow is plentiful at all times especially during the fall migration. As a summer resident it probably comes next to the Barn Swallow as regards numbers, and its gourd shaped nests can be found crowded together under the eaves of large barns or warehouses. One nest I found had two entrance holes, one on each side, the neck in each case being very flat and short, thus leaving a clear passage right through the top of the nest.

82. **Hirundo erythrogaster** (Boddært). BARN SWALLOW.— Common summer visitant; April 25 to Sept. 7. Average date of arrival (for four years) May 1; of departure (for three years) Sept. 6. Eggs: June 4 to July 10. This is probably the most common swallow here at all times, especially where there are plenty of the old-fashioned barns and open outbuildings, to which the swallows have easy access. As the more modern barns increase with their greater tightness and difficulty of entrance, I presume this swallow will show a falling off in numbers, unless they take more to building under the outside eaves.

83. **Iridoprocne bicolor** (Vieillot). TREE SWALLOW.— Fairly common summer visitant; April 19 to Sept. 7. Average date of arrival (for four years) April 24; of departure (for three years) Aug. 30. Eggs: June 7 to 19. In my experience the nesting site here is generally some small cavity in the eaves or cornices of farm buildings, but I have found it also nesting in deserted Woodpeckers' holes in birch trees overhanging a pond. Unless at migration times, it is not nearly so numerous as the Barn and Cliff Swallows, but probably at those times equals, if it does not exceed, them in numbers.

84. **Riparia riparia** (Linnæus). BANK SWALLOW.— Fairly common summer visitant; May 6 to Aug. 30. Average date of arrival (for two years) May 11; of departure (for two years) Aug. 22. Eggs: June 3. It was not until the summer of 1914 that I came across a small colony of these birds, which were nesting in the bank of a little stream at the south end of Massawippi village, and again this year two or three pairs were found as well at another spot on the roadside (previously unoccupied) about half a mile from the first, so that it looks as though the species were extending their area of operations in that locality, the soil of which is more of a sandy nature than round here. Some of the nesting holes that I examined extended two feet into the bank.

85. **Bombycilla cedrorum** (Vieillot). CEDAR WAXWING.— Fairly common summer visitant; (April 10, 23) May 27 to Sept. 5. Average date of arrival (for four years) May 31. Eggs: June 15 to July 22. Previous to the year 1914 Cedar Waxwings had been quite an uncommon bird, but during the past two years have been fairly plentiful. The earlier date in April is for a single only, and the later for a flock of 19 (the largest I have seen so far) both for the present year 1915. They are fond of hawking over the marsh taking their food after the manner of a Kingbird. A pair built their nest in a small fir tree quite close to the verandah of my house, and it was most interesting to watch their lovable ways.

86. **Lanius borealis** (Vieillot). NORTHERN SHRIKE.— Rare transient; Nov. 3, Dec. 11. The above dates in November, 1913, and December, 1915, are the only ones on which I have observed this bird, and to make identification sure I shot the example in November, and the skin is now in my collection. I have since been informed that a bird, which from the description given, I take to be one of this species, was seen killing an English Sparrow on Nov. 24, 1914.

87. **Lanius ludovicianus migrans** (W. Palmer). MIGRANT SHRIKE. — Rare summer visitant; April 13 to Sept. 10. Average date of arrival (for two years) April 20; of departure (for two years) Sept. 4. Eggs: May 21. I have only seen this shrike on very few occasions, and then with one exception not within three miles of Hatley. In the spring of 1913 I located a nest near Massawippi in an old apple tree quite close to the road, which contained young birds. On visiting the locality again the following spring another nest was found containing five eggs also in an apple tree, and within thirty yards of the previous one, and these two are the only records I have, as the birds could not be found in the locality this year.

88. **Vireosylva olivacea** (Linnæus). RED-EYED VIREO.— Common summer visitant; May 20 to Sept. 10. Average date of arrival (for four years) May 24; of departure (for two years) Sept. 10. Eggs: June 11 to July 22. This is certainly the most abundant of the Vireos, although since 1912 when nests of the two rarer species the Yellow-throated and Blue-headed were found, and this and the Warbling Vireo were more than usually plentiful, it has really been scarce, no more than three nests having been located during the past two years, whereas in 1912 one could hardly go out for a walk without finding one or two. This and the Yellow Warbler are the only birds that I have found victimized by the Cowbird, the one nest found this year containing a young Cowbird and one addled egg of the owner only.

89. **Vireosylva gilva gilva** (Vieillot). WARBLING VIREO.— Fairly common summer visitant; May 20 to Aug. 20. Average date of arrival (for four years) May 24; of departure (for two years) Aug. 17. Eggs: June 13. This Vireo can generally be found nesting in the woods as well as in shade and apple trees in orchards, for which latter it seems to have a special liking. A pair have nested for three years in succession in an orchard near my house, twice in an apple tree and once in a maple, but during the present season, 1915, I have only observed the species at migration times.

90. **Lanivireo flavifrons** (Vieillot). YELLOW-THROATED VIREO.— Rare summer visitant; May — to Aug. 13. Eggs: June 24. I have only come across one nest of this species so far in 1912, which like that of the Blue-headed was a handsome affair, suspended from a forked branch of a beech tree nine feet above the ground, and contained four quite distinctive eggs, the spots being much larger and browner on three of them, than is usual in Vireos' eggs, whilst the fourth is immaculate, the average size of the set being .81 × .60. I can give no specific date of arrival in 1912 nor have I seen it since except in the fall of the present year 1915 when a number were observed on August 13 migrating in company with the Warbling Vireo.

91. **Lanivireo solitarius solitarius** (Wilson). BLUE-HEADED VIREO. — Rare summer visitant; May — to ——. Eggs: June 26. Only a pair of this handsome species has been noted so far and their nest located in 1912. This latter was an elegant structure suspended in the forked

branch of a cedar tree six feet above the ground. It contained a full set of four eggs somewhat heavier marked and larger than those of the Red-eyed, their average size being .82 × .58. The birds were not at all shy and kept in the immediate neighbourhood of the nest on several occasions when I visited it. I am unable at present to give any specific date of arrival or departure, not having observed the birds at those periods.

92. **Mniotilta varia** (Linnæus). BLACK AND WHITE WARBLER.— Fairly common summer visitant; May 4 to Sept. 10. Average date of arrival (for four years) May 6; of departure (for three years) Sept. 5. Eggs: June 4 to 9. This tree creeping little warbler is more plentiful at migration times than in the summer, only a limited number of pairs remaining to breed. Of the three nests I have succeeded in finding so far, one was hidden away in a small hollow under a fallen tree trunk, another was placed at the foot of an alder sapling, and the third was in the upturned roots of a fallen tree three feet above the ground. They were all composed of dry leaves, moss and strips of bark, heavily lined with long black and white horse hairs, the average dimensions of the three being: outside diameter $3\frac{3}{4}$, inside $1\frac{3}{4}$ inches; outside depth $2\frac{1}{4}$, inside $1\frac{1}{2}$ inches; the second nest contained a rare set of six eggs, one of which was wreathed at the smaller end, the third a full set of five, and the first was either robbed or abandoned as I never found any eggs in it.

93. **Compsothlypis americana usneæ** (Brewster). NORTHERN PARULA WARBLER.— Rare summer visitant; May 14 to June 26. Eggs: June 5 to 26. The present year (1915) has certainly been a warbler one, and this may account for my good fortune in finding two nests of this charming and smallest of warblers, in a district where usnea lichen does not abound, and where at all events the bird must be rare at any time. Certainly I have failed to notice it in previous years in the only swampy wood where *usnea longissima* hangs in long festoons from a very limited number of trees. Here the two exquisite little nests were found both in fir trees, the first some thirty-five feet up, and the second about twenty-five feet, both pensile, attached to long streamers of usnea, and composed almost entirely (especially the latter one) of this lichen, only a very little plant down, fine red rootlets and hair being used as a lining, and containing four and three eggs respectively. The average dimensions of the two are as follows, viz: outside diameter $2\frac{3}{4}$, inside $1\frac{1}{2}$ inches; outside depth $2\frac{7}{8}$, inside $2\frac{1}{8}$ inches. As only a pair of birds were located at any one time, and seeing that the construction of both nests are similar, and the date of the second one somewhat late, I have come to the conclusion that it contained the second set of eggs from this one pair of birds. This nest (which was situated just sixty yards from the site of the first one) with the branch it was attached to, I have presented to the Victoria Memorial Museum at Ottawa, where I hope it will eventually give pleasure to innumerable bird lovers, who have not the opportunities of viewing such works of art in their natural surroundings. After the taking of this nest the birds were not seen again, nor did the fall migration produce any.

94. **Dendroica æstiva æstiva** (Gmelin). YELLOW WARBLER.— Irregular summer visitant; May 9 to Aug. 17. Average date of arrival (for four years) May 14. Eggs: May 31 to June 30. It seems strange to have to apply the term irregular to such a common and generally distributed warbler, nevertheless the following facts seem to justify the epithet. During the summer of 1911 only one pair of birds were seen and afterwards found nesting. In 1912 not a single one was observed, and the year following only one male was seen, and one nest located. In 1914 five males and three females were seen and three nests located, and the same number were found during the present year, one of which contained the Cowbird's egg already referred to. This nest was five feet up in a small fir and when found on June 27 contained the Cowbird's egg, and four of the owner, one of which had been built over by the Warbler, no doubt in mistake for the Cowbird's. On this date I removed the egg of the Cowbird, and also raised up the built over one of the Warbler, and concluded as the female had begun to sit she would go on doing so. Judge of my surprise when visiting the nest three days later to find that the Warbler had not only laid another egg, but had replaced the one in the hole I had removed it from, and had also embedded another at the side of it, and was sitting on three eggs only, surely a unique occurrence. I have the nest which is a perfect two storied one, and shows the two holes in which the owner's eggs fit, and when there only the tops are visible. The height of the eight nests found varies from three to twelve feet above the ground, two contained a full set of five eggs, one three, and the remainder four, the average dimensons being, outside diameter $2\frac{5}{8}$ ins., inside $1\frac{5}{8}$ ins.; outside depth $2\frac{1}{2}$ ins., inside $1\frac{3}{8}$ ins. In the "Ottawa Naturalist" for November, 1904, Mr. L. M. Terrill writing of the status of this bird at Bury some 35 miles northeast of here, says: "The Yellow Warbler, one of the most common summer residents in Montreal was notable by its absence, as I did not see a single specimen either as summer resident or migrant." Mr. Terrill's experience seems to bear out my own, and would appear to indicate that in this southeast corner of the Province, the bird is not nearly so plentiful as it is at Montreal and elsewhere, where large river valleys exist.

95. **Dendroica cærulescens cærulescens** (Gmelin). BLACK-THROATED BLUE WARBLER.— Rare summer visitant; May 14 to Sept. 10. Average date of departure (for two years) Sept. 6. It was not until the fall of 1914 that I became acquainted with this handsome and sleekly groomed bird. At that time only two examples were observed, but during the present year (which I have already remarked has been a great warbler one) several were seen from May to September, including a singing male on June 23, together with a female, which latter was flushed from some dense underbrush nearby, but no nest could be found, although from the actions of the birds, I am sure it could not have been so far off. On the above data I have ventured to include it as a rare breeding visitant more common during migration times.

96. **Dendroica coronata** (Linnæus). MYRTLE WARBLER.— Rare

summer visitant; abundant transient; April 26 to Oct. 16. Average date of arrival (for four years) May 1; of departure (for four years) Oct. 13. Eggs: May 27 to June 18. Of all the warblers at migration times this is the most abundant and during the fall of 1914 it was more numerous than ever, being found in small parties in almost every conceivable place. In the spring the greater bulk pass further north, only a very limited number remaining to breed. Of the five nests that have come under my notice, all were situated in small fir trees close to the trunk from three to six feet up, and were composed externally of fine fir twigs and grass stems, lined inside with horse hair, and a good supply of feathers from various small birds. This feather lining which is usually present forms an interesting feature of these nests in as much as in some cases, the bases of the feathers are imbedded in the bottom of the nest, with the tips protruding above, thus forming a kind of little canopy over the nest. So pronounced was this in one case, where the smaller feathers of a Blue Jay had been used that I could not see the contents, until some of the tips had been put on one side. Unfortunately this interesting nest was destroyed after two eggs had been laid, the other four containing four young birds, one set of five, and two sets of four eggs respectively, the average dimensions of the nests being: outside diameter $3\frac{1}{2}$ inches, inside 2 inches; outside depth $2\frac{1}{2}$ inches, inside $1\frac{1}{2}$ inches.

97. **Dendroica magnolia** (Wilson). MAGNOLIA WARBLER.— Fairly common summer visitant; May 9 to Sept. 7. Average date of arrival (for four years) May 19; of departure (for three years) Sept. 5. Eggs: June 5 to 15. This warbler is not nearly so plentiful at migration times as the Myrtle, but the number of pairs remaining to breed exceed those of the latter bird. Of the six nests I have found so far all were in small firs from one foot three inches to nine feet up, saddled on to the branches, in one case close to the trunk, in the others from a few inches to two feet away. They were all composed of dry grasses held together by what look like little balls of some brown or white woolly substance, usually heavily lined inside with long black horse hairs, and fine red rootlets, the average dimensions being: outside diameter $3\frac{1}{4}$, inside $1\frac{3}{4}$ inches; outside depth 2, inside $1\frac{1}{4}$ inches. One contained four young birds, another a set of three, and the remainder sets of four eggs each.

98. **Dendroica pensylvanica** (Linnæus). CHESTNUT-SIDED WARBLER. — Fairly common summer visitant; May 16 to July 20. Average date of arrival (for two years) May 20. Eggs: June 6 to 25. It was not until the spring of 1914 that I noticed this dainty little Warbler, and then only two pairs were located. The present season however has been more productive, double the number having been found breeding. Of six nests located so far, three were on the roadside the others in second growth on the outskirts of woods, one being within four feet of a Black-billed Cuckoo's nest, which somewhat weighs against the recent statement of a writer in 'The Oölogist' that one need never look for anything in the vicinity of a Cuckoo's nest, owing to their habit of eating the eggs and young of other

birds, which propensity however, does not seem to be altogether generally admitted. All were in forks of low bushes at a height of from a foot and a half to three feet and a half above the ground, and were composed in some cases of dry grasses and fir twigs, held together by spiders silk, and lined with black and white horse hair and fine red rootlets, in others the fir twigs were absent, grasses and strips of birch bark being used, with fine grasses and rootlets as a lining, sometimes fine grasses only. Five contained sets of four eggs each, the remaining one a set of three, the average dimensions being: outside diameter 3, inside $1\frac{3}{4}$ inches; outside depth $2\frac{3}{4}$, inside $1\frac{1}{4}$ inches. I have no fall records, the last bird seen in 1914 being on June 25 and in 1915 on July 20.

99. **Dendroica castanea** (Wilson). BAY-BREASTED WARBLER.— Rare transient; May 29; Aug. 27 to Sept. 9. Average date of departure (for two years) Sept. 3. The above date in May of the present year (1915) is the only one on which I have seen an adult pair of these birds in breeding plumage. In September, 1914, three males were seen, and this fall six were observed in August making a total of eleven birds only for the past five years.

100. **Dendroica fusca** (Müller). BLACKBURNIAN WARBLER.— Rare summer visitant; May 14 to Aug. 23. Average date of arrival (for two years) May 17; of departure (for two years) Aug. 17. It was not until the spring of last year, 1914, that I had the satisfaction of seeing a pair of this exceedingly handsome warbler on the outskirts of a large wood, and later on in the fall a single male. The present great warbler year however, has brought different results, 23 examples being seen in May, besides the locating of two pairs all through June, which were undoubtedly breeding, but whose nests I failed to discover, notwithstanding presistent watching and searching. The male spends most of his time singing and darting about in the tops of the tall fir and hemlock trees, and in a somewhat dense growth of these it is by no means an easy task to follow him or his mate to the nesting site.

101. **Dendroica virens** (Gmelin). BLACK-THROATED GREEN WARBLER.— Fairly common summer visitant; May 11 to Sept. 10. Average date of arrival (for four years) May 18; of departure (for two years) Sept. 6. This is not a particularly abundant warbler at any time, and only quite a limited number of pairs remain to breed. With regard to the finding of its nest and eggs, luck has been against me all along, for notwithstanding the fact that I have seen the female with food and building material in her beak on one or two occasions, I have never been able to follow her to the site of the nest. Searching high up and low down in firs, pines and hemlocks has brought no results except one vacated nest nine feet up in a fir which differed slightly in its construction from any other warbler's nest I have found, and which I feel sure belonged to this species, as I had seen a pair of birds about the locality earlier in the season. At Bury 35 miles to the northeast of Hatley, the species would seem to be more plentiful according to Mr. Terrill's experience, see 'Ottawa Naturalist' for November, 1904.

102. **Dendroica vigorsi** (Audubon). PINE WARBLER.— Rare transient; Aug. 27 to Sept. 7. Average date of departure (for two years) Sept. 5. This is a warbler which seems to have escaped my notice during the spring migration, in fact it was not until last fall that I came across it at all and then only two specimens were seen; and three more during the same period of the present year, 1915, although more persistent searching may prove it to be more plentiful than would appear from the above records. The great migration route is through the Penobscot Valley in Maine, some 160 miles or more to the east of Hatley, but even there comparatively few remain to breed. It is a busy little searcher after food, creeping in and out amongst the leaves, and at migration times can be found almost anywhere in the woods, and not necessarily in pine groves, at least that is my experience.

103. **Dendroica palmarum hypochrysea** (Ridgway). YELLOW PALM WARBLER.— Rare transient; May 4. The above date in 1912, is the only one on which I have had an opportunity of observing this warbler, and then only one example was seen, but so near was I to the bird that there was no chance of confusing it with the Palm Warbler, as the reddish brown or rufous breast streaks were plainly visible.

104. **Seiurus aurocapillus** (Linnæus). OVENBIRD.— Fairly common summer visitant; May 11 to Sept. 10. Average date of arrival (for two years) May 14; of departure (for two years) Sept. 10. Eggs: June 23 to July 7. Although most of the woods contain a pair or more of these birds, I have only been able to locate three nests so far, two in June, one of which contained a set of 4 eggs, the other being destroyed after one egg had been laid, and the third in July containing 3 eggs, no doubt a second set. All three were on the ground at the foot of little bramble or other shoots and ferns, and were arched over. They were composed of moss, leaves, and grasses, lined inside with skeletonized leaves, fine grasses, rootlets and a few long horse hairs, the average dimensions of two being; outside length 5, inside $2\frac{3}{4}$ inches; outside depth $4\frac{3}{4}$, inside 3 inches; height $5\frac{1}{4}$ inches; entrance hole $2\frac{1}{4} \times 2$ inches.

105. **Geothlypis trichas trichas** (Linnæus). MARYLAND YELLOWTHROAT.— Common summer visitant; May 12 to Sept. 9. Average date of arrival (for four years) May 20; of departure (for three years) Sept. 7. Eggs: June 8 to July 19. Although this is a somewhat plentiful little warbler, its nest is by no means very easy to find, being well hidden away amongst the grass at the foot of some small bush, or in the midst of a tuft of long grass, surrounded with water. Of the five found so far three contained sets of three, and two sets of four eggs each. All were somewhat bulky being composed of dry leaves and coarse grasses with sometimes a little bark, the inside being lined with finer grasses and perhaps a few horse hairs, the average dimensions being, outside diameter $3\frac{1}{2}$, inside $1\frac{3}{4}$ inches; outside depth $3\frac{1}{4}$, inside $1\frac{1}{2}$ inches. Sets of this species vary a good deal in shape, size, and markings, one I have being very oblong with one egg marked at the small instead of the large end.

106. **Wilsonia pusilla pusilla** (Wilson). WILSON'S WARBLER.— Rare transient; May 21. I have only seen one example of this little black-cap flycatching warbler in five years. This was a male in 1911, which was flitting about in some low bushes near a little stream on the outskirts of a small swampy wood, and not being at all shy I had a very good opportunity of watching it for some time and making sure of its identity.

107. **Wilsonia canadensis** (Linnæus). CANADA WARBLER.— Fairly common summer visitant; May 16 to Aug. 26. Average date of arrival (for two years) May 20; of departure (for two years) Aug. 19. Eggs: June 9 to 12. The finding of this elegant little warbler's nest is by no means an easy matter, and I consider myself lucky in having located two so far, the first of which was neatly hidden away under the fallen branch of a tree amongst a tangle of rich vegetation on the outskirts of a cool damp wood. The second was in similar surroundings, but at the foot of an alder sapling, and both contained a beautiful full set of five eggs. They were composed of dry leaves, strips of bark, moss and coarse grasses, lined inside with finer grasses and long horse hairs, the average dimensions being: outside diameter $4\frac{1}{8}$, inside $1\frac{3}{4}$ inches; outside depth $3\frac{1}{8}$, inside $1\frac{1}{2}$ inches. Last year I only saw three examples of this warbler, but during the present (1915) spring migration I counted ten examples at various times during May, besides locating three breeding pairs in June.

108. **Setophaga ruticilla** (Linnæus). AMERICAN REDSTART.— Common summer visitant; May 14 to Sept. 9. Average date of arrival (for four years) May 15; of departure (for two years) Sept. 5. Eggs: June 3 to 13. This gay and charming little warbler is to be found in most of the woods especially those of a damp nature. Here I have generally found its nest in the crotch of a willow or alder sapling from 7 to 15 feet above the ground. It is a very compact affair composed of grasses, strips of bark, plant fibres and spiders webs woven together into a cup shape, and lined inside with fine grasses, rootlets and long horse hairs, and in two cases a few feathers were added. The average dimensions of five nests are: outside diameter $2\frac{5}{8}$, inside $1\frac{1}{2}$ inches; outside depth 3, inside $1\frac{1}{2}$ inches. Eggs vary considerably in size, one very beautiful set I have, besides being very small is heavily wreathed right round the centre of each egg.

109. **Dumetella carolinensis** (Linnæus). CATBIRD.— Fairly common summer visitant; May 23 to Sept. 18. Average date of arrival (for four years) May 26; of departure (for two years) Sept. 13. Eggs: June 21 to July 17. The Catbird is not very plentiful either during the summer or at migration times, and during the present season, 1915, I have not found a single nest and have seen very few birds.

110. **Nannus hiemalis hiemalis** (Vieillot). WINTER WREN.— Fairly common summer visitant; April 20 to Oct. 21. Eggs: June 9. This little wren is generally more plentiful at migration times, but as a breeding species is decidedly restricted, one nest only having been located so far. This was found by flushing the bird from a small decayed stump (in the damp low lying part of a hilly wood) in a cavity of which the nest

of moss and leaves lined with feathers was neatly secreted, the hole in the side being the only indication of its whereabouts, so well did it harmonize with its surroundings. It contained five eggs faintly marked with reddish spots, incubation somewhat advanced. On a late date in June of the present year (1915) I saw two family parties, quite a pretty sight, and there is no doubt that this has been the most productive year of the past five.

111. **Certhia familiaris americana** (Bonaparte). BROWN CREEPER. — Fairly common transient; April 24 to May 6; (Aug. 13) Sept. 23 to Nov. 12. Average date of arrival (for four years) April 28; of departure (for three years) Nov. 1. This restless little bird is by no means plentiful and I have never seen more than two individuals together. The early date in August is for a single seen this year, 1915. I do not suppose a bird could be found whose habits whilst seeking its food are more like a piece of machinery, as starting from the foot of a tree he winds his spiral way to the top and then down he flies to the foot of another and repeats the process hour after hour. Writing in the 'Ottawa Naturalist', Vol. 17, 1903, Mr. Terrill gives an interesting account of finding a nest of this species at Robinson, a village some thirty miles to the northeast of Hatley, so it is just possible the bird may summer here on rare occasions.

112. **Sitta carolinensis carolinensis** (Latham). WHITE-BREASTED NUTHATCH.— Common resident. The White-breasted Nuthatch is far oftener seen during the fall and early winter months than at any other time. So far I have been unable to locate a nest probably owing to the bird's habit of frequenting the larger and deeper woods, during the breeding season, where it is hard to follow them.

113. **Sitta canadensis** (Linnæus). RED-BREASTED NUTHATCH.— Fairly common transient; May 6 to 21; (June 26); Aug. 8 to Nov. 28, (Dec. 25). Previous to the present year, 1915, I had only seen four examples of this bird, two in May, 1912, and one each in August and September of 1914, the year 1913 producing none at all. However this year things have changed entirely and the bird has been met with commonly in small parties of five or six or singly from August to the end of November, the date in December being for a pair only. The status of the bird at Bury, a village some thirty-five miles to the northeast of Hatley, appears to be entirely different, for there Mr. L. M. Terrill speaks of it as a common permanent resident and mentions flocks consisting of as many as 75 individuals. Possibly the summer date of June 26 may indicate that a pair at least have bred here this season. It is more often seen at the top of some tall fir tree feeding on the seeds of the cones, than running up and down the tree trunks like its near relative the White-breasted Nuthatch.

114. **Penthestes atricapillus atricapillus** (Linnæus). BLACK-CAPPED CHICKADEE.— Common resident. Eggs: May 14 to June 1. The Chickadee is certainly more numerous during the fall and spring, than it is in the summer. I have generally found its nest in decayed stubs within two or three feet of the ground, the usual number of eggs being from five to seven, and on one occasion nine. Whilst out shooting one day a Chick-

adee flew down from a nearby tree and perched right on the end of the barrels of my gun (which at the moment I was resting on my hip) where it remained for a minute or so surveying me with evident interest and curiosity. As regards the so called love note or nesting song a high whistled " Phe-be," I can only say that I have heard the birds utter it during nearly every month in the year, so that if it is a love note which I don't dispute, it is certainly not peculiar to the nesting season alone, as some I believe imagine.

115. **Penthestes hudsonicus littoralis** (Bryant). ACADIAN CHICKADEE.— Rare transient; April 20. Always on the lookout for this form of the Chickadee it was not until the above date of the present year, 1915, that I had the pleasure of making its acquaintance, on a fir clad slope at the edge of a rather large and damp wood. There were only a pair of birds which I followed about and watched for the best part of half an hour, during which time they gave me many chances of thoroughly identifying them. Their notes are certainly somewhat different and weaker than those of the Black-capped Chickadee and it was this difference that first drew my attention to them. Many times I visited the spot during the next few weeks but never saw them again. Mr. L. M. Terrill writing in the 'Ottawa Naturalist', Vol. 17, 1903, gives an interesting account of a nest he found of the Hudsonian [presumably Acadian?] Chickadee at Robinson, a village some 30 miles to the northeast of Hatley, so that it seems within the bounds of possibility that it may be found breeding here also some day.

116. **Regulus satrapa satrapa** (Lichtenstein). GOLDEN-CROWNED KINGLET.— Common transient; April 16 to 21; Sept. 17 to Nov. 28 (Dec. 25). The fall is the time when these elegant little birds are most generally to be found in small flocks frequenting the tops of fir trees more especially, from which they make sudden darts, returning to the tip of some branch, where on quivering wings after the manner of a hummingbird, they abstract some minute insect. At Robinson, a village thirty miles to the northeast of Hatley, Mr. L. M. Terrill in December of 1908 and 1909 saw several flocks daily and says that apparently they are the most common birds there at that season. The above date in December of the present year, 1915, is for a pair of birds only.

117. **Regulus calendula calendula** (Linnæus). RUBY-CROWNED KINGLET.— Fairly common transient; May 2 to 13; Sept. 18 to Oct. 21. This delicate and sober hued little gem is by no means as plentiful as the previous one, and in my experience has oftener been seen nearer the ground in thick undergrowth than in the tree tops. There is something fascinating to me in the eye of this species, which no doubt owing to the whitish eye ring, looks very large and expressive for such a small bird.

118. **Hylocichla fuscescens fuscescens** (Stephens). VEERY.— Fairly common summer visitant; May 12 to Aug. 8. Average date of arrival (for two years) May 13. Eggs: June 2 to 15. This is by no means an abundant bird here, only five nests having been located during the past two years, as against about three times this number of the Hermit Thrush. Of the above five nests, all were placed as usual near the ground

in damp situations, except one which must form almost a record, it being 10 feet up in a fir tree close against the trunk. The eggs in my experience are just a little smaller and darker if anything than those of the Hermit Thrush, and the nests are somewhat distinctive in that the lining has always consisted of dry leaves and rootlets, as against grasses and rootlets in those of the latter, which are also placed in drier situations.

Since writing the above I find Dr. Townsend in his book "Birds of Essex County" quotes an instance in 1878 of a nest having been found at the extraordinary height of 25 feet above the ground.

119. **Hylocichla ustulata swainsoni** (Tschudi). OLIVE-BACKED THRUSH.—Rare summer visitant; May —, to Sept. —. Eggs: June 11. On the above date in June, 1914, I came across a nest of this species in a small maple sapling 9 feet above the ground, containing three eggs upon which the female was sitting. The nest was composed of coarse rootlets, fir twigs and dry leaves, and lined inside with fine grasses and black rootlets. I can give no specific date of arrival or departure, never having seen the bird except on the above occasion.

120. **Hylocichla guttata pallasi** (Cabanis). HERMIT THRUSH.—Common summer visitant; April 21 to Nov. 13. Average date of arrival (for four years) April 24; of departure (for two years) Nov. 6. Eggs: May 18 to July 3. This beautiful songster is without a doubt the thrush of the district, although there are years when it is not so plentiful as others. Their nest in my experience is invariably placed on the ground and generally at the foot of some small fir or hemlock tree whose lowest branches touch the ground, and form a good cover, the only exception to this being one that was built four feet up in a small fir tree, close to the trunk and which contained 3 fresh eggs on June 26 of the present year, 1915. I have already referred to the difference in construction of nest and size of eggs etc., to the Veery under the heading of that bird.

121. **Planesticus migratorius migratorius** (Linnæus). ROBIN.—Abundant summer visitant; March 24 to Oct. 24 (Nov. 12). Average date of arrival (for five years) April 1; of departure (for four years) Oct. 10. Eggs: May 14 to July 26. As a rule all the Robins have disappeared by the end of September, the late date of Nov. 12 being for a single specimen only in 1914. Sets of five eggs are decidedly rare as I have not come across one during the past five years although I have examined some 68 nests with this object in view. Robins here are particularly fond of using pearly everlasting (*Anaphalis margaritacea*) in the foundations of their nests, which have been found in almost every conceivable place, but only once actually resting on the ground under a projecting ledge of rock on a sloping hillside. A pair of birds have built their nests for two successive years in a small fir tree near my house, and have reared two broods each season in the same nest. Is it merely a coincidence that when specially on the lookout this year, I noted males on March 24, but no females were seen until April 9, or do the males really precede the females? I can find no reference to the subject in any of my books.

122. **Sialia sialis sialis** (Linnæus). BLUEBIRD.— Common summer visitant; March 24 to Oct. 22. Average date of arrival (for five years) April 8; of departure (for four years) Oct. 15. Eggs: April 27 to July 30. Bluebirds are fairly plentiful here and during the past two years have been more abundant than ever. I once witnessed a pair of these birds drive out a Hairy Woodpecker from a half completed nesting hole it had made, and after gaining possession of it they immediately set to work building a nest which was completed and four eggs laid in the remarkably short space of six days. Is it also merely a coincidence the same as in the case of the Robin that I noticed males on March 24 of this year, but no females until April 5; or do the males of this species also really precede the females, as no mention of it either is made in any of my books?

Synopsis of principal events Years 1911–1915.

1911. Early nesting of Goldfinch June 3, set of 6 Chipping Sparrow's eggs found, also one of 3, all immaculate.

1912. Great Vireo year, Yellow-throated and Blue-headed found breeding, also Indigo Bunting, Scarlet Tanager seen, Pine Grosbeaks plentiful, Red-winged Blackbirds very abundant, Yellow Palm and Wilson's Warblers seen, Hermit Thrush plentiful.

1913. Bartramian Sandpiper found breeding, also Rose-breasted Grosbeak. Evening Grosbeaks seen, Pine Grosbeaks again plentiful. Swamp Sparrows and Black-capped Chickadees nesting more freely than usual.

1914. Woodcock seen, Olive-backed thrush and Veery found breeding, Vireos scarce, Crested Flycatcher plentiful, also Cedar Waxwings, Bobolinks and Myrtle Warblers. Pine Siskins first observed.

1915. Great Warbler year, Northern Parula found breeding, also Prairie Horned Lark, Sora, Cowbird and Blue Jay, Vireos scarce, White-throated Sparrows, Slate-colored Juncos and Hermit Thrush breeding plentifully, Acadian Chickadee, Killdeer and Semipalmated Plovers seen, also Green-winged Teal, Canada Spruce Grouse, Magpie and Canada Jay.

Errata.

Page 69, line 3, for leucomelas read villosus.
" 69, " 3, for Northern Hairy read Hairy.
" 69, " 12, for Northern Downy read Downy.
" 73, " 15, for Common Resident read Resident.
" 73, " 31, for March 10 read March 1.

ADDITIONS TO THE AVIFAUNA OF KERR CO., TEXAS.

BY AUSTIN PAUL SMITH.

IN 'The Auk' for April, 1911 (Vol. XXVIII, No. 2), Mr. Howard Lacey gives a list of 'The Birds of Kerrville, Texas, and Vicinity.' Embodying as it does, the observations of a close student of nature for nearly thirty years, it is a reasonably complete enumeration of the avifauna of the region covered; so that the following notes are merely meant to supplement his article, either by the addition of several species found by the writer; by replacement with forms recently differentiated, of species he has recorded; or by extension of breeding and migration dates.

Ingram (formerly Ingraham) is a small village, situated in the valley of the Guadaloupe River, seven miles due west of Kerrville, and of nearly the same altitude (1675 feet); but the hills in the vicinity of the first named place, rise more abruptly and attain a greater elevation, than near Kerrville; and it is on these higher hills, and the draws that head among them, that the Upper Sonoran marks its eastern extension in Texas. A characteristic plant of this zone is the beautiful 'Wintergreen' or Texas Madrona (*Arbutus texana*); which with the Cedar (*Juniperus mexicana*), constitutes the principal arborescent growth on many of the hilltops. Ingram itself, lies well within the lower Sonoran, as may be inferred from the scattering mesquite growing near by; as well as the Cypress (*Taxodium distichum*) lining the river. It is noteworthy that within sight of this village are several large trees of the American Elm (*Ulmus americana*); also a deciduous *Sophora*, possibly *S. affinis*.

All notes pertain to observations made within a radius of ten miles of Ingram; during a period extending from November 18, 1914, to July 15, 1915. Altogether some 150 forms were recorded from this area.

Querquedula discors. BLUE-WINGED TEAL.— There is little doubt that this teal breeds in the region as it was present throughout June, usually frequenting the small streams tributary to the Guadaloupe.

Pisobia fuscicollis. WHITE-RUMPED SANDPIPER.— Opposite Ingram,

the river broadens out, forming a number of small mud flats; it was there that most of the wading birds were observed. The present species was noted between May 8 and 25 and during most of that period, was the most abundant member of its family.

Pisobia bairdi. BAIRD'S SANDPIPER.— On May 26 a lone individual of this species was recorded; it was in the company of a small flock of Semipalmated Sandpiper.

Pisobia minutilla. LEAST SANDPIPER.— As far as I could ascertain, the Least Sandpiper was much less numerous than the following with which it generally associated. Both species appeared early in May, and remained up to about June 1.

Ereunetes pusillus. SEMIPALMATED SANDPIPER.— This species was quite abundant, considering the limited area suited to its requirements; especially so during the final two weeks of its stay. Neither this nor the preceding three species are listed by Lacey.

Helodromas solitarius cinnamomeus. WESTERN SOLITARY SANDPIPER.— It was the western subspecies of the Solitary Sandpiper that I found occurring. It was present during May but never more than one or two birds were seen in a day, and at all times very shy.

Actitis macularia. SPOTTED SANDPIPER.— Lacey surmises that the Spotted Sandpiper breeds in the region. This is undoubtedly so, as I saw the species up to the day preceding my departure. It was first noted about May 5.

Colinus virginianus texanus. TEXAS BOB-WHITE.— Nests containing sets of 23 and 30 eggs were found. These were in all probability community nests, as the eggs in both followed several types in form and were of considerable difference in size.

Meleagris gallopavo intermedia. RIO GRANDE WILD TURKEY.— There can be little doubt that, at the present time, Wild Turkeys exist in greater numbers in Kerr and adjoining counties than in any other part of Texas. Their abundance may be accounted for, as the result of the encroachment of the Cedar and various species of scrubby oaks upon lands formerly under cultivation or in pasture; to the decrease in numbers of the Armadillo (*Tatu novemcinctum texanum*) which of late years have been much hunted for commercial purposes; and to the enactment of a law limiting the open season and the number that may be killed. During the winter spent in the region several heavy snowfalls occurred. These caused many turkeys to seek open spots in the valleys and along fence rows, often in the vicinity of human habitations, and I recall one flock of seven hunting for several hours within a hundred feet of the building I lived in.

Polyborus cheriway. AUDUBON'S CARACARA.— Seen on several dates during March, usually along the river, but occasionally small streams higher up in the hills.

Strix varia albogilva. TEXAS BARRED OWL.— Although Lacey judges this owl to be a rather common resident, I was able, during my residence, to locate but one, and to hear perhaps one or two others. Evi-

dently the growth existing at the present day along the river is not dense enough to suit its requirements, and it is only in the heavily wooded draws among the hills that it is now found.

Otus asio hasbroucki. RIDGW.— The Screech Owls that breed along the Guadaloupe, and its tributaries, within the limits defined, seem typical of this recently described subspecies. All the examples I collected conform in every particular with the original description (Ridgway, Birds of N. and Mid. Amer., Vol. VI, 694), as compared with *O. a. mccalli;* and when compared with *O. a. aikeni,* are found to have the barrings much heavier, especially on the thighs, as well as in being dichromatic. Two specimens secured during the evening of June 26; one an adult female, and the other an immature two-thirds grown, that was being fed by the old bird, both were in the brown phase of plumage, proving this assertion.

Coccyzus americanus (occidentalis?) CALIFORNIA CUCKOO.— Based upon an examination of the material I collected, the cookoos found along the upper Guadaloupe had better be considered as intermediates. Several males in this series barely average the measurements of typical *americanus.*

Ceryle americana septentrionalis. TEXAS KINGFISHER.— The Texas Kingfisher was rarely observed until a point about three miles above Ingram was reached; but from thence up the river it was fairly common (a pair or two for each mile). Only once did I meet with it along the smaller streams, although the Belted Kingfisher favored these commonly.

Centurus aurifrons. GOLDEN-FRONTED WOODPECKER.— A limited number of this species were resident in the valley, but it rarely ascended into the hills; and then only during the late fall and winter.

Colaptes auratus luteus. NORTHERN FLICKER.— It is apparent that during the winter of 1914–5, an irruption of this Flicker occurred within the region, as Mr. Lacey, in a recent conversation with me, stated that he had never met with *luteus* within Kerr County. I found it present almost throughout the winter, at times outnumbering *C. cafer collaris.* Intermediates between the two were collected.

Nuttallornis borealis. OLIVE-SIDED FLYCATCHER.— I found this species to be a common spring transient, occurring between May 1 and June 1, inclusive. It frequented both stream courses and hillsides.

Empidonax trailli trailli. TRAILL'S FLYCATCHER.— This Flycatcher made its appearance about May 10 and was often observed up to the 21st. It showed the usual partiality for brushy growth fringing streams; perching well within cover of the foliage and as it rarely uttered any note, would have been difficult to detect, had it not been for the fact that it remained in one position but a short time.

Empidonax minimus. LEAST FLYCATCHER.— Recorded as a common transient between May 8 and 25, inclusive. The first individual observed was found perched in a clump of Spanish Oak (*Quercus texana*) on an otherwise barren hilltop. It generally preferred the immediate vicinity of watercourses, but was less prone to seek heavy cover than

trailli; although equally quiet during its presence. Lacey's account does not include this or the preceding species.

Aphelocoma texana. TEXAS JAY.— This very local form keeps well within the Upper Sonoran, except on occasions when it descends to the streams to drink, mostly after dry weather has set in; but it quickly returns to its natural haunt — hillsides covered with a mixed growth of cedar and oak. It was found to congregate in flocks, even during the breeding season which, as Lacey has correctly stated, occupies late March and early April, so perhaps only a portion of its numbers nest annually. The Texan Jay while affecting a varied diet is very fond of the acorns of the Spanish and shin oaks, searching these out and eating them after they have sprouted. Until the plumage of this Jay is much worn, it closely resembles *A. woodhousei*, for the brown on the back is much obscured by a slaty cast in the fresh plumage while many of the adults have the under tail coverts strongly tinged with blue.

Molothrus ater ater. COWBIRD.— Judging from material secured this is the breeding form; but several examples taken in late March and in April possess a heavier, shorter bill than is usual in true *ater;* although seemingly not variety *obscurus*.

Astragalinus tristis tristis. GOLDFINCH.— This common winter visitant was noted as late as April 7 frequently associating in flocks with the following.

Astragalinus psaltria mexicanus.[1] Examination of a large series of adult males from the region shows a uniformity in the intensity of the black on the upperparts. Even examples taken in winter present little evidence of a greenish tinge. Although Lacey considers it as a summer visitant only, I found it throughout my stay. Limited in numbers during most of the winter but of common occurrence after March 1.

Passerculus sandwichensis nevadensis. GREAT BASIN SAVANNAH SPARROW.— The form found commonly wintering was *alaudinus*, as was shown by the identifications made by the Biological Survey. One skin however (taken March 7) was returned labelled *nevadensis*. Savannah Sparrows were present up to April 5.

Ammodramus savannarum bimaculatus. WESTERN GRASSHOPPER SPARROW.— As Lacey seems to consider the Western Grasshopper Sparrow only a winter visitant, it seems worthy of record to give the final date — May 8 — upon which I noted it. This bird was most frequently encountered on hilltops where the cedar was scattered enough to allow grass to grow.

Zonotrichia querula. HARRIS'S SPARROW.— The presence of this distinguished looking sparrow was coincident with the coldest period of the year, or from January 25 to February 5, when small flocks were several times seen.

Zonotrichia albicollis. WHITE-THROATED SPARROW.— Appears to be an uncommon winter visitant. Lacey gives one record only, while I observed at least two in company of various other sparrows, February 6.

[1] The race *mexicanus* is not recognized in the A. O. U. Check-List.

Aimophila ruficeps eremœca. ROCK SPARROW.— I found the Rock Sparrow most numerous during the winter months. It is however, a common resident of the region; much more abundant over a given area than I found either *scotti* in Arizona, or *ruficeps* in California. It keeps closely to heavy brush covering hillsides, or (principally in winter) weedy patches along streams. During the breeding season, males were now and then to be seen, mounted on the topmost branch of a tree, singing in a rather dispirited manner.

Spizella pallida. CLAY-COLORED SPARROW.— The date of departure, given by Lacey for this species, is April 24. I only noted it between May 10 to 13; when a limited number, mostly singly or in pairs, were seen feeding along roadsides.

Spizella pusilla arenacea. WESTERN FIELD SPARROW.— During the winter months this is the prevailing form; it withdraws rather gradually, not finally departing until after the middle of April when *pusilla* alone remains to breed.

Melospiza melodia juddi. DAKOTA SONG SPARROW.— In the list given by Lacey, *melodia* is the name given to the Song Sparrows visiting the region; and it is quite likely that the eastern form does occur though all examples that I forwarded to the Biological Survey were assigned to the variety *juddi*. The species is a common winter visitant, usually found in brush or weeds in vicinity of streams. Departs early, none seen after March 17.

Pipilo erythrophthalmus erythrophthalmus. TOWHEE. — On January 19, the familiar notes of the Towhee, issuing from a plum thicket, drew my attention. The bird being secured, proved to be a female, of large size, and in high plumage. I presume it to be an unusual visitant, as this was the only instance that I met with it, and Lacey makes no mention of it.

Petrochelidon lunifrons tachina. LESSER CLIFF SWALLOW.— There can be little doubt that true *lunifrons* occurs in migration but all examples of this species secured, from the date it was first seen (April 15), seem to be fairly typical of *tachina*. This form is by far the most numerous of the breeding Cliff Swallows. *P. fulva pallida* appears not to occur in the eastern half of the county, being first met with about six miles west of Ingram, where several isolated colonies nest.

Lanivireo solitarius solitarius. BLUE-HEADED VIREO.— I met with the Solitary Vireo on two dates, April 28 and May 17. The single bird observed on the later date, was located by its rich and voluble song, with which I was previously unacquainted.

Vireo atricapillus. BLACK-CAPPED VIREO.— This conspicuously marked species arrived about April 5. Nest-building had begun, a nearly completed one being found April 13. The Black-capped Vireo is sometimes found breeding in proximity to *V. griseus* but generally its choice of nesting site is in its favorite feeding haunts — low shin oak, or dwarf plum thickets, on dry hillsides rarely resorted to by the White-eyed Vireo.

The male *atricapillus* is rather easy to locate by reason of its subdued, though persistent, song; the female however, being of duller plumage and quiet mien, is less likely to be met with, and when incubating can almost be touched before leaving the nest.

Vermivora celata celata. ORANGE-CROWNED WARBLER.— The Orange-crowned Warbler was found to be present throughout the winter, mostly associated with flocks of Kinglets, Chickadees (*Penthestes carolinensis agilis*) and Titmice (*Bœolophus atricristatus sennetti*) usually hunting among the cedar brake. It remained up to at least April 21.

Dendroica auduboni auduboni. AUDUBON'S WARBLER.— While not mentioned by Lacey, this species was to be expected in the region. On April 24, I found several individuals hunting over a cypress, growing along the river, near Ingram.

Dendroica dominica albilora. SYCAMORE WARBLER.— The arrival of this species was much delayed in 1915. Lacey gives the average date of its appearance as March 22, yet I did not meet with it until April, although frequently visiting its favorite haunt — the cypress groves along the river. As this is the western limit of the breeding range, it was to be expected that the individuals found here would develop the subspecific characters, which is evidently true, as none of the skins I have examined show any trace of yellow on the superciliary stripe.

Dendroica chrysoparia. GOLDEN-CHEEKED WARBLER.— This much remarked species did not make its appearance until March 27, the lastest date, according to Mr. Lacey, within his experience. The adult males (third year), preceded the females and younger males by some five days. Until nidification is well advanced, it was seldom found outside of the 'cedar brake'; thereafter it was of more general dispersion and after the young were on the wing, resorted to the walnut thickets. It is my impression that the Golden-cheeked Warbler hunts over, rather than through, the foliage of a tree. A perhaps peculiar trait of this species is its U-shaped sallies after flying insects, from the lower limbs of a tree. While as a rule a very active bird, I have seen it sitting motionless for minutes at a time at any hour of the day.

Seiurus noveboracensis notabilis. GRINNELL'S WATER-THRUSH.— It is a coincidence, worthy of note, that the single record Lacey gives for this form, May 10, 1895, is the same day of the month upon which I secured the only individual seen.

Oporornis tolmiei. MCGILLIVRAY'S WARBLER.— Several birds of this species were seen, and one secured, May 21. Apparently an original record for the county.

Dumetella carolinensis. CATBIRD.— Lacey considers this familiar bird an uncommon visitant, yet I met with it twice in the region — May 10 and 13.

Catherpes mexicanus conspersus. CAÑON WREN.— Dr. Louis B. Bishop writes me that Mr. Oberholser considers the Cañon Wrens from the region to constitute a distinct form, *polioptilus*. It is a generally distributed resident wherever bluffs occur.

Thryomanes bewicki eremophilus.[1] Among the large series of Texas Wrens collected, one skin was found that could not be allocated, it being much paler in plumage than *cryptus*, the common resident form, and also differed from *bairdi*. On being sent to the Biological Survey, it was pronounced by Mr. Oberholser to be *eremophilus*, and he informs me that it must be considered as a rare or casual visitant to the region. The example in question was taken March 12.

Troglodytes aëdon parkmani. WESTERN HOUSE WREN.— A rather common winter visitant. A bird shot April 24, appears to record an unusually late date for the bird so far south.

Certhia familiaris americana. BROWN CREEPER.— One shot at the edge of a cedar brake, April 2; not otherwise noted.

Regulus satrapa satrapa. GOLDEN-CROWNED KINGLET.— I found it present nearly throughout the winter, usually outnumbering *R. calendula*. It is probably of irregular irruption, as Mr. Lacey told me he missed it some years entirely. The last individuals were observed April 2.

Hylocichla ustulata swainsoni. OLIVE-BACKED THRUSH.— A single bird shot May 17, as it was perching in the underbrush of a heavily wooded draw, adds another species to the county list.

Hylocichla guttata pallasi. HERMIT THRUSH.

Hylocichla guttata sequoiensis. SIERRA HERMIT THRUSH.— These two forms of the Hermit Thrush were commonly present throughout the winter; the latter variety remaining until April 16.

Planesticus migratorius propinquus. WESTERN ROBIN.— A bird shot March 18 is identifiable as above. *P. migratorius*, the eastern form, is a common winter visitant; departing April 13, in 1915.

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[1] This race is not regarded as separable from *bairdi* in the A. O. U. Check-List.

TWO NEW FORMS OF PETRELS FROM THE BERMUDAS.

BY JOHN T. NICHOLS AND LOUIS L. MOWBRAY.

IN 'The Auk,' April, 1906, p. 217, Mr. Thomas S. Bradlee recorded as *gularis* an *Æstrelata* from Bermuda. Since that date the mounted bird has been in the Bermuda Museum of Natural History, by which it has recently been courteously loaned to Mr. Mowbray and critically examined by the writers. It is closer to *brevipes* Peale, of the western Pacific, but unquestionably distinct. This specimen is here made the type of a new species, and a Bermuda *Puffinus* (larger than *lherminieri* which breeds rather commonly in the Bermudas) the type of a new race.

Æstrelata cahow sp. nov.

The type specimen, a mounted bird, Coll. Bermuda Museum of Natural History, was taken by Mr. Mowbray, Feb. 22, 1906, in a rock crevice, about 20 feet above high water, Southeast side of Castle Island.

Upper surfaces dark sooty, darkest on the primaries, grayish on the back and nape. Tail coverts (partially lost) dark gray, with white bases. Rectrices grayish black with white bases. Inner web of the two outer feathers white almost to the tip. Sides of the breast sooty gray. Primaries dark beneath. Under wing-coverts white, with a peculiar oval dark spot just inside the exposed primaries, as in *hasitata*. Tail cuneate. Forehead, lores and underparts white. Center of forehead and white region above the eye finely speckled with dark. The dark color from the side of the neck extends narrowly forward under the eye. Bill dark. Legs, basal third of foot, and inner toe, pale, remainder of foot dark. Wing $10\frac{1}{4}$ in. Tail $6\frac{1}{2}$. Culmen $1\frac{3}{16}$. Tarsus $1\frac{3}{8}$. Middle toe and claw $1\frac{3}{4}$.

The name "cahow" was used by early settlers in Bermuda for an *Æstrelata* abundant at Cooper's Island, a mile at the most from where the type was taken and presumably of the same species. Numerous partially fossil bones (including skulls) which, after comparison, we believe to belong to the form here described have been found by Mr. Mowbray in various caves in the eastern end of the Bermudas, some about a half mile from where the bird was taken.

Puffinus puffinus bermudæ subsp. nov.

The type, a skin, Coll. of L. L. Mowbray, March 10, 1905, sitting on a single white egg in a crevice in Gurnet Head Rock.

Close to the Manx Shearwater of which it is made a race, but differing from that species about as much as does *P. yelkouanus* of the Mediterranean. Slightly larger than *puffinus*, with less gray on axillars and under tail-coverts than *yelkouanus*. The three should probably stand as geographic races.

Above sooty black. Below white, the colors somewhat mingled at the line of demarkation at the level of the gape. Under tail-coverts white, the lateral ones outwardly mottled with gray. Under wing-coverts white. Axillars with subterminal dark gray bars and white tips. Wing 9 in. Tail $3\frac{1}{3}$. Bill $1\frac{7}{16}$. Tarsus $1\frac{13}{16}$. Middle toe and claw $2\frac{1}{8}$.

The bird has been compared with a specimen from the Orkneys in the American Museum, two from Wales and one from the Bosphorus in the collection of Dr. Jonathan Dwight. The British birds have the culmen slightly less than $1\frac{3}{8}$ to $1\frac{1}{4}$, tarsus $1\frac{11}{16}$ to $1\frac{13}{16}$. middle toe and claw $1\frac{7}{8}$ to 2. In the Bosphorus bird the culmen. measures just over $1\frac{3}{8}$, tarsus $1\frac{13}{16}$, middle toe and claw $2\frac{1}{16}$.

This is doubtless the form recorded as *anglorum* breeding in the Bermudas (Savile G. Reid. The Birds of the Bermudas, Zoologist, Oct. and Nov., 1877, reprint 1883, p. 41). No bones of this species were found with those referred to *Æstrelata cahow*, although mixed with them were skulls and other bones clearly referable to *P. lherminieri*.

GENERAL NOTES.

The Type Locality of *Uria t. troille*.— The Common Murre (*Uria troille troille*) was named by Linnæus in his 'Fauna Suecica,' ed. 2, 1761, p. 52. He gives only one reference, Martens' 'Spitzbergische Reise,' which contains both description and a plate of a specimen taken July 25, 1671, in the northeastern part of Spitzbergen. There is nothing in Martens' description or plate that would not apply equally well to *Uria lomvia*, and as a fact this is the bird which Martens had in hand, for the bird we now know as *Uria troille* does not occur anywhere in Spitzbergen, while *Uria lomvia* still occurs there "by thousands" as Martens says he found them there at latitude 80° N., much farther north than *troille* ever ranges.

The description of Linnæus is fuller in some particulars than that of Martens showing that Linnæus had a specimen, which would have come from the coast of Sweden and which would actually have been the species now known as *troille*, since this is the form which occurs there and not *lomvia*. Therefore the type locality of *Uria troille troille* should be given as Sweden instead of Spitzbergen.— Wells W. Cooke, *Biological Survey Washington, D. C.*

The Pomarine Jaeger and the Purple Gallinule in Western Missouri.— A Pomarine Jaeger (*Stercorarius pomarinus*) was taken at Eaton Bend on the Missouri River, a few miles below Kansas City, Mo., on November 28, 1915, by Joe Barlow. As far as I can learn this is the first record of the capture of this species in Missouri. On December 31, 1915, an immature Purple Gallinule (*Ionornis martinica*) was captured alive on the flats near Kansas City, Mo., and given to Miss Clements of Independence, Mo., who brought the bird to the attention of the Kansas City Bird Club. Widmann gives two records for the Purple Gallinule for Missouri, both in April, 1877, in the vicinity of St. Louis. (Birds of Missouri, p. 61).— Ralph Hoffmann, *Kansas City, Mo.*

The Breeding Range of Leach's Petrel.— In 'The Auk' for April, 1915, p. 173, Mr. R. C. Murphy states that the breeding range of *Oceanodroma leucorhoa* should be given as follows:— "Southern Greenland and the Færoes south to Maine and the Hebrides." Curiously enough the breeding range of this species is incorrectly given in both the 'Hand List of British Birds' and also in the 'B. O. U. List of British Birds.' In the former it is said not to breed in Europe outside the British Isles, and in the latter to "occur," in Iceland. As a matter of fact there is a large breeding colony on the Westmann Islands, southwest Iceland, but as far as I am aware there is no evidence of nesting anywhere on the Færoes. Laubmann in his recent paper, 'Fauna Farœensis,' makes no mention of it, and Müller & Feilden state that it is not known to breed there. If Mr. Murphy

has more recent information on the subject, it would be as well to publish it. The only known breeding places on the East Atlantic are the Westmann Isles in Iceland, the Flannans, St. Kilda group and N. Rona in Scotland and islets off the Kerry and Mayo coast in Ireland.— F. C. R. Jourdain, *Appleton Rectory, Abingdon, Berkshire, England.*

Barrow's Golden-eye at Wareham, Mass.— I am indebted to Mr. C. A. Robbins for the freshly-prepared skins of a female Barrow's Golden-eye and for permission to report that the bird was killed in Wareham by L. P. Hacket, a local gunner, on November 27, 1915. Mr. Robbins states further that "it was shot from a stone breakwater within one hundred yards of the shore and at a point almost exactly at the head of the broadest expanse of Buzzard's Bay. Although other Golden-eyes were feeding or in flight near by, this bird was accompanied by but one other (a female or young male)." On comparing the specimen with series of skins in my collection I find that with respect to every essential characteristic of both form and coloring it is a perfectly typical representation of *C. islandica.* The interest attaching to its occurrence is enhanced by the fact that so few birds of its sex and species have heretofore been reported from anywhere along the Massachusetts Coast. No doubt they visit this oftener than we realize, being overlooked because so closely similar to female Whistlers.— William Brewster, *Cambridge, Mass.*

Lesser Snow Goose (*Chen h. hyperboreus*) **in Massachusetts.**— On December 7, 1915, a bird of this species was shot as it swung in alone to some decoys at Eagle Hill, Ipswich, Mass., by Mr. Wm. O. Thrasher of Peabody. He gave it to Mr. Charles E. Clarke of Tuft's College, Mass. The latter had gone to Ipswich to study the birds, and had recognized this rare species hung up outside the shooting shack. Mr. Clarke kindly gave the bird to me for my collection and for record. It proved to be a male in good condition but not fat. Its plumage indicated a bird of the previous year. The feathers about the head and breast were tinged yellowish brown as if stained with iron rust.

Definite records of this goose in Massachusetts are few, although it is probable that the majority of the indefinite records of Snow Geese belong to this species and not to *Chen h. nivalis.* The only previous records for Essex County of specimens of the Lesser Snow Goose are: one, now in the Peabody Academy, taken at Lynn Beach in 1866, one taken by B. S. Damsell at Amesbury in 1888, and one, now in the collection of Mr. William Brewster, taken at Ipswich on October 26, 1896.— Charles W. Townsend, M.D., *Boston, Mass.*

Blue Goose (*Chen cærulescens*) **in Maine.**— Last winter when visiting some of the islands of Penobscot Bay, Knox County, Maine, in quest of sea birds, I saw and examined a mounted specimen of the Blue Goose in possession of Mr. Walter Conley of Isle Au Haut.

Mr. Conley shot the bird November 13, 1913, at Little Spoon Island, a small island near Isle Au Haut. This specimen is of so unusual occurrence on the Atlantic coast that I am interested to have this instance recorded. At the present time I understand that the bird is still in Mr. Conley's possession.— Charles E. Clarke, *West Somerville, Mass.*

A Banded Canada Goose.— On December 13, I shot a very large Canada Goose at the Pine Island Club, N. C. Both legs carried aluminum bands. The right numbered 312, the left, 314. This note if published in 'The Auk' may possibly be seen by the bander who would naturally in return give the facts regarding the banding.— Harold Herrick, 25 *Liberty St., New York.*

Two Trumpeter Swan Records for Colorado.— A specimen of this species (*Olor buccinator*), the sex of which was not determined was shot by Mr. Walter Scott, near Timnath, seven miles southeast of Fort Collins, Colo., on November 18, 1897. Another specimen, a male, was found dead by Mr. J. L. Gray, at Rocky Ridge Lake, seven miles north of Fort Collins, on November 25, 1915.

Both specimens are mounted in the College Museum.— W. L. Burnett, *Colorado Agricultural College, Ft. Collins, Colo.*

King Rail (*Rallus elegans*) **in Massachusetts in November.**— On the 12th day of November, 1914, a King Rail was captured in Longmeadow. This is the latest time in the autumn that the presence of one of these birds has been noted in this region. Early writers on bird life in Massachusetts placed the King Rail in the class of birds whose presence in this State was accidental, and with only two records of their appearance in any part of the State, while now there are in collections here a half a dozen specimens of this bird that have been taken in the vicinity of Springfield in recent years.— Robert O. Morris, *Springfield, Mass.*

Willets in Migration.— During the last days of May, 1907, while on my way from Havre to New York on the S. S. 'La Loraine,' I saw at sea a remarkable congregation of Willets (*Catoptrophorus semipalmatus*).

It was in the middle of the morning of a gray, but not foggy, day, when we were off the Grand Banks of Newfoundland, that I noticed a considerable gathering of birds resting on the water in the immediate path of the ship. As we approached them I thought they looked like shore birds, and as the vessel drew quite close to them those immediately near it rose on wing and flew off to right and left, and again alighted on the water among their fellows. In the way in which they left the path of the vessel they reminded me of similar flights of waterfowl seen in Alaska.

When the birds took wing, they were at once recognized as Willets, and there must have been somewhere near a thousand of them, not all packed together in a dense clump on the water, but more or less scattered out, in

groups of forty, fifty or a hundred, yet all fairly near one another, and suggesting a single flock. They seemed to leave the water reluctantly and gave me the impression that they were weary.

The long flights demonstrated for many shore birds had always puzzled me, for it seemed hardly possible that such flights could be made without rest or food. Here, however, was an apparent explanation of the matter. The birds might stop to rest anywhere in the course of their long journey, and, no doubt, in many places food in abundance might be found floating on the water.

Though I had never seen or even heard of anything like this sight, I have taken it for granted that ornithologists had often observed and reported on this matter. I think I once mentioned it incidentally in 'Forest and Stream' in connection with some notes on shore birds. Mr. E. W. Nelson, to whom I mentioned the matter recently, advised me that the matter was new to him and suggested that this note be sent to 'The Auk.'— Geo. Bird Grinnell, *New York City.*

American Golden Plover (*Charadrius d. dominicus*) **at Nantucket Island.**— On September 6, 1915, I drove to the extreme western end of the island, and remained there an hour or two without seeing any birds. I interviewed the crew of the Life Saving Station at Maddeket, several of whom I knew, none of them had seen, or heard any Golden Plover or Eskimo Curlew passing this summer. One of the men said he had heard of five Golden Plover living in a certain field, the owner of which preferred watching, to shooting them. In the afternoon I drove to the south side of the Island (Surfside). I called at once on the former captain of the Life Saving Station located there, who was an old acquaintance, and a gunner. He informed me that his grandson had shot a Golden Plover the day before, he showed me the legs which I identified. He said there had been four in all living at Nobadeer pond, and that I could probably find the other three still there. I suggested we harness up his horse and ride down to the pond, he and his grandson taking their guns. On arrival we saw the three Golden Plover running about, two black and white breasted birds, and one 'pale-breast' (young); we succeeded in shooting the latter, which I later had made into a skin. I am of the opinion that these birds were the same ones which occupied the protected pasture mentioned above. They constitute the only records of this plover I have been able to obtain for the island of Nantucket this season. I also saw, while at the Nobadeer Pond, two Hudsonian Curlew, and two of the larger Yellowlegs.— George H. Mackay, *Boston, Mass.*

Nest of the Alder Flycatcher on the Pocono Mt., Pa. — Among the low shrubs, birches and swamp grass, bordering a lake on the Tobyhanna River, Monroe County, Pa., the Alder Flycatcher (*Empidonax trailli alnorum*) is apparently not uncommon, for at least three pair can be found within a radius of two or three miles. The discovery of the nest is, how-

ever, a difficult problem, and has eluded the search of a number of ornithologists around this very lake for several years. On June 12, 1915, the nest was found by J. D. Carter in a low shrub well hidden and within twenty-four inches of the ground. One egg was laid on the 14th, but the nest was found destroyed on the 27th when it was again visited. On July 17 I found a new nest containing three fresh eggs in almost the same spot or within six feet of the first one; it was also well hidden, and it was by the luckiest chance that I happened to see it. The bird was not flushed either time, and was generally heard uttering the short harsh note from a hundred to five hundred feet away, giving little clew to the general position of the nest. While I was photographing, the parent bird ventured within fifteen feet of me, but all the time hidden in the thicket and occasionally uttering an unconcerned low single note. The nest was built of soft bleached grass, lined with fine thin material, the eggs being rich cream and spotted almost exactly like the Wood Pewee's eggs. I think this nest is the first recorded for the State of Pennsylvania.— Wm. L. Baily, *Ardmore, Pa.*

Yellow-bellied Flycatcher (*Empidonax flaviventris*) **Breeding on the Pocono Mountain, Pa.**— A nest containing four eggs was found along the Tobyhanna Creek, on Pocono Mountain in Monroe County, Pa., by Geo. H. Stuart, 3rd., in company with J. Fletcher Street on June 27, 1915. I had found a nest containing four fresh eggs in almost the identical spot eight years previous, June 23, 1907, in company C. G. Abbott, and though we did not collect the nest we obtained excellent photographs of the eggs and one of the birds on the nest. On July 17, 1915, I found a third nest containing three young about two days old, which I photographed; and I also obtained another picture of the parent near the nest. During an hour's stay within about thirty feet of the nest, both birds were near by, somewhat anxious, and uttering every few seconds their drawling "pe-a."

The nesting sites were all in little open sunny spots of wet sphagnum in the dense secluded forest of spruce, hemlock, balsam and tamarack; and all through the moss grew the wintergreen, bunch berry and occasionally the fragrant white swamp azalia. The nests were hidden in the sides of little mounds of sphagnum; only a little black flat hole was visible, which did not even look suspicious. The nest which had young was composed first of small spruce twigs, and then lined thickly with pine needles only, and set right in the sphagnum deeply cupped. As I had not flushed the bird, I poked my finger into it for investigation before I knew it to be a nest. Mr. Stuart's nest, which contained eggs, was simply lined with pine needles. This is the only spot on Mt. Pocono where we have found this species breeding, and it is safe to state that there were at least three pairs in the vicinity.— Wm. L. Baily, *Ardmore, Pa.*

Swainson's Hawk in Illinois.— An interesting record is the capture of a beautifully marked specimen of *Buteo swainsoni*, near Waukegan, by

a boy, on October 13, 1914 (H. K. C. No. 17970). This bird was taken to Mr. R. A. Turtle, the Chicago taxidermist, who kindly presented it to me. It measures: length 20 in., extent 49 in., wing 14.75 in., tail 8.75 in. Cere, legs and feet yellow. Iris slaty brown. It is dark brown above, mottled with light brown and yellowish buff; below from bill to tail, clear yellowish buff with dark brown markings on the sides of the breast. This is the first Swainson's Hawk I have ever seen taken here.— Henry K. Coale, *Highland Park, Illinois.*

Nesting of the Crossbill (*Loxia curvirostra minor*) in Crook Co., Oregon.— During the summer of 1914 while camped in the yellow pine forest near the little town of Sisters, Crook County, Oregon, I was fortunate enough to locate the nest of the Red Crossbill. On July 21, while standing near camp I saw a female fly from the ground with a large bunch of grass in her bill. She flew to a tree near by, where she perched for a moment, and was joined by the male, when both birds flew to another tree farther on. I arrived under the tree just in time to see the female disappear in a dark mass that I soon made out to be the nest. The male perched on a small twig near by for some time, but finally flew away leaving the female in the nest, where she stayed several minutes, giving me the impression that house building was about over. I watched this pair several days and saw the female carry several loads of nesting material, but, although the male was often near I did not see him help in any way. Both birds were very noisy while near the nest. On July 26, my time was up in this locality, so on that date the female parent, the nest, and the one egg it contained were taken. The nest was located near the end of a branch, about fifteen feet from the trunk and about ninety feet from the ground in a large yellow pine (*Pinus ponderosa*). Dry sage-brush twigs, rootlets, weed and grass stems were used in its construction. The whole appearance of the nest suggested that of the House Finch nest on a slightly larger plan. The one egg was pale bluish, spotted and streaked with shades of brown and purple, mainly about the larger end.— Stanley G. Jewett, *Portland, Oregon.*

The Barn Owl (*Aluco pratincola*) in Massachusetts.— On October 31, 1915, a male Barn Owl was captured in Longmeadow, a few miles from Springfield, Mass. There is but one other record of the occurrence of this species in so much of the Connecticut valley as lies within the borders of Massachusetts.— Robert O. Morris, *Springfield, Mass.*

Cowbird wintering in Massachusetts.— On November 26, 1915, beside a small swamp, on the borders of Flax Pond, Lynn, Mass., I found a male Cowbird (*Molothrus ater ater*) in company with a flock of English Sparrows. On December 26, I received a postal from my friend, Mr. G. M. Bubier, announcing that he had that day seen a male Cowbird, associating with English Sparrows, beside Strawberry Brook, the outlet of Flax Pond,

and about three fourths of a mile from where I saw the Cowbird in November. Today, December 30, I found Mr. Bubier's Cowbird within a few rods of the place he reported him, and still accompanied by his English retinue.— Arthur P. Stubbs, *Lynn, Mass.*

Another Hybrid Warbler from Northern New Jersey.— On July 8, 1915, while in company with Mr. Samuel N. Rhoads on the edge of a rhododendron swamp near Sussex, N. J., the writer secured a specimen of the hybrid, supposed to result from the interbreeding of the Golden-winged and the Blue-winged Warblers (*Vermivora chrysoptera* and *V. pinus*). The specimen was a young bird of the year on which the wing bands were not fully developed. Nevertheless they were developed sufficiently to show bright yellow. This marking, taken with the general appearance of the bird, made it approximate *leucobronchialis*, but on the other hand the under parts were quite strongly suffused with yellow and the throat was dusky.

This bird, in company with several other young, at least two more, and with an adult male *chrysoptera*, was under our observation for nearly an hour. On several occasions the birds were within a few feet of us, so that fairly accurate field observations were possible, and yet they were flitting about so constantly in search of insect life, which was very abundant on the sunny edge of the swamp, that it was almost impossible to get a good shot at any of them. The depth of the water between the swampy islands also impeded us greatly.

Our conclusions in regard to the birds we did not secure, were as follows: one adult bird was certainly present and that was a pure male Golden-winged Warbler. This bird, though not actually observed feeding the young, was with them at all times, sometimes occupying the same branch with them and exhibiting the subtle behavior of a parent bird. If the other parent was present, we could not distinguish it from the young. It should be stated, however, that a Blue-winged Warbler, sex undetermined, had been noted in the neighborhood not a hundred feet away, but this bird was constantly associated with other warblers and was not once seen with the hybrid family in question. As to the color of the other young birds, I noticed particularly that they were all very light, especially on the under parts. One of them had a more pronounced, dusky throat than the others, and none of them seemed to have the under parts suffused with yellow, as did the specimen secured. And yet they might have had, as the character of under parts is very difficult to determine in the field, even when birds are as close as these were.

It was most unfortunate that we were chased away by an excited farmer, otherwise we might have contributed something more definite to the store of knowledge gradually accumulating about these interesting species.

The specimen was mailed to Dr. Witmer Stone at the Academy of Natural Sciences, Philadelphia. Unfortunately it arrived in such bad condition that it could not be preserved, but before it was thrown away, it was

carefully compared with specimens in the Academy's collection. Dr. Stone stated that it was undoubtedly one of the hybrid warblers, and that it was somewhat similar to a specimen in the collection marked *leucobronchialis*.— ROBERT THOMAS MOORE, *Haddonfield, N. J.*

Cape May Warbler in Virginia in Winter.— On December 7, 1915, about 8:00 P.M., a Cape May Warbler (*Dendroica tigrina*) was brought to me alive but in a much weakened condition. According to the captor of the specimen, it was secured in the morning, in the snow, being barely able to flutter along. It revived considerably when taken to warmer quarters, but refused to eat. On the morning following it seemed even better, and ate banana from the hand. It rejected peanuts, but ate the banana readily. By the following evening it seemed weaker, however, and the next morning it was dead. The bird was apparently a young male, and with the exception of the fact that it had but three tail feathers, the plumage was comparatively perfect.— GEORGE M. SUTTON, *Bethany, W. Va.*

The Occurrence of the Western House Wren on Smith's Island, Northampton County, Virginia.— On May 13, 1910, I collected an adult male of *Troglodytes aëdon parkmani* at Smith's Island, Northampton County, Virginia. The specimen is Cat. No. 312912, U. S. National Museum. (Original number, 18946.) It was identified by Messrs. Ridgway, Oberholser, and Mearns.— EDGAR A. MEARNS, *Washington, D. C.*

Bicknell's Thrush in Northeastern Illinois.— On September 6, 1909, while collecting migrating warblers in the woods near Highland Park I shot a rather small specimen of *Hylocichla aliciæ*, which on more careful examination proves to be a typical example of *Hylocichla aliciæ bicknelli*. It is an adult male (H. K. C. No. 13169), and measured before skinning: length 7 in., extent 11.5 in., wing 3.75 in., tail 2.70 in. The average measurements of several males of *Hylocichla aliciæ aliciæ* in my collection are: length 7.5 in., extent 13 in., wing 4.25 in., tail 3.25 in. The only other record for the state is a specimen taken by Charles K. Worthen at Warsaw, May 24, 1884 (Ridgway, Orn. Ill. 1889).— HENRY K. COALE, *Highland Park, Ill.*

Additions to the Birds of Custer County, Montana.— In the months of November and December, 1909, I spent some time in the extreme southeastern part of Custer County, Mont., close to the South Dakota border. During this time I found three species of birds not included in the late Mr. E. S. Cameron's list of the Birds of Custer and Dawson Cos. (Auk, Vol. XXIV, p. 241 to 270 and 389 to 406. Vol. XXV, p. 39 to 56.) I sent these records to Mr. Cameron, who wrote me that he intended to publish some additions to his list later, and would include them then. Since the recent death of Mr. Cameron prevented the publication of these additions, I have decided to put them on record myself.

During the past summer I had an opportunity to examine the collection of birds at the University of Montana. In this collection I found a large number of specimens from Miles City and vicinity, taken by Mr. C. F. Hedges. Two of the birds I had observed were represented and a number more as well that are new to the region, including one that is entirely new to the State. In addition to this I have found a number of Mr. Hedges' specimens in the collection of Dr. L. B. Bishop at New Haven. The combination of these records presents sixteen species new to the region, as well as some other notes of interest on species that are not new.

Nuttallornis borealis. Olive-sided Flycatcher.— One male, Miles City, June 8, 1902.

Otocoris alpestris arcticola. Pallid Horned Lark.— One male, Miles City, March 30, 1901.

Astragalinus tristis pallidus. Western Goldfinch.— Comparing Mr. Hedges' specimens with Connecticut specimens in the same collection, I believe that they belong to the western race. One specimen taken at Miles City, December 25, 1899, makes the first winter record from this region.

Calcarius lapponicus alascensis. Alaska Longspur.— A specimen in Dr. Bishop's collection was taken at Miles City, September 24, 1900. A series of this species in the University of Montana collection, taken from September 20 to 27, 1900, probably also belong to this race, though they are labelled 'Calcarius pictus.'

Spizella pusilla arenacea. Western Field Sparrow.— One, Miles City, May 11, 1902.

Junco aikeni. White-winged Junco.— A series of ten specimens taken at Miles City between April 22 and 27, 1900. I found this bird in the Long Pine Hills, and secured a specimen December 5, 1909. Mr. S. S. Visher also found it breeding in this region July 20, 1910. (Auk, XXVIII, p. 14.)

Junco hyemalis connectens. Shufeldt's Junco.— One specimen, Miles City, January 15, 1900.

Melospiza melodia montana. Mountain Song Sparrow.— One female, Miles City, September 27, 1900. There are also several specimens of *M. m. melodia* from the region with which to compare this bird, which is markedly grayer in plumage.

Melospiza georgiana. Swamp Sparrow.— One female, Miles City, February 17, 1901. Though there are two other records of this species from Montana, this is the first from this region, and the first that can be accepted without question.

Piranga ludoviciana. Western Tanager.— One female. Ft. Keough, June 1, 1902.

Stelgidopteryx serripennis. Rough-winged Swallow.— One male, Miles City, May 30, 1902.

Mniotilta varia. Black-and-white Warbler.— One male, Miles City, May 21, 1902. This is the first record of this species for the State.

Dendroica auduboni. AUDUBON'S WARBLER.— Four specimens. Three from Little Pumpkin Creek, April 23, 26 and 27, 1900, and one from Ft. Keough, May 25, 1902.

Oporornis tolmiei. MACGILLIVRAY'S WARBLER.— One male, Ft Keough, May 25, 1902.

Wilsonia pusilla pileolata. PILEOLATED WARBLER.— One specimen in Dr. Bishop's collection, September 22, 1900.

Sitta canadensis. RED-BREASTED NUTHATCH.— Seven specimens. Little Pumpkin and Otter Creeks, April 25–27, 1900, and one from Ft. Keough, May 18, 1902. I observed several of these birds in the Long Pine Hills, November 16, 1909.

Regulus satrapa (subspecies?). GOLDEN-CROWNED KINGLET.— I observed two of these birds in the Long Pine Hills, November 29, 1909.

Regulus calendula calendula. RUBY-CROWNED KINGLET.— One male, Ft. Keough, September 22, 1900.— ARETAS A. SAUNDERS, *West Haven, Conn.*

The Rose Beetle Poisonous to Young Birds. – In 1914, Mr. Ernest Napier, President of the New Jersey Fish and Game Commission reported to the Biological Survey the loss of hundreds of pheasant chicks and of numerous young ducks and chickens from eating rose beetles (*Macrodactylus subspinosus*). Four young Ring-necked Pheasants were examined and rose beetles found to compose 48, 30, 50 and 17 per cent respectively of their food. The largest number of rose beetles in any one was 12. The crops of these birds were only from one-fourth to three-fourths full and thoroughly ground up remains of the beetles were present in each gizzard, showing that the insects were being digested in regular course. There being no evidence of crop binding, to which the trouble had been attributed,[1] and a positive diagnosis of white diarrhœa being obtained, it was concluded that the rose beetles were not the direct cause of the mortality.

It is of great interest, therefore, that the rose beetle has recently been discovered to "contain a neuro-toxin that has an effect upon the heart action of both chickens and rabbits and is excessively dangerous as a food for chickens."[2] In experimental feeding of rose beetles to young chicks death resulted in from 9 to 24 hours. Similar results were obtained with an extract of rose chafers. Resistance to the poison increased rapidly with the age of the chicks and none over ten weeks old was killed.

Besides the obvious economic aspect of this discovery, and the indicated necessity of keeping young domesticated birds away from rose-beetles, the facts have an interesting bearing on the theory of "protected" insects and their warning colors. This, a poisonous insect according to the theory

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[1] Prof. F. E. L. Beal informs the writer that it is sometimes necessary to open the crops of young turkeys because of clogging up by rose bugs.

[2] Lamson, George H., Jr.— The poisonous effects of the rose chafer upon chickens. Journ. Ec. Ent., 8, No. 6, Dec., 1915, p. 548; Science, N. S., 43, Jan. 28, 1916, p. 139.

should have bright warning colors, yet is of a uniform and inconspicuous brownish yellow. According to hypothesis, furthermore, birds are supposed to learn about disagreeable insects when young and thus be trained when adult to ignore them. In this case, however, experiment is usually followed by death, so that experience is not conserved. What is more, the insect is not dangerous to adult birds, so that, adopting this style of argument for the moment, early bad experience probably would be overcome by later satisfactory trials.

We do not know whether eating rose chafers has a bad effect upon the young of wild birds, but we do know that the adults of a number of species feed upon these insects. So far, rose-beetles have been found in stomachs of 12 wild species. The Kingbird seems especially fond of them, from 12 to 40 rose-chafers being found in each of several collected stomachs.

The case is analogous to that of numerous birds feeding extensively upon the fruits of poison sumacs. A known poisonous principle, which at first thought we should be inclined to consider a preventive against eating by wild animals, is proved by the observed facts to have no such effect. Other analogies are by no means rare, and it would seem that if carefully pondered, they would serve to check the enthusiasm with which anthropomorphic explanations of animal behavior are advanced.— W. L. McAtee, *Washington, D. C.*

A Fossil Feather from Taubaté.— Fossil birds are rare enough when we come to consider how very few of them have fallen into the hands of science, as compared with the great quantity of material we have representing the fossil forms of other Vertebrata; and, as to fossil feathers, they are many times rarer than those of the birds themselves. Without inviting special attention to the literature on this subject — for numerous authors have contributed to it, myself among the number — I would say that the specimen here to be described was kindly sent me for that purpose by Herr Director Dr. von Ihering, of the Museu Paulista, São Paulo, Brazil; it came by registered mail, the letter of transmittal being dated January 8, 1915.

The locality where this specimen was found has yielded many fine fish fossils, which have been described by Dr. A. S. Woodward, of the British Museum, while the locality itself has been touched upon by Dr. von Ihering himself in an article entitled: 'Observacões sobre os peixes fosseis de Taubaté,' which appeared in volume iii (p. 71) of the 'Revista do Museu Paulista' for the year 1898. As the locality is fully described in that contribution, it will not be necessary to further refer to it in this note.

The matrix is of dark chocolate brown, with a leathery roughness on the side carrying the fossil; on the other side it is somewhat lighter in color, and exhibits evidences of cleavage horizontally. In size the slab measures about 14 cm. by 7.5 cm., and it has an average thickness of 3 mm. It bears evidence of having been cut out of its place where collected with some sharp instrument — perhaps a strong knife. As noted above, the specimen

contained in this matrix is upon its dark side, and is, without doubt, the feather of some rather large bird. When the slab is wet, this feather comes out much more clearly into view, and when it was in that condition, I made a photograph of it natural size, to file, along with similar ones, in my collection.

Although this fossil feather has the appearance of being somewhat plumulaceous in character, I am strongly of the opinion that it is a primary feather from a wing. Its quill has a length of about 4 cm., and the vane about 7.3 cm. In other words, it was a feather about 11.3 cm. long, and apparently belonged to a bird of considerable size. As the photograph shows, the impression is very faint, and even with a strong lens it is quite impossible to make out the minute structure or any part of it, as is so frequently the case in fossil feathers. This specimen is No. 111 in the Paulista Museum, and is of interest from the fact that it furnishes evidence of the existence of highly developed birds in that particular formation in which it occurred.— R. W. Shufeldt, *Washington, D. C.*

RECENT LITERATURE.

Bryan's Natural History of Hawaii.[1] — Quoting the words of the author in his preface: "In the preparation of the following pages it has been the aim of the author to bring together into one volume the more important and interesting facts about the Hawaiian Islands and their primitive inhabitants, as well as information concerning the native and introduced plants and animals of the group."

The results of the author's labors appear in a large volume of nearly 600 pages, illustrated by 117 full-page plate photographs. The scope of the volume and the subjects treated appear from the following chapter headings:

Coming of the Hawaiian Race; Tranquil Environment of Hawaii and its Effect on the People; Physical Characteristics of the People; Their Language; Manners and Customs; Religion of the Hawaiians: Their Method of Warfare and Feudal Organization; The Hawaiian House: Its Furnishings and Household Utensils; Occupations of the Hawaiian People; Tools, Implements, Arts and Amusements of the Hawaiians; Coming of Pele

[1] "Natural History of Hawaii." Being an Account of the Hawaiian People, the Geology and Geography of the Islands, and the Native and Introduced Plants and Animals of the Group. By William Alanson Bryan, B. Sc., Professor of Zoölogy and Geology in the College of Hawaii. The Hawaiian Gazette Co., Ltd., 1915. Price, $5.50.

and an Account of the Low Islands of the Group; The Inhabited Islands: A description of Kauai and Niihau; Island of Oahu; Islands of Molokai, Lanai, Maui and Kahoolawe; Island of Hawaii; Kilauea, the World's Greatest Active Volcano; Condensed History of Kilauea's Activity; Plant Life of the Sea-shore and Lowlands; Plant Life in the High Mountains; A Ramble in a Honolulu Garden; Tropical Fruits in Hawaii; Agriculture in Hawaii: Its Effect on Plant and Animal Life; Various Animals from Land and Sea; Introduced Birds; Birds of the Sea; Birds of the Marsh, Stream and Shore; Birds of the Mountain Forests; Hawaiian Fishes; Introduced Fresh Water Fish; Important Economic Insects; Native Insects; Land and Fresh Water Shells; Shells from the Sea-shore; Plants and Animals from the Coral Reef.

The long residence of the author in the archipelago, his extensive knowledge of biological subjects, and his sympathetic acquaintance with the natives and their ways eminently fit him for his self-imposed task, and the result is a volume which cannot fail to be of great value to the general student of island history, the visitor who seeks for information and an explanation of what he sees about him, and for the residents. Hitherto much of the information in regard to the islands and the natives, especially on scientific subjects, has been locked up in special treatises not accessible to the general public, or in expensive volumes out of reach of all but the wealthy.

Readers of 'The Auk' will be chiefly interested in the chapters on birds, which fill pages 304 to 338, and contain brief accounts, but no formal descriptions, of many of the islands' native birds and also the seven introduced species; English Sparrow, Rice Bird, Chinese Turtle-dove, Mynah, Sky-lark, Pheasant, and California Partridge.

Under the caption Birds of the Sea and Oceanic Islands the author treats of many of the more interesting species permanently residing on the islands or spending the winter on them. Under this head are included also the Laysan Islands birds, which are of special interest to the ornithologist.

Under the caption 'Birds of the Mountain Forests' are mentioned the more notable of the native woodland birds, including the famous and now extinct Mamo, and the O-o.

American ornithologists will hardly be able to understand the statement that were it not for the presence of a dozen or more species of birds that have been introduced into Hawaii by accident or design, it is doubtful if the average tourist would see or hear a single bird during his journeys through the islands. Nevertheless, the statement is literally true, so closely are the native species confined to the deep forests and steep mountain-sides and so difficult of access are these semi-tropical fastnesses.

Recalling the roving disposition of our mainland crows, the American ornithologist will be surprised to learn that the Hawaiian Crow (*Corvus hawaiiensis*) is restricted to a part of one island, and not only has failed to occupy the other islands of the group, but fails to enter even the neighboring districts where vegetation is similar and food appears equally abundant.

Even more remarkable is the case of one of the *Drepanine* birds, *Viridonia sagittirostris*, which is confined to a tract of the deep forests in Hawaii a few miles square, although the surrounding forest seems to be in every respect similar.

Seven black-and-white plates fairly well illustrate the more interesting of the Hawaiian birds. As many of these birds are beautifully colored, it seems a pity that adequate illustrations in color could not have been furnished. The accounts of the Hawaiian birds, while not written for the professional ornithologist, contain many facts of interest and give an excellent birds-eye-view of the subject. The non-professional, however, for whom the accounts of the islands birds are chiefly intended, will find the treatment given by the author entirely adequate to his needs. The index and glossary to the volume have been made a special feature. They have been prepared with great care, and render the contents of the book readily accessible to every seeker for the wealth of material which it contains.— H. W. H.

The B. O. U. Jubilee Supplement to the Ibis, No. 2.[1] — In December, 1908, the British Ornithologists' Union, as part of the activities connected with the celebration of its fiftieth anniversary, arranged to send an expedition to Dutch New Guinea to explore the Snow Mountains, with especial consideration of its avifauna. This expedition under the leadership of Mr. Walter Goodfellow met with unforeseen obstacles and while it acquired much valuable information and many specimens, it failed to accomplish all that was hoped for. The ornithological results appeared in 'The Ibis' for 1913, pp. 76–113.

A second expedition, under Mr. A. F. R. Wollaston, who had accompanied the first one, met with complete success, reaching the highest peaks of the Snow Mountains and bringing back large collections. The present report covers both collections — representing 321 species and includes additional forms obtained by other expeditions. It contains a vast amount of information upon the relationship and status of the birds of this portion of New Guinea which could only be obtained from adequate series of specimens such as are here available. Many important facts regarding the plumage of Birds of Paradise are brought out for the first time.

As might have been expected, Bowdler-Sharpe's statement that the glossy green racket shaped tail feathers of the King Bird of Paradise are apparently derived from the curved brown ones without molt, proves to be erroneous. The green racket shaped feathers are acquired in the fourth year by a regular molt, encased in curious circular sheaths "for all the world like miniature motor-tyres." There are also numerous valuable field

[1] The Ibis, Jubilee Supplement No. 2. 1915. Report on the Birds collected by the British Ornithologists' Union Expedition and the Wollaston Expedition in Dutch New Guinea. By W. R. Ogilvie-Grant. pp. i–xx + 1–336, 8 plates and two maps. December, 1915.

notes by the members of the expedition which add much to our knowledge of the habits of the birds of this wonderful country.

Many new forms have already been described from these collections, but others, recognized as the critical study of the material progressed, are here described for the first time. These are: *Cicinnurus regius claudii* (p. 16); *Lophorhina superba feminina* (p. 27); *Ptilotis salvadorii utakwensis* (p. 71); *Pachycephala soror klossi* (p. 88); *Lalage karu microrhyncha* (p. 118); and *Pseudogerygone conspicillata mimikae* (p. 168). New forms described from other parts of New Guinea or elsewhere are as follows: *Diphyllodes rothschildi* (p. 24), Salawatti; *Pachycephala soror bartoni* (p. 88), British New Guinea; *Rhipidura harterti* (p. 149), Rendova, Solomon Isls.; *Poecilodryas brachyura dumasi* (p. 162), Northern New Guinea; *Microeca griseiceps bartoni* (p. 174), Mt. Manacao; *Alcyone richardsi aolae* (p. 206), Aola, Guadalcanar, Solomon Isls.; *A. r. bougainvillei* (p. 207), Bongainville, Solomon Isls.

Mr. Ogilvie-Grant has evidently spared no pains to make his report as full and accurate as possible and he has succeeded in producing one of the most valuable contributions to the ornithology of New Guinea that has yet appeared. With so many points of excellence to its credit it is regrettable to find the old custom perpetuated of designating two types — a male and female. In case these should eventually prove to belong to different forms — and such things have occurred!— we immediately have an opportunity for a nomenclatural entanglement, which would have been entirely avoided by designating but one type specimen.— W. S.

Chapin on New Birds from the Belgian Congo.[1]— Continuing the critical study of the collection obtained by the American Museum Congo Expedition, Mr. Chapin describes four new species. These are a Starling, *Stilbopsar leucothorax* (p. 23), from the Ituri District; *Paludipasser uelensis* (p. 24), from the Upper Uele District, a curious Weaver Finch, apparently congeneric with Mr. S. A. Neave's *Paludipasser locustella* from Lake Bangweolo; another Weaver, *Malimbus flavipes*, (p. 27), Ituri District and a warbler, *Bradypterus carpalis* (p. 27), from the papyrus swamps of the Upper Uele. Drawings of head and feet accompany the excellent descriptions and a few remarks on habits are added, forming a welcome relief from the all too prevalent meagre diagnoses which characterize many present day systematic papers.— W. S.

Oberholser on Races of the Crested Tern.[2]— This is another of Mr. Oberholser's careful monographs, treating of a group that has recently

[1] Four New Birds from the Belgian Congo. By James P. Chapin. Bull. Amer. Mus. Nat. Hist., XXXV, Art. III, pp. 23–29. February 21, 1916.

[2] A Synopsis of the Races of the Crested Tern, Thalasseus bergii (Lichtenstein). By Harry C. Oberholser. Proc. U. S. Nat. Mus., Vol. 49, pp. 515–526, Plate 66. December 23, 1915.

received considerable attention from authors, notably Mr. Mathews and Mr. Stresemann. As Mr. Oberholser's material was not available to either of these authors his investigations have a peculiar value in checking up their conclusions.

Eleven races are recognized, all but one of which fortunately are already provided with names. This form from Pata Island, southern Philippines, is described as *Thalasseus bergii halodramus* (p. 522). Mr. Bang's race *boreotis* from the Riu Kiu Islands is synonymized with *T. b. cristatus*.

While there may be a difference of opinion as to the advisability of raising *Thalasseus* to full generic rank it is a satisfaction to see this name used for this group instead of for the Caspian Tern as is done in the A. O. U. Check-List, a mistake against which the reviewer has long contended. Mr. Oberholser's statement regarding one form of which he was unable to see specimens is significant. He says, "there is no trouble at all in distinguishing it....merely from the measurements given by Mr. Stresemann." Had Mr. Stresemann neglected to give measurements as has been done in some recent diagnoses of new forms, the status of this race could not have been settled in the present monograph! — W. S.

Riley on a New Hazel Grouse.[1]— The United States National Museum having recently acquired a series of typical *Tetrastes bonasia septentrionalis* Mr. Riley finds that specimens from Manchuria formerly referred to that form are quite distinct and he proposes for them the name *T. b. amurensis* (p. 17), type locality I-mien-po, N. Kirin.— W. S.

McGregor on a New Prionochilus.[2]— This new flower-picker which is here named *Prionochilus anthonyi* (p. 531) was procured on Polis Mountain, Luzon, in the mossy forest at 2000 ft. elevation. It differs in pattern of coloration from any other Philippine species. A colored plate accompanies Mr. McGregor's paper.— W. S.

Chapman on New Colombian Birds.[3]— Dr. Chapman here proposes twenty-five new species and subspecies as a result of his further studies of the collections of the American Museum. As in his previous papers the descriptions are accompanied by extended remarks on allied forms which add materially to our knowledge of the groups treated. The new forms here described belong to the following genera, *Crypturus, Tachytriorchis, Herpetotheres, Aulacorhynchus, Picumnus, Conopophaga, Microbates, Xiphorhynchus, Siptornis, Automolus, Manacus, Phyllomyias, Habrura, Microcerculus,*

[1] Description of a New Hazel Grouse from Manchuria. By J. H. Riley. Proc. Biol. Soc. Wash., XXIX, pp. 17–18. January 25, 1916.

[2] Description of a New Species of Proniochilus from the Highlands of Luzon. By Richard C. McGregor. Philippine Jour. of Sci., IX, No. 6, Sec. D. November, 1914.

[3] Diagnoses of Apparently New Colombian Birds. IV. By Frank M. Chapman. Bull. Amer. Mus. Nat. Hist., XXXIV, Art. XXIII, pp. 635–662. December 30, 1915.

Polioptila, Sporophila, Catamenia, Phrygilus, Cyanerpes, Iridosornis, and *Cacicus.* The northern races of *Phrygilus unicolor* are considered at length.— W. S.

Coale on the Birds of Lake County, Ill.[1]— The separate before us constitutes Chapter XIV of a history of Lake County published in 1912, pp. 353–370, although this fact does not appear on the cover. It consists of a list of 269 species with brief annotations and records of rare occurrences and forms a very satisfactory county list.— W. S.

Roberts' 'The Winter Bird-Life of Minnesota.'[2]— This brochure is Dr. Roberts' first publication since occupying the position of ornithologist in the department of animal biology in the University of Minnesota and of the Natural History Survey. It is an excellent summary of the winter bird life of Minnesota, illustrated by a number of half-tones from photographs and a colored plate of the Evening Grosbeak. The species are grouped under the following heads, Permanent Residents 35; Winter Visitants 17; "Half Hardy" 12; Accidental 27, while in a summary at the end they are all arranged systematically in one nominal list. It would seem that the reverse of this method would render the list more easy of consultation, as it is much easier to find a species in a single list than to hunt for it in four, while nominal lists under the above headings could be better contrasted. However this may be a matter of opinion and in no way detracts from the excellence of Dr. Roberts' work. He has brought together a mass of valuable data and his list should be of much assistance to the ornithologist, the Audubon Society and the conservationist. The same paper without the summary and colored plate appeared a few weeks earlier in 'Fins, Feathers and Fur,' the official bulletin of the Minnesota Game and Fish Department, for December, 1915.— W. S.

Kellogg's Report upon Mammals and Birds of Trinity, Siskiyou and Shasta Cos., Cal.[3]— This report deals with the results of two trips into the Trinity, Salmon and Scott Mountains of northern California undertaken during February–March, and June–August, 1911, by Misses Annie M. Alexander and Louise Kellogg. A collection of 449 birds and 976 mammals was obtained which has been presented by Miss Alexander to the Museum of Vertebrate Zoölogy of the University of California. The greater part of the report treats of the mammals, but there is a briefly annotated list of the birds, with dates and localities where they were observed. This comprises 95 species.

[1] Birds of Lake County. By Henry Kelso Coale. [1912].

[2] The Winter Bird-Life of Minnesota. Being an annotated list of birds that have been found within the State of Minnesota during the winter months. By Thomas S. Roberts, M. D. Geol. and Nat. Hist. Survey of Minn. Zool. Div. Occasional Papers: Number 1, pp. 1–20, pl. I. February, 1916.

[3] Report upon Mammals and Birds found in Portions of Trinity, Siskiyou and Shasta Counties, California. By Louise Kellogg. Univ. of Cal. Publ. in Zool., Vol. 12, No. 13, pp. 335–398, plates 15–18. January 27, 1916.

Another paper by Dr. Joseph Grinnell immediately follows Miss Kellogg's and deals with an 'Analysis of the Fauna of the Trinity Region of Northern California'[1] based upon the collection above mentioned. His conclusions are that the boreal element of the fauna of the Trinity region is nearest to that of the Sierra Nevada, with but little Humid Coast element, while the Sonoran "islands" of the region are nearest to the Sacramento Valley in their faunal characteristics. The Trinity region seems to show but very slight endemic individuality. These two papers form a valuable contribution to the series which Dr. Grinnell and his associates are issuing from time to time and which are rapidly assuming the proportions of a natural history survey of the State.— W. S.

Lincoln's 'The Birds of Yuma County, Colorado.'[2] — This is a very briefly annotated list of 164 species. Presumably it is based upon field work carried on by representatives of the Colorado Museum of Natural History but on this point the several paragraphs of introduction throw no light, merely stating that systematic work in Yuma county "was deemed likely to be exceptionally productive." It is to be regretted that some account of the expedition and a detailed analysis of its results do not accompany the list.— W. S.

Witherby's Report on the 'British Birds' Marking Scheme.[3] — During the seven years that 'British Birds' has been conducting its systematic bird marking scheme, 67,614 birds have been banded. Of the 59,847 banded to the end of 1914 no less than 1835, or 3.06 per cent, have been heard from. Several Swallows, a Sand Martin and a Wryneck banded in 1914 returned to England and were identified the following year, while a Martin banded at Kinnelhead June 26, 1913, was recovered at the same place August 17, 1915. Three Mallards banded in Great Britain in February were recovered in Sweden and Holland, in November and August following.

These are only some of the interesting records which this report contains, and it is deeply to be regretted that the war is so seriously interfering with the progress of this valuable line of ornithological work.— W. S.

Recent Papers by Van Oort.— Several recent publications by Dr. E. D. Van Oort are before us. In one he summarizes the work of the Leiden Museum in bird banding,[4] giving some 47 cases of birds recovered

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[1] An Analysis of the Vertebrate Fauna of the Trinity Region of Northern California. By Joseph Grinnell. Univ. of Cal. Publ. in Zool., Vol. 12, No. 14, pp. 399–410. January 27, 1916.

[2] The Birds of Yuma County, Colorado. By F. C. Lincoln. Proc. Colo. Mus. Nat. Hist., pp. 1–14, Dec., 1915. [Neither volume nor part indicated].

[3] The "British Birds" Marking Scheme. Progress for 1915 and Some Results. By H. F. Witherby. British Birds, IX, No. 9. February 1, 1916.

[4] Resultaten van het ringonderzoek van het Rijks Museum te Leiden. Ardea, 1915, pp. 119–126.

in 1914 and 1915. These include representatives of a number of different species, Gulls, Titmice, Starlings, etc. In another paper[1] he records the occurrence of *Puffinus gravis* in the Netherlands for the first time while a third contribution[2] consists of a description of a new Bird of Paradise, *Falcinellus meyeri albicans* (p. 228) from the Snow Mountains of Central New Guinea.— W. S.

Didier's 'Le Macareux du Kamtschatka.'[3] — This brochure consists of a brief monograph of the Crested Puffin, with descriptions of birds in various stages of plumage, accounts of nest, egg, habits, distribution, synonymy, etc. There is also a lithographic plate of the adult birds and a cut of the egg.— W. S.

Annual Report of the National Association of Audubon Societies for 1915.[4] — This report shows the National Association, the 'parent body' of bird protectionists in America, to be in excellent condition. About $100,000. of income has been expended during the year in the interests of wild bird life. Besides the secretary's report which touches briefly upon the various lines of work carried on during the year, we have reports of field agents, in Maine, Massachusetts, Virginia, Ohio and the Pacific States; the report of H. K. Job, head of the department of Applied Ornithology, of Mary S. Sage, organizer in schools, and thirty-nine reports from State Societies and independent clubs. In conclusion there is the report of the treasurer and the list of members. This report as well as the substantial Audubon department in each number of 'Bird-Lore' will prove interesting reading to all who have at heart the growth and development of the great work of bird protection.— W. S.

Recent Bird Biographies by Miss Stanwood.— Numerous sketches of birds and their nesting activities have appeared during the last few years from the pen of Miss Stanwood, all of them evidently based upon careful study and written in a style that is pleasing and yet serious enough to suit the importance of many of the facts that are recorded. These sketches can well be taken as models for others who have the time to make careful studies of the activities of birds' nests, and ability to set them down in biographical sketches. Miss Stanwood has recently contributed an excellent account of the nesting of the Red-breasted Nuthatch,[5] a species that but

[1] Een voor de Nederlandsche fauna nieuwe stormvoglesoort *Puffinus gravis* (O'Reilly) Ardea, 1915, pp. 130–131.

[2] On a New Bird of Paradise from Central New Guinea, *Falcinellus meyeri albicans*. Zool. Mededeelingen, Deel I, Afl. 3–4.

[3] Le Macareux der Kamtschatka (*Lunda cirrhata* (Pall.)) Dr. Robert Didier. Suppl. au No. 82 de la Revue Française d'Ornithologie. 1916. pp. 1–16. Pl. I.

[4] Annual Report of the National Association of Audubon Societies for 1915. Bird-Lore, 1915, pp. 493–560.

[5] The Red-breasted Nuthatch. By Cordelia J. Stanwood. Home Progress, January, 1916, pp. 213–215.

few have had the opportunity to study carefully in its summer home, another on the nesting of the Redstart [1] and an account of a tame Olive-backed Thrush [2] which she raised from a nestling.— W. S.

Washburn's 'Further Observations on Minnesota Birds.' [3] — Minnesota birds bid fair to be well cared for in the future, for in addition to Dr. Roberts' list we have another circular from the Agricultural Experiment Station on common birds, by the State Entomologist, Mr. F. L. Washburn. This is issued in response to the great demand in the schools for a similar earlier publication (Circular 32). Twenty-three familiar species are described in a popular way and illustrated by cuts from 'Citizen Bird' representing paintings by Louis Agassiz Fuertes, which have been very well printed. Mr. Washburn's pamphlet should prove very satisfactory for school use.— W. S.

Recent Papers on Bird and Game Protection. — Dr. Walter P. Taylor [4] at the Meeting of the American Association of Museums in San Francisco read an important paper, reviewing the carelessness of legislative bodies in passing laws affecting wild birds and animals which have operated toward the extinction of really valuable species. He then pointed out an important function of the museum in placing at the service of the State the results of its technical and economic investigations and in training experts who can work directly for the State in the investigation and conservation of the native fauna.

Two recent pamphlets from the Biological Survey are Mr. Henshaw's report as Chief of the Survey [5] and the report of the governor of Alaska on the Alaska Game law.[6] The bird work outlined by Mr. Henshaw has been largely published in special reports already noticed in these columns, and covers the mortality of wild ducks on Great Salt Lake; ducks in relation to oyster industry; food of wild ducks; collecting of data on migration and distribution; notes on conditions of ten national bird reservations are given and on the enforcement of the Migratory Bird Law. Importations of foreign birds total 270,000 for the year 1915, of which 216,000 were canaries. In Alaska the bag limit for game birds has been of great value in

[1] A Skillful Architect [The Redstart]. By Cordelia J. Stanwood. The House Beautiful, February, 1916. pp. xl–xlii.

[2] The Chronicle of a Tame Olive-backed Thrush. By Cordelia J. Stanwood. Wilson Bulletin, No. 93, December, 1915.

[3] Further Observations on Minnesota Birds: their Economic Relations to the Agriculturist. By F. L. Washburn. Circular 35, Minn. Exper. Sta. January 15, 1916.

[4] The Museum of Natural History and the Conservation of Game. By Dr. W. P. Taylor. Proc. Amer. Asso. of Museums, IX, pp. 96–103, 1915.

[5] Report of Chief of Bureau of Biological Survey. By H. W. Henshaw. Ann. Rep. U. S. Dept. Agr., 1915, reprint, pp. 1–15.

[6] Report of the Governor of Alaska on the Alaska Game Law By J. F. A. Strong. pp. 1–18.

saving from extinction grouse, ptarmigan and water fowl in certain sections, while the law against spring shooting is generally respected.

The New Jersey Audubon Society has issued an attractive annual report,[1] devoted especially to the Junior Audubon class work.— W. S.

A Beginning of Philippine Economic Ornithology.— Mr. Richard C. McGregor, Ornithologist of the Philippine Bureau of Science has undertaken the study of the economic value of birds in the Philippines, in which work he has the support and coöperation of the Agricultural Congress. A circular requesting information has been issued, accompanied by a card upon which the data can be entered. There has been published also a press bulletin [2] intended to arouse interest in the work. This publication illustrates some common types of Philippine birds, and contains general notes on the food of many species, and specific data on a few.

It is to be hoped that good progress can be made on the elucidation of the economic ornithology of the Philippines, and that the results in rational protection of birds will be satisfactory.— W. L. M.

Collinge's 'Some Observations on the Rate of Digestion in Different Groups of Wild Birds.' — Under this caption, Professor Walter E. Collinge summarizes [3] the investigations of other workers, and presents the results of his own studies on rate of digestion in the Rook, Starling, and House Sparrow. The various findings agree very well that the contents of the stomach are completely digested in about four hours. From this it would seem that the human plan of three meals a day must be largely prevalent among birds. The reviewer has presented evidence [4] that a much larger number of meals may be taken when the food consists of particularly delicate insects.— W. L. M.

Economic Ornithology in Recent Entomological Publications.— In "Some notes on the western twelve-spotted....cucumber beetles," [5] Mr. R. A. Sell notes that "The only birds observed actually eating these insects were the purple finch, the bush-tit, the linnet and the canon wren."

The Biological Survey records add to this list: the Pipit, Wren-tit, Tule Wren, Red-shafted Flicker, Steller's Jay, Yellow Warbler, Western Yellow-bellied Flycatcher, Traill's Flycatcher, Brewer's Blackbird, Western Yellow-throat, Lutescent Warbler, Barn Swallow, Russet-backed Thrush, Bullock's Oriole, California Shrike, Valley Quail, Gambel's Quail, Cliff Swallow, California Towhee, Spurred Towhee, Black Phœbe, Vigor's Wren, and Black-headed Grosbeak. Some of these birds feed extensively

[1] Fifth Annual Report of the New Jersey Audubon Society. Oct. 5, 1915. pp. 1–23.

[2] No. 32, rev. Bureau of Science, 14 pp., Dec. 29, 1915. Birds in Their Economic Relation to Man.

[3] Journ. Econ. Biol., Vol. X, No. 3, Sept., 1915, pp. 65–68.

[4] Yearbook, U. S. Dept. of Agriculture, 1912 (1913) pp. 402–403.

[5] Journ. of Economic Ent., Vol. 8, No. 6, Dec. 1915, p. 518.

on the beetle (*Diabrotica soror*). From Mr. Sell's account it appears that natural enemies other than birds are negligible.

A few birds that feed upon grasshoppers are mentioned in Harrison E. Smith's report on 'The Grasshopper outbreak in New Mexico, during the summer of 1913.'[1] The irruption described was largely of one species, the long-winged grasshopper (*Dissosteira longipennis*). It extended over about 500 square miles in which area grasses and crops were in great part devastated. "Among the more important bird enemies noted to be feeding upon grasshoppers during this invasion were the Desert Horned Lark (*Otocoris alpestris leucolæma*), Western Meadowlark (*Sturnella neglecta*), Desert Sparrow Hawk (*Falco sparverius phalæna*), Nighthawk (*Chordeiles virginianus*), Killdeer (*Oxyechus vociferus*), and Quail (*Colinus virginianus*)" (pp. 6–7).

A Woodpecker is given high credit as an enemy of a destructive pine moth by Josef Brunner of the Bureau of Entomology."[2] It is said that: "In most sections of the Rocky Mountains the Rocky Mountain Hairy Woodpecker (*Dryobates villosus monticola*) is unquestionably the most efficient natural force in restraining the Zimmerman pine moth. Thousands of trees are each year regularly infested by the moth in comparatively small areas, and this bird as regularly destroys almost all of the larvæ in all of them during early winter, so that, although hundreds of trees may be examined at a time, it is only on rare occasions that larvæ are found after December in wounds in the trunks of trees which had been infested during the previous summer. This woodpecker seems to have a decided preference for the caterpillar of the pine moth wherever the writer and the entomological rangers assigned to the Northern Rocky Mountain Field Station have had opportunities for observation. In the extreme southeastern part of Montana, and particularly that portion covered by the Northern Cheyenne Indian Reservation and by the Custer National Forest, the moth has apparently neither bird nor insect enemies. In all other localities this woodpecker is fully able to eliminate this insect as a serious factor in timber destruction. Especially will the work of the bird become effective when the habits of the moth are more generally understood and its "brood trees" are eliminated through use by man."

In recent papers by W. W. Froggatt, Government Entomologist of New South Wales, are some interesting notes on the food of birds. He discusses[3] at some length the bird enemies of sheep-maggot flies (*Calliphora spp.*). The Crow (*Corvus coronoides*) is credited with destruction of large numbers of the maggots. Other birds recorded among their enemies are Magpies (*Gymnorhina*) and Soldier-birds and other Honey-eaters (*Meliphagidæ*). The writer adds a word of caution against indiscriminate spread of the Starling.

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[1] Bull. No. 293, U. S. Dept. of Agr., 12 pp., 2 figs., Oct. 7, 1915.
[2] Bull. No. 295, U. S. Dept. of Agr., Oct. 28, 1915, p. 6.
[3] Farmers' Bull. No. 95, Dept. of Agr., N. S. Wales, March, 1915, pp. 39–41.

In an article on 'Pests and disease of the cocoanut palm'[1] the same author notes that a small cockatoo of the Solomon Islands, which from the description is *Cacatua ducorpsi* (fide Alex Wetmore), does a great deal of damage by gnawing holes in small green cocoanuts.— W. L. M.

The Ornithological Journals.

Bird-Lore. XVII, No. 6. November–December, 1915.

The Behavior of the Least Bittern. By Arthur A. Allen.— Excellent illustrations from photographs.

A Family of North Dakota Marsh Hawks. By Florence M. Bailey.

Grouse Camp-Mates. By Roy C. Andrews.— Spruce Grouse in the Adirondacks.

The Nuthatches are the subject of the colored plate, with notes on migration and plumage of the several species.

The Educational Leaflet, by T. G. Pearson, treats of the Surf Scoter.

In the Audubon Society department there is a well illustrated article 'Cruising the Klamath.'

Bird-Lore. XVIII, No. 1. January–February, 1916.

Some Canadian Grouse. By H. H. Pittman.

The Chickadees are figured in the colored plate and their migration and plumage discussed.

Bird-Lore's Sixteenth Christmas Census covers 25 pages.

Educational Leaflet, The Shoveller. By T. G. Pearson.

The Condor. XVII, No. 6. November–December, 1915.

The Yellow-billed Loon, a Problem in Migration. By W. W. Cooke.

Notes on the Nesting of the White-tailed Ptarmigan in Colorado. By W. C. Bradbury.

Characteristic Birds of the Dakota Prairies. II. Along the Lake Borders. By Florence Merriam Bailey.

A Convenient Collecting Gun. By L. H. Miller.

Further Remarks on the Kern Red-wing. By J. Mailliard.

Nesting of the White-tailed Kite at Sespe, Ventura County, California. By Lawrence Peyton.

Additional Observations on the Birds of the Lower Colorado Valley in California. By A. B. Howell and A. Van Rossem.

The Condor. XVIII, No. 1. January–February, 1916.

Philadelphia to the Coast in Early Days, and the Development of Western Ornithology Prior to 1850. By Witmer Stone.

Characteristic Birds of the Dakota Prairies. III. Among the Sloughs and Marshes. By Florence Merriam Bailey.

New and Interesting Bird Records from Oregon. By S. G. Jewett.

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[1] Science Bull. No. 2, Dept. Agr. N. S. Wales, 3d Ed., July 1914, p. 54.

A Personal Supplement to the Distributional List of the Birds of California. By W. L. Dawson.

The Wilson Bulletin. XXVII, No. 3. September, 1915.

Field Observations on the Rose-breasted Grosbeak. By I. N. Gabrielson.

Birds by the Wayside, in Egypt and Nubia. By Althea R. Sherman.

Owls as Regarded by the Scientist, the Agriculturist and the Sportsman. By R. W. Shufeldt.

Plainfield, New Jersey, Bird Census. By W. D. Miller and C. H. Rogers.

Mississippi Kite in Nebraska. By D. H. Bailey.

The Wilson Bulletin. XXVII, No. 4. December, 1915.

The Home of the Great Crest. By I. N. Gabrielson.

A Two-year Nesting Record in Lake County, Ill. By C. C. Sanborn and W. A. Gœlitz.— 71 species.

The Chronicle of a Tame Olive-backed Thrush. By C. J. Stanwood.

Five Hours on Butler's Lake, Lake Co., Ill. By W. A. Gœlitz.

Cardinals in Northeastern Iowa. By M. E. Hatch.

The Oölogist. XXXII, No. 12. December 15, 1915.

A Belated Nest of the Olive-sided Flycatcher. By R. W. Tufts.

Notes on the Acadian Flycatcher in the Vicinity of Philadelphia. By R. F. Miller.

The Oölogist. XXXIII, No. 1. January 15, 1916.

The Golden Eagle in Cochise County, Arizona. By F. C. Willard.

European Widgeon [in Virginia]. By H. H. Bailey.

The Oölogist. XXXIII, No. 2. February 15, 1916.

The Bald Eagle in Florida. By O. E. Baynard.

Blue Bird. VIII, No. 1. December, 1915.

A Sketch of the Magnolia Warbler on his Breeding Ground. By Cordelia J. Stanwood.— With illustrations from photographs.

Eggs of North American Water Birds. (Part iv). By R. W. Shufeldt.— Two color plates of Murre's Eggs.

Blue Bird. VIII, No. 2. January, 1916.

Some Experiences in the Photography of Owls. By R. W. Shufeldt.— Numerous illustrations.

Cemeteries as Bird Sanctuaries. By T. G. Pearson.— Reprinted from 'The Craftsman.'

The Ibis. X Series. Vol. IV, No. 1. January, 1916.

A Revision of the Genus Haplopelia. By D. A. Bannerman.— Ten forms are recognized, two subspecies of *H. larvata*, six of *H. simplex*, while *principalis* and *forbesi* are given specific rank. The latter, it is thought, will prove to be the female of another race of *simplex*, its locality being at present unknown.

Notes on some of the Birds of Grand Cayman, West Indies. By T. M. Savage English.— Twelve species are added to Mr. P. R. Lowe's list (Ibis, 1911). A colored plate of *Spindalis salvini, benedicti* and *pretrei* is given.

Notes on the Birds of the Jhelum District of the Punjab. By Hugh

Whistler. With Notes on the Collection by C. B. Ticehurst.— 267 species listed, of which *Riparia riparia indica* (p. 70) from Jhelum, is described as new.

Notes on a remarkable Honey-eater (*Woodfordia superciliosa* North.) from Rennell Island in the Western Pacific. By C. M. Woodford.— With colored plate.

Studies on the Charadriiformes — III. Notes in Relation to the Systematic Position of the Sheath-bills (*Chionididæ*). By P. R. Lowe.— This is an admirably prepared paper on an important subject. Dr. Lowe's studies lead him to the opinion that the Sheath-bill is not a connecting link between the Plovers and Gulls as Kidder and Coues suggested, while it does not seem to be very closely related osteologically to the Oystercatcher as some writers have contended. He finds not a particle of evidence to support Dr. Shufeldt's statement that "the skull of *Chionis minor* is a veritable columbo-gallinaceous one." Dr. Lowe considered that the evidence points to the Sheathbills having been differentiated from the main Charadriiform stock before it had split into the Plover and Snipe branches and prior to the differentiation of the Skuas and Gulls. They are however, a very specialized, not a generalized, group.

Incidentally Dr. Lowe emphasizes the "very literal and patent fact" that the Gull is only a highly specialized Plover.

Bulletin of the British Ornithologists' Club. No. CCX. December 3, 1915.

Dr. Hartert described *Stachyris leucotis goodsoni* (p. 7), Borneo; and proposed the generic name *Reinarda* (p. 7) for *Claudia* preoccupied.

Ægialitis hiaticula tundræ (p. 7) is described as new by Dr. P. R. Lowe from the valley of the Yenesay, E. Siberia; and *Mirafra cantillans williamsoni* (p. 9) by E. C. Stuart Baker from Bangkok, Siam.

A general discussion was held on 'The Bearing of Oölogy on Classification.'

Bulletin of the British Ornithological Club. No. CCXI. December 20, 1915.

E. C. Stuart Baker described as new *Mirafra assamica marionæ* (p. 34), from Central Siam, and Dr. Hartert the following: *Malacocincla sepiaria tardinata* (p. 35), Gunong Tahan, E. Malay Peninsula; *Pomatorhinus schisticeps cryptanthus* (p. 35), Margherita, Upper Assam; *Erythrocichla bicolor whiteheadi* (p. 36), Borneo; and *Macronus ptilosus reclusus* (p. 36), Kina Balu, Borneo. It was announced that the Birds of Paradise introduced on the island of Tobago in 1909 had bred, and five young had been raised.

Bulletin of the British Ornithologists' Club. No. CCXII. February 3, 1916.

Charles Chubb described the following new forms from Ecuador; *Asio galapagoensis æquatorialis* (p. 46), Pichincha; *Ciccaba albitarse goodfellowi* (p. 46), Quito; *Pyriglena castanopterus* (p. 47), Braza; *Grallaria nuchalis obsoleta* (p. 47), Pichincha; *Automolus brooki* (p. 48), Gualea. G. M.

Matthews described *Cookilaria cookii byroni* (p. 48) from Byron Bay, northern N. S. Wales.

A discussion was held on 'Bird Parasites and Bird Phylogeny.'

British Birds. IX, No. 7. December 1, 1915.

Notes on the Grey Plover on the Yenesei. By Maud D. Haviland.

The Moults of the British Passeres with Notes on the Sequence of their Plumages. Part II. By H. F. Witherby.— This installment treats of the Fringillidæ. Part III covering the same family appears in No. 8.

British Birds. IX, No. 8. January 1, 1916.

Henry E. Dresser, An obituary notice by Lord Rothschild.

Some Birds New to the British List. Notes by several contributors.

British Birds. IX, No. 9. February 1, 1916.

The "British Birds" Marking Scheme. By H. F. Witherby (see p. 213).

Notes on the Lapland Bunting on the Yenesei River. By Maud D. Haviland.

Avicultural Magazine. VII, No. 2. December, 1915.

Some Firefinches and other Gambian Birds. By E. Hopkinson (continued in No. 4.)

Avicultural Magazine. VII, No. 3. January, 1916.

The Genus Zosterops. By A. G. Butler.

Spring in New South Wales. By G. A. Heumann.

Cassowaries. By Dr. Graham Renshaw.— Notes on breeding and rearing in the London Zoo.

Humming Birds in their Native Haunts [Argentine and Chili). By F. E. Blaauw.

The American Bittern in Captivity. By I. Dorrien-Smith.

Avicultural Magazine. VII, No. 4. February, 1916.

The European Goldfinch. By Dr. A. G. Butler.— With illustrations from photographs.

Sunbirds in their Native Haunts [S. Africa]. By T. E. Blaauw.

The Emu. XV, Part 3. January, 1916.

Pœcilodryas albigularis. By A. J. Campbell.— With colored plate.

A Trip to the Northern end of the Flinders Ranges. By S. A. White.

Nesting Habits of the Mistletoe Bird (*Dicaeum hirundinaceum*). By S. A. Lawrence and R. T. Littlejohns.

Notes upon the Yellow-mantled Parrot (*Platycercus splendidus* Gould). By H. L. White.

Remarks on the Proposed Second Edition of the "Official Check-List of the Birds of Australia." By G. M. Matthews.

Birds of a Murray Island. By C. Barrett.

Bird Life at Dumbleyung. By M. W. Elliott.

Procellariiformes in Western Australia. By W. B. Alexander.

Notes on the Ground Cuckoo-Shrike (*Pteropodocys phasianella*). By C. F. Cole.

Morning Song of the Noisy Miner (*Myzantha garrula*). By R. Hall.

South Australian Ornithologist. II, Part 5. January, 1916.

Birds of the North and Northwest of Australia. By G. M. Matthews.

A New Parrot for South Australia. By S. A. White.— *Barnardius barnardi lindoi* (p. 115), Moolooloo, Flinders Range.

The Migration of Swallows in South Australia. By A. M. Morgan.

Aquatic Birds breeding near Adelaide. By A. M. Morgan.

A Sketch of the Life of Samuel White (cont'd). By S. A. White.

The Austral Avian Record. III, No. 2. November 19, 1915.

On *Certhia atricapilla* Latham. By G. M. Mathews.

On the " Table des Planches Enlum." of Boddært. By G. M. Mathews and T. Iredale.— A list of new names proposed in this work and omitted in Sherborn's ' Index Animalium.' Among these is *Fringilla canadensis* for our Tree Sparrow, which will take us back again to the nomenclature of Audubon and his " Canada Bunting."

Additions and Corrections to my Reference List. By G. M. Mathews.

Austrotis australis melvillensis (p. 51), subsp. nov. from Melville Isl., N. Australia.

Pluvialis dominicus fulvus description of the chick and immature bird.

Revue Francaise d'Ornithologie. VII, No. 79. November 7, 1915.

A Contribution toward an Ornithological Study of Provence. By J. L'Hermitte (continued in Nos. 81 and 82).

Observations on the Birds of Newport, Belgium, during the War 1914–1915. By J. de Tristan.

The Snipe. By M. de la Fuye (continued in No. 80).

Birds and Electricity. By P. Bede.— Discussion of the killing of birds by telegraph wires.

Revue Francaise d'Ornithologie. VII, No. 80. December 7, 1915.

List of Birds Observed at Lemnos in April, 1915. By Dr. M. Millet-Horsin.

Note on *Accipiter major* (Degl. & Gerbe). By F. Daguin.

Biological Observations on Birds of Kerguelen Island. By J. Loranchet (continued in No. 81).

Revue Francaise d'Ornithologie. VIII, No. 81. January 7, 1916.

Notes on a Collection of Birds from New Caledonia and Lifou. By L. Brasil.— The following are described as new: *Chalcophaps chrysochlora disjuncta* (p. 195); *Haliastur sphenurus johannæ* (p. 201); *Pandion haliaëtus microhaliaëtus* (p. 201); *Sauropatis sancta canacorum* (p. 203) from New Caledonia; and *Tyto alba lifuensis* (p. 202), from Lifou.

Hunting and the Protection of Birds in French East Africa. By A. Menegaux.

Revue Francaise d'Ornithologie. VIII, No. 82. February 7, 1916.

Notes on a Collection of Birds from New Caledonia and Lifou (continued). By L. Brasil.

Note on the Ornithology of Marocca. By A. Vaucher.

Messager Ornithologique. VI, No. 4.

A Journey to the Southeastern and Southern Parts of the Russian Altai and to Northwestern Mongolia. Main Ornithological Results. By P. Sushkin.

On the Ornithology of the Commander Islands. By B. M. Shitkov and S. G. Schtecher.

Sitta europæa taivana nom. emend. By S. A. Buturlin (p. 311).— New name for *S. formosana* (nec *S. formosa* Blyth).

Carduelis carduelis colchicus subsp. nov. By Alex. Koudashev (p. 313).

Muscicapa atricapilla sibirica subsp. nov. By V. A. Chachlov.

Birds collected by A. P. Velezhanin in the Basin of the Upper Irtysh. By G. I. Poljakow (continued).

Ornithologische Monatschrift. XXXIX, No. 9. September, 1914.

New Facts on the Method of Propagation in Cuckoos. By K. Wenzel.

Ornithologische Monatschrift. XL, No. 1. January, 1915.

Contains reports on the several German bird reservations.

Ornithological Articles in Other Journals.[1]

Piers, Harry. The Occurrence of European Birds in Nova Scotia. (Proc. and Trans. Nova Scotia Inst. Sci., XIII, Pt. 3, 1912–13, printed April 3, 1915.)

Williams, M. Y. Notes on the Herring Gull. (Ottawa Naturalist, November, 1915.)

Rintoul, L. J., and Baxter, E. V. Some Notes on Birds Moulting in their Winter Quarters. (Scottish Naturalist, January, 1916.)

Ticehurst, C. B. Notes on Migrants and Moult, with Special Reference to the Moults of Some of our Summer Visitors. (Scottish Naturalist, February, 1916.)

Butterfield, E. P. Observations on the Behavior of a Nestling Cuckoo. (Zoologist, January, 1916.)

B[ragg], L. M. Royal Terns on Devoe's Bank [S. C.]. (Bull. Charleston Mus., December, 1915.)

Lucas, F. A. The Beginnings of Flight. (Amer. Mus. Journal, January, 1916.)

Thomas, Rose H. White-collar Mendelising in Hybrid Pheasants. (Proc. Zool. Soc. London, 1915, pp. 279–284).

Mitchell. P. Chalmers. Anatomical Notes on the Gruiform Birds. (Proc. Zool. Soc. London, 1915, pp. 413–423.)

Miller, L. H. The Owl Remains from Rancho la Brea. (Univ. of Cal. Publ., Geol. IX, No. 8, pp. 97–104.)

Hankinson, T. L. The Vertebrate Life of certain Prairie and Forest Regions near Charleston, Illinois. (Bull. Ill. State Lab. Nat. Hist., XI, pp. 281–303.)

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[1] Some of these journals are received in exchange, others are examined in the library of the Academy of Natural Sciences of Philadelphia. The Editor is under obligations to Mr. J. A. G. Rehn for a list of ornithological articles contained in the accessions to the library from week to week.

Dennis, D. W. Why do our Birds Migrate. (Proc. Indiana Acad. Sci., 1914, pp. 145–148.) The author considers that birds building protected nests or which are able to protect them do not migrate, and that the others migrate in search of safety in nesting! Some of his listed migrants are however resident over a large part of their range.

Culbertson, Glenn. A Note on a Peculiar Nesting Site of the Chimney Swift. (Proc. Indiana Acad. Sci., 1914, p. 279.) — In an old dry well.

Beebe, C. William. A Tetrapteryx Stage in the Ancestry of Birds. (Zoologica II, No. 2, pp. 39–52.) — Finds well developed quills on leg of young dove just behind the femur, considered to be remains of 'posterior wing.'

Lashley, K. S. The Color-Vision of Birds. I. The Spectrum of the Domestic Fowl. (Jour. Anim. Behavior, VI, No. 1, pp. 1–26.) Finds that the fowl is sensitive to difference of wave length in light, irrespective of intensity.

Levick, G. M. Natural History of the Adelie Penguin. (Brit. Antarctic Exped., 1910, Zool. 1, No. 2, pp. 55–84.) — The same material, in a general way, as is embodied in his recent book upon the penguins.

Moulton, J. C. An Account of the Various Expeditions to Mt. Kinabalu, British North Borneo. (Sarawak Mus. Jour. II, pt. II, No. 6, pp. 137–176.) — Contains list of ornithological papers.

Lewis, Frederick. List of Birds Observed in the Vedda Country during July, 1914. (Spolia Zeylanica X, pp. 158–165.) — 129 species of Ceylon birds.

Coward, T. A. A Note on the Behavior of a Blackbird.— A Problem in Mental Development. (Mem. and Proc. Manchester Lit. and Philos. Soc., 1914, pp. 1–8.) — The bird returned again and again to combat its own image in a window. It seemed to remember the spot where its antagonist was to be found but did not profit by the experience of continual failure to reach it.

Alvarado, Rodolfo. Los Colibries Mexicanos. (Bolet. Dirrec. Estad. Biolog. Mex. I, No. 2, pp. 45–95.) — A compiled résumé with descriptions from specimens.

Publications Received.— **Chapin,** James P. Four New Birds from the Belgian Congo. (Bull. Amer. Mus. Nat. Hist., XXXV, Art. III, pp. 23–29, February 21, 1916.)

Chapman, Frank M. Diagnoses of Apparently New Colombian Birds. IV. (Bull. Amer. Mus. Nat. Hist., XXXIV, Art. XXIII, pp. 635–662, December 30, 1915.)

Coale, Henry K. Birds of Lake County [Illinois.] [History of Lake County, 1912.] (Chapter XIV, pp. 353–370.)

Didier, Dr. Robert. La Macareux du Kamtschatka. Supplement au No. 82 de la 'Revue Francaise d'Ornith.,' 1916, pp. 1–16.

Grinnell, Joseph. Method of Caring for Study Skins of Birds. (Proc. Amer. Asso. Museums, Vol. IX, 1915, pp. 106–111.)

Henshaw, H. W. Report of Chief of Bureau of Biological Survey. (Ann. Repts. U. S. Dept. of Agr., 1915, pp. 1–15.)

Kellogg, Louise. Report upon Mammals and Birds found in Portions of Trinity, Siskiyou and Shasta Counties, California. An Analysis of the Vertebrate Fauna of the Trinity Region of Northern California. By Joseph Grinnell. (Univ. of Cal. Publ. in Zool., Vol. 12, Nos. 13 and 14, pp. 335–410, January 27, 1916.)

Lincoln, F. C. The Birds of Yuma County, Colorado. (Proc. Colo. Mus. Nat. Hist. [No Vol. or No.!] pp. 1–14, December 6, 1915.)

McGregor, R. C. (1) Birds in their Economic Relation to Man. (Bull. of Bureau of Science, Govt. of Philipp., No. 32, revised, pp. 1–14, December 29, 1915.) (2) Description of a New Species of Prionochilus from the Highlands of Luzon. (Philipp. Jour. of Sci., IX, No. 6, Sect. D., p. 531, pl. I, November, 1914.)

Murphy, R. C. Notes on American Subantarctic Cormorants. (Bull. Amer. Mus. Nat. Hist., XXXV, Art. IV, pp. 31–48, February 21, 1916.)

Oberholser, H. C. A Synopsis of the Races of the Crested Tern, *Thalasseus bergii* (Lichtenstein). (Proc. U. S. Nat. Mus., 49, pp. 515–526, December 23, 1915.)

Riley, J. H. Description of a New Hazel Grouse from Manchuria. (Proc. Biol. Soc. Wash., XXIX, pp. 17–18, January 25, 1916.)

Roberts, Thomas S. The Winter Bird-Life of Minnesota. Being an Annotated List of Birds that have been found within the State of Minnesota during the winter Months. (Geol. and Nat. Hist. Survey of Minn., Zool. Div., Occasional Papers, No. 1, pp. 1–20, February, 1916.)

Shufeldt, R. W. (1) The Gardens of the Zoölogical Society of Philadelphia. (Sci. Amer. Suppl., January 1, 1916, pp. 8–9.) (2) Nature-Study and the Common Forms of Animal Life. (Nature-Study Review, 12, No. 2, February, 1916, pp. 57–63.) (3) The Photographic Portraiture of Pets. (Popular Photography, February, 1916, pp. 217–223.) (4) Owls, as Regarded by the Scientist, Agriculturist, and the Sportsman. (Wilson Bull., No. 92, September, 1915, pp. 393–403.) (5) On a Restoration of the Base of the Cranium of *Hesperornis regalis*. (Bull of Amer. Paleontology, No. 25, pp. 75–82, December 15, 1915.) (6) Incidents in Animal Intelligence. (Our Dumb Animals, January, 1916, pp. 123–124.) (7) Shall we Save the Quail from Extermination? (*do.* March, 1916, pp. 147–148.)

Stanwood, Cordelia J. (1) The Red-breasted Nuthatch. (Home Progress. January, 1916, pp. 213–215.) (2) The Chronicle of a Tame Olive-backed Thrush. (Wilson Bull., No. 93, December, 1915, unpaged.) (3) A Skillful Architect. (The House Beautiful, February, 1916, pp. xli–xlii.)

Strong, J. F. A. Report of the Governor of Alaska on the Alaska Game Law, 1915. Washington, D. C., 1916, pp. 1–18.

Taylor, W. P. The Museum of Natural History and the Conservation of Game. (Proc. Amer. Assoc. of Museums, Vol. IX, 1915, pp. 96–103.)

Van Oort, E. D. (1) Een voor de Nederlandsche fauna nieuwe storm-

vogelsoort *Puffinus gravis* O'Reilly. (Ardea, 1915, p. 130.) (2) Resultaten van het ringonderzoek van het Rijks Museum te Leiden. (do. pp. 119–126.) (3) On a New Bird of Paradise from Central New Guinea, *Falcinellus meyeri albicans*. (Zoolog. Menedeelingen, Diel I, Afl. 3 en 4, p. 228.)

Washburn, F. L. Further Observations on Minnesota Birds: Their Economic Relations to the Agriculturist. (Circular 35, Office of State Entomologist, January 15, 1916, pp. 1–24.)

Wetmore, Alex. An Anatomical Note on the Genus Chordeiles Swainson. (Proc. Biol. Soc. Wash., XXVIII, pp. 175–176, November 29, 1915.)

Witherby, H. F. The "British Birds" Marking Scheme. (Brit. Birds, IX, No. 9, February 1, 1916, pp. 222–229.)

Abstract Proc. Linnaean Soc. N. Y., Nos. 26–27, 1913–1915, November 23, 1915.

Abstract Proc. Zool. Soc. London, No. 150, November 23, 1915.

American Museum Journal, The, XV, No. 8, XVI, No. 1, December, 1915 and January, 1916.

Austral Avian Record, The, III, No. 2, November 19, 1915.

Avicultural Magazine, (3) VII, Nos. 2, 3 and 4, December, 1915 to February, 1916.

Bird-Lore, XVIII, No. 1, January–February, 1916.

Blue-Bird, VIII, Nos. 1 and 2, December, 1915 and January, 1916.

British Birds, IX, Nos. 8 and 9, January and February, 1916.

Bulletin British Ornith. Club, Nos. CCX, CCXI, and CCXII, December 3 and 29, 1915, and February 3, 1916.

Bulletin of the Charleston Museum, XI, No. 8, December, 1915, and XII, Nos. 1 and 2, January and February, 1916.

Condor, The, XVIII, No. 1, January–February, 1916.

Emu, The, XV, Part 3, January, 1916.

Fins, Feathers and Fur, Bull. Minn. Game and Fish Com., No. 4, December, 1915.

Forest and Stream, LXXXVI, Nos. 1 to 3, January to March, 1916.

Ibis, The (10) IV, No. 1, January, 1916; and Jubilee Supplement, No. 2, December, 1915, Report on the Birds collected by the British Ornithologists' Union Expedition and the Wollaston Expedition in Dutch New Guinea. By W. R. Ogilvie Grant, pp i–xx + 1–329, pl. 1–8, maps, A–B.

Messager Ornithologique, VI, No. 4.

New Jersey Audubon Bulletin, No. 12, March 1, 1916, and Fifth Annual Report N. J. Audubon Society, October 5, 1915.

Oölogist, The, XXXII, No. 12, December, 1915, XXXIII, Nos. 1 and 2, January and February, 1916.

Ornithologische Monatschrift, 39, Nos. 8 to 11, 40, No. 1, August to November, 1915, and January, 1916.

Ottawa Naturalist, The, XXIX, Nos. 8 to 10, November, 1915 to January, 1916.

Philippine Journal of Science, X, No. 4, July, 1915.

Proceedings and Transactions Nova Scotia Inst. of Sci., XIII, Parts 3 and 4, XIV, Part 1.

Proceedings Academy of Natural Science of Phila.

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CORRESPONDENCE.

Membership in the A. O. U.

EDITOR OF 'THE AUK,'

Dear Sir:—

As I fail to find in the corrected copy of the A. O. U. by-laws, sent me by Mr. Sage, any changes whereby the working ornithologists in the Associate Class are benefited, I have this day sent in my resignation as an 'Associate' in the A. O. U. This step also was necessary, by the refusal by 'The Auk,' of further articles dealing with "proposed changes," previous to the last A. O. U. meeting in San Francisco. In my open letter on the subject, I asked for a free discussion in 'The Auk.' This was denied me, as well as others who cared to take part in it. It is evident, that the Fellows, who like I, desired a changed by-laws, to meet changed conditions, were absent, or were over ruled at the last meeting. By leaving the A. O. U. I am not giving up any work so dear to me, and my friends will still find my collection of birds, mammals and eggs, as well as my home, open at all time to them.

Very truly yours,

HAROLD H. BAILEY.

Newport News, Va. Sunday, the 19th of December, 1915.

[As Mr. Bailey's statement regarding his discussion in 'The Auk' may be misleading, the editor desires to state that the *only* communication

which was refused publication was one from Mr. Bailey discussing the fitness of certain gentlemen for the various classes of membership. As Mr. Bailey declined to omit this personal matter his letter was returned.]

Graphic Representation of Bird Song.

[At Mr. Moore's special request 'The Auk' publishes his letter, below. With his permission a copy was sent to Mr. Saunders whose rejoinder follows. These contributions will close this discussion.— Ed.]

Editor of 'The Auk,'

Dear Sir:—

In the January issue of 'The Auk' Mr. Saunders complains that "many of the faults" I found with his system "are the result of misunderstanding." If I misunderstood him, I regret it. My purpose was to point out kindly to one who is just beginning to record bird-songs scientifically, the limitations of his methods, so plain to those who have devoted years to the same study. I assumed that when he elected to employ technical terms, he would wish to use them with the "scientific" precision musicians employ. Now that he admits attaching to them the various and often contradictory meanings found in large family dictionaries, the reason for our misunderstanding is apparent. I am no longer astounded by his careless use of such technical terms as, "duration," "time" and "rhythm," and his most serious confusion of the "trill" with the "repeated note." When he *has* "recorded enough songs" even of the few species he has worked on, he will have to revise his wild assumption that the "shake must be rare in bird music." The shake or trill is not rare! Indeed, it is employed by the *very* birds whose songs he records! It is not uncommon in songs of Field Sparrow, Song Sparrow and Purple Finch, and in a form of wide range is *characteristic* of the Vesper Sparrow.[1] If Mr. Saunders really cares to be as "scientific" as musicians, he will find this factor decidedly "worth bothering" his "head about!"

Mr. Saunders casts many aspersions at the methods of musicians. Among others, he charges them with artificially *changing* bird songs "in both pitch and time to fit the method." It is possible he did this when he used the musical method, but I know of none who have. Our field methods are just as scientifically accurate as his, for some of us discovered the stop-watch long ago and use both it and the more valuable metronome. Personally I do not "decide on some key the bird is supposed to sing!" I do *not* record the key in the field *at all* and if none exists, leave the song as it is. As to pitch, I record every note that is off the pitch with its approximate variation, which is all that Mr. Saunders does. As to time I use for a unit

[1] See Schuyler Matthews' "Field Book of Wild Birds and Their Music, pp. 106–122–123–87.

the 1/64 note, which is often a smaller unit than Mr. Saunder's 1/10. It is just exactly as accurate to measure a song by 1/64 notes as by 1/10s, even if the song is *not* rhythmical. If it is rhythmical (which is true of 95 songs out of 100) the use of the musical unit permits a clear indication of the rhythm, which is vitally important! Mr. Saunder's records do *not* indicate the rhythm clearly, for in six of his songs, whose authors invariably sing rhythmically, the rhythm is absolutely obscured by his failure to mark the *accented notes*. In his Robin's record it is possible to show it *existed*, only because the pauses *happen* to be all of the same length and come at regular intervals.

I agree with Mr. Saunders it is "absolutely ludicrous" to play bird-songs on the piano and expect them to sound like the bird. I regret that the old system is so "intricate" and "unintelligible" to him, but hundreds of thousands of people do understand it and thousands of *children* from six to fourteen years of age readily grasp it. The vital difference between the two systems is this: The new method is most efficient for exploitation of such obvious things as the "duration of the songs"; the old system is most efficient for recording the really important factors,— the harmonical relations of the song and its rhythmical beat, which latter for most songs is *the* "specific character."

Robert Thomas Moore.

Haddonfield, N. J.

Editor of 'The Auk,'

Dear Sir:—

Replying to Mr. Moore's latest remarks concerning methods of recording bird songs, it might not be irrelevant to the subject to say that musicians are as a rule artists and not scientists. The science necessary for the student of bird songs consists almost entirely of the physics of sound, not the use of technical musical terms. The student of bird songs is working primarily for the ornithologist, not the musician. So why use an obscure, musical definition of a trill or cast slurs at the "large family dictionary" when the small pocket dictionary is, as far as my examination of it goes, equally to blame?

It would throw much light on the subject, and remove some serious objections to the old method, if Mr. Moore would explain how he is able to record certain bird songs on the musical scale without artificially changing them to fit the method. How, for instance would he write a note pitched half way between A and A flat? How can he record in 1/64 notes and multiples of it, notes whose relative durations are incommensurable?

The old system is not unintelligible to me. I began its study myself when somewhere between six and fourteen years of age, and have considerable use for it at the present time. But I still believe that it is too intricate and mechanical to be of the highest utility in recording bird songs. That my original records did not show accent, which is simply a variation in

intensity of notes, does not weaken the graphic system in any way, for I have mentioned more than once how variations in intensity may be represented by this method, and have recorded this factor in the field in many of my more recent records.

"The proof of the pudding is in the eating." If either method proves to be unworthy in the light of the other, it will sooner or later be discarded, regardless of either Mr. Moore's or my opinions on the subject at the present time. I only ask that the future student of bird songs give both methods a fair and unprejudiced trial in the field, and then use that method which he truly finds to be most accurate, comprehensive, scientific and simple.

ARETAS A. SAUNDERS.

New Haven, Conn.
Mar. 9, 1916.

NOTES AND NEWS.

THE American Ornithologists' Union has sustained one of the greatest losses in its history in the death of Daniel Giraud Elliot on December 22, 1915. Dr. Elliot was one of the founders of the Union and its second president while his deep interest in the society and its welfare was maintained until the time of his death. His name and his scientific publications are familiar wherever ornithology and mammalogy are studied, but those who were privileged to know him personally will appreciate far more the loss that we have sustained. Possessed of a striking personality, dignity and kindliness of manner Dr. Elliot left a lasting impression upon all with whom he came in contact, and inspired with love and respect those with whom he was familiarly associated.

In accordance with custom the president of the Union has appointed one of the Fellows to prepare a biographical notice to be read at the Meeting in November and published in the January number of 'The Auk.' Dr. Frank M. Chapman has been his choice and has accepted the appointment. It will therefore be only necessary in this connection to mention briefly some of the principal events in Dr. Elliot's life.

Daniel Giraud Elliot was born in New York City, March 7, 1835. In early life he travelled for some years in southern Europe, the West Indies and Brazil. Returning to New York he pursued the study of ornithology which seems to have always been his chief interest. Much of his time was spent at the Academy of Natural Sciences at Philadelphia, which was then

through the influence of John Cassin, Dr. T. B. Wilson and others the center of ornithological activity in America.

In 1864 he began the publication of his 'Monograph of the Tetraonidæ,' the first of a series of sumptuous folio works with hand colored plates. There followed monographs of the Pittidæ and Phasianidæ and a volume on new or unfigured North American Birds.

In 1869 Dr. Elliot went to England and remained abroad almost continuously until 1883. In these years he became closely associated with the British ornithologists and this period of his life is pictured in his biography of Dr. Sclater (Auk, 1914, pp. 1–12). His publications during this period comprise monographs of the Paradiseidæ, Bucerotidæ, and the Felidæ, the last marking the beginning of his study of the mammals. Numerous other papers were published in 'The Ibis' and the 'Proceedings' of the Zoological Society of London,' etc., and on his return to America, he contributed a number of chapters to the 'Standard Natural History.'

Dr. Elliot was the scientific advisor of the trustees during the early days of the American Museum of Natural History and was instrumental in securing for them many of the first collections obtained by this institution, while his own collections and library passed into its possession through gift and purchase.

In 1894, Dr. Elliot accepted the curatorship of zoölogy in the Field Museum, at Chicago, and at once began the accumulation of a vast collection of mammals while a series of comprehensive volumes from his pen on the mammals of North and Middle America were published in rapid succession. While at the Field Museum Dr. Elliot made a notable expedition to Somaliland, Africa, and later to the Olympic Mountains of Washington, securing valuable collections.

Returning to New York in 1906 he established himself at the American Museum and began his 'Review of the Primates' an undertaking upon which he was engaged for six years and which necessitated his visiting all of the principal museums of America, Europe and Asia.

Dr. Elliot was an artist of ability and the plates of his earlier monographs were from his own paintings. In addition to his numerous scientific publications he prepared, in 1895–1898, three volumes of a more popular type on the game birds of North America which were well received by sportsmen and others interested in these groups.

Dr. Elliot was a member of a number of scientific Societies, both at home and abroad. In 1906 Columbia University conferred upon him the degree of Sc. D. and 1915 he was made a trustee of the American Museum in which institution much of his interest had been centered. During his long life he was the recipient of many other honors in recognition of his splendid publications and his distinguished contributions to the advancement of systematic zoölogy.

Henry Eeles Dresser[1] an Honorary Fellow of the American Ornithologists' Union, died at Cannes, France, on November 28, 1915, where he had gone in the hope of recovering his health. Mr. Dresser's name has been closely associated with bird study in England for over half a century and he was one of the last of a generation of systematic ornithologists to whom the science is largely indebted for its present advanced position.

Mr. Dresser was for years a member of the Linnæan Society and the Zoological Society of London and joined the British Ornithologists' Union in 1865, serving as secretary from 1882 to 1888. His most notable work was the monumental 'Birds of Europe' in nine quarto volumes with colored plates, with which his name will ever be associated. This appeared from 1871 to 1881 with a supplementary volume in 1895–6. He later published an octavo 'Manual of Palæarctic Birds,' which was an invaluable reference volume to many who were unable to obtain the larger and far more expensive work. Mr. Dresser was also the author of an illustrated work on the eggs of European birds and monographs of the Rollers and Bee-eaters, besides many shorter articles.

He accumulated a large collection of birds and eggs and an extensive library, all of which have come into the possession of the Manchester Museum.

In spite of the extent of Mr. Dresser's ornithological activities and the magnitude of his achievements, his time was not devoted exclusively to his favorite study. For many years ornithological investigations were incidental to a busy business career, though for many years before its publication was begun he had definitely planned his 'Birds of Europe' so that his observations were made with that object in view.

He was born in London, May 9, 1838, and was educated in England, Germany and Sweden. In 1856 he entered the office of a lumber firm in Finland, this being his father's business, and for eight years was engaged in lumber industry in various parts of Europe and in New Brunswick. In 1863 he took a cargo to Texas consigned to the Confederate government and during some months' residence near San Antonio was intimately associated in ornithological investigation with Dr. A. L. Heermann then residing there. From 1864 to 1871 he was engaged in the iron trade in London travelling extensively meanwhile in many parts of northern Europe, Turkey and the Balkan States. His wide experiences and his familiarity with a number of languages gave him a fund of knowledge which was always placed cheerfully at the service of his friends and correspondents and several of his translations have made available to English speaking ornithologists important papers in Russian, Swedish, etc.

Mr. Dresser was noted for his cheerfulness and sweetness of temper, qualities which even those who knew him as did the writer, only as a correspondent, can readily appreciate.— W. S.

[1] For most of the facts contained in this notice, acknowledgment is made to an obituary by Mr. J. E. Harting in 'The Field' for Dec. 11, 1915.

William Charlesworth Levey, son of William Marshall and Anne Maud Charlesworth Levey, an Associate of the American Ornithologists' Union, was born in Indianapolis, Indiana, November 13, 1887, and died July 5, 1914, at his summer home on the east shore of Alton Bay, Lake Winnepesaukee, New Hampshire. He was deeply interested in bird protection and conservation, and was a skilled photographer, some of his pictures appearing in Forbush's 'Game Birds, Wild Fowl and Shore Birds.' His annotated lists of the birds of South Carolina, and of Alton Bay, New Hampshire, were published in Maynard's 'Records of Walks and Talks with Nature.' — J. H. S.

Leslie Waldo Lake, an Associate of the American Ornithologists' Union, died February 7, 1916. He was born April 25, 1849, in Hamburg township, Erie Co., N. Y. He was principal of several schools, and from 1888 to 1891 was district School Commissioner. In the latter year he engaged in business in Hamburg, where he always took a prominent part in public affairs. Mr. Lake was one of the oldest and best known amateur ornithologists in this section and was also much interested in botany and archæology.— T. L. B

Since systematic ornithology is not much over a century and a half old we have only recently begun to consider what was going on one hundred years ago. This sort of retrospect is well worth while as it brings more clearly to our attention the relative position of various important works which we are accustomed to quote independently, without much regard to their relationship to other publications. A series of notes gathered by Dr. Charles W. Richmond in his researches amongst the ornithological literature of the past, and kindly placed at the disposal of 'The Auk,' throw some interesting light on the progress of ornithology in 1816 — a really notable year in the history of our science.

The work which stands out as the great work of the year is of course Vieillot's 'Analyse,' an unpretentious brochure of 128 pages in which a classification of birds is set forth including some 138 new genera. It is announced as among the new books for the week of April 20, 1816 (Bibl. de la France of that date) though curiously enough Vieillot maintained that it was published in December (Ferussac's Bull. xv, Sept. 1828, p. 143).

Several authors tried to discredit Vieillot's important work by claiming that he had had access to the Paris Museum's galleries and had adopted various manuscript names which Cuvier had placed on the specimens and which were about to be published in his 'Règne Animal,' which appeared in December, 1916. (cf. Mathews Nov. Zool. XVIII, p. 18). A 'critique' on the 'Analyse' was published by Temminck in Amsterdam in 1817. As a matter of fact Vieillot had the 'Analyse' in mind and at least partly prepared long before 1816 (*cf.* his Ois. Chant. p. 74). In 1813 he submitted the manuscript to the Turin Academy and in 1814 to the Linnæan Society of London neither of which accepted it. (Analyse, p. 20,

note). In London Stephens had access to it and adopted several of Vieillot's names publishing them in his continuation of Shaw's 'General Zoology' (Vol. IX, pts. 1 & 2) which probably appeared in the first half of 1816, as it is noticed in the 'British Review' for August, 1816, as one of the new books from the period April 10 to July 10, of that year. This presents a nice question of priority but it would appear as if Vieillot deserved the benefit of the doubt!

Vieillot's ability as a systematic ornithologist seems not to have been appreciated by his contemporaries and he was apparently treated very unfairly. Correspondence between ornithologists of his time would no doubt reveal some very interesting side lights upon this matter!

Vieillot's Analyse was the expression of a more or less widespread desire for more generic groups than were provided in the systems of Linnæus and Brisson. Additional genera had of course been proposed since their time but they were scattered here and there and most of them were for new species rather than for segregates of the old genera.

Bonnaterre in his volume of the 'Encyclopedie Méthodique' (1790); Lacépède in his 'Tableau' (1799) and Daudin in his 'Traité Élémentaire' (1800) made attempts in this direction, but the first and last of these works were never completed while the second was never followed by a fuller treatment such as the author evidently intended; so that the field lay open for Vieillot and he took advantage of it, though the conservatives evidently did what they could to discourage him, and not until years after his death was his work appreciated at its full value. Curiously enough the eccentric Rafinesque came near depriving him of his glory as he likewise produced an 'Analyse' in 1815 in which a number of substitute names are suggested for existing genera and 138 new names are proposed! These latter however, are unaccompanied by diagnoses or specific examples so that they fall as *nomina nuda* and it is impossible to tell for what birds they were intended.

Another publication of 1816 is a curious 'Systematic Catalogue of Indigenous Mammals and Birds in the British Museum' by W. E. Leach printed on one side of the leaves in the form of labels. The several new names that occur here have been pretty generally rejected today as *nomina nuda* but the book is in any case an interesting curiosity and a great rarity. Both it and Vieillot's 'Analyse' were reprinted by the Willoughby Society. The introduction to the Leach reprint, by the way, fails to mention among the known copies of the original one in the library of the Philadelphia Academy.

On January 22, Mr. C. William Beebe of the New York Zoölogical Society sailed for Demarara to establish a tropical zoölogical station for the study of the evolution of birds and the life histories of important South American species. Incidentally large numbers of living vertebrates will be secured and shipped to New York for exhibition in the Zoölogical Park. Mr. Beebe is accompanied by Messrs. G. Inness Hartley, Paul G. Howes and Donald Carter.

At the Annual Meeting of the Delaware Valley Ornithological Club held at the Academy of Natural Sciences of Philadelphia, January 6, 1916, Henry W. Fowler was elected president for the ensuing year; George H. Stuart 3rd, Vice President; J. Fletcher Street, Secretary and Dr. Samuel C. Palmer, Treasurer. Communications were made during the past year by Dr. Wm. E. Hughes, on 'Bird-life in Italy'; Samuel N. Rhoads, 'A Trip to Guatemala'; David E. Harrower, 'Birds Observed in Costa Rica'; Dr. Witmer Stone, 'Our Western Birds and their Haunts' and J. Fletcher Street, 'Rare Birds of the Pocono Mt.'

Mr. W. Leon Dawson of Santa Barbara, Cal., has made over his valuable collection of birds' eggs and nests to a board of trustees who are incorporating an institution to be known as the Museum of Comparative Oölogy, in which it is hoped to accumulate a representative collection of the nests and eggs of the birds of the world. Mr. Dawson is to have responsible control of the collection during his life in order to insure its proper care during the early years of the enterprise. At the expiration of three years during which he will be engaged in field work in connection with the forthcoming 'Birds of California,' a campaign will be inaugurated for an endowment and a group of buildings suitable for housing the collection. A number of prominent oölogists and ornithologists have been invited to form a Board of Visitors to coöperate with the museum management.

'Blue-Bird,' formerly edited by Dr. Eugene Swope, has now passed into the hands of Elizabeth C. T. Miller of Cleveland, Ohio, who as owner and editor is conducting it as a monthly. Volume VIII began with the December number and presents a very creditable appearance.

The next stated meeting of the American Ornithologists' Union will be held at the Academy of Natural Sciences, at Philadelphia, November 14–16, with a business session on the 13th. It has been the general consensus of opinion that a return to the former time of meeting, the second Tuesday of November is desirable as it is convenient to the largest number of members. In accordance with the recent amendments to the By-Laws, proposed for the purpose of broadening the organization of the Union, the class of Members will this year, for the first time, take part in the business sessions and participate in the election of Members, Associates and Officers. This innovation will doubtless bring together a much larger number of Members and Fellows than usual. Furthermore owing to the fact that last year's meeting was held in San Francisco, where most of the eastern members were unable to attend, there will be an unusually full attendance of all classes from the east at the Philadelphia meeting, while not a few from 'the coast' stimulated by last year's meeting have signified their intention of being present. All in all this meeting promises to be one of the largest that the Union has held and it is none too soon for members to

make their plans for attending. We earnestly urge those who have not before attended to do so this year as the social intercourse made possible by these gatherings is of inestimable benefit both to the individual and the society, in promoting ornithological interest.

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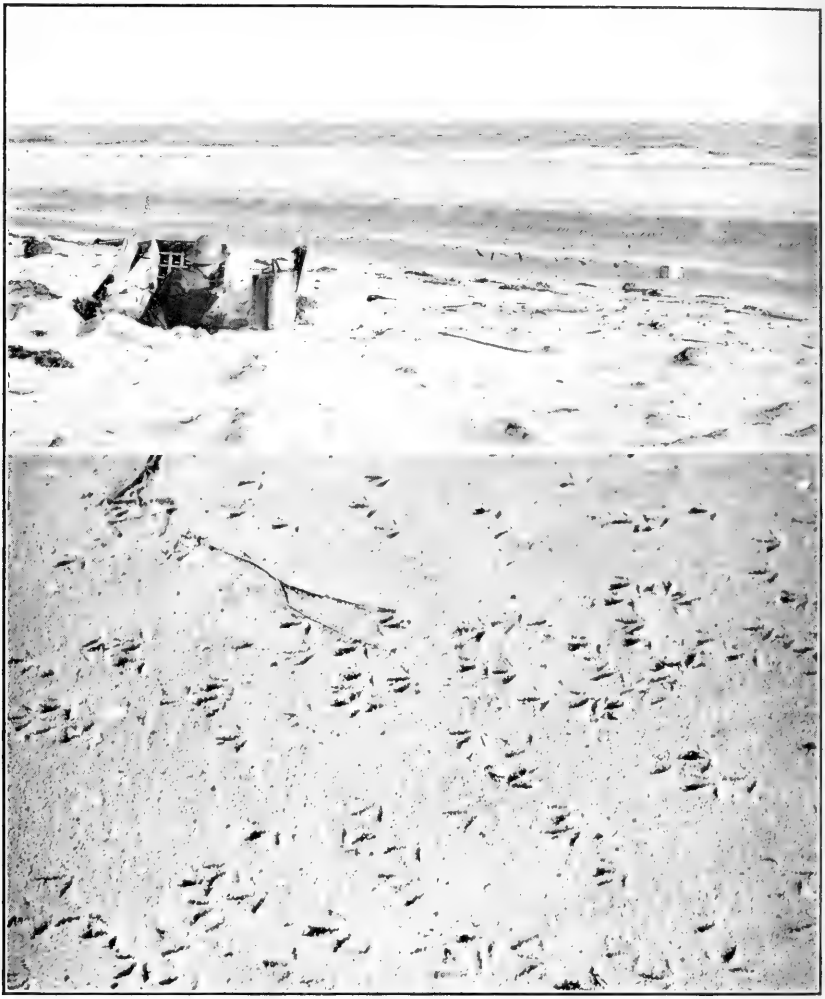

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BY JOHN TREADWELL NICHOLS AND FRANCIS HARPER.

Plates VII–XIII.

LONG ISLAND, with its abundant and varied avifauna, has long been one of the most thoroughly canvassed fields for ornithological work in America. Naturally the water birds hold first place among its attractions. Of the Limicolæ alone, nearly fifty species have been recorded, including a considerable number of European forms and others of rare or accidental occurrence. Unfortunately, bird students in general are rather neglectful of the shore birds, and allow most of the records to be made by gunners or collectors, who— at least as far as Long Island is concerned — have seldom done more than publish migration data or the occurrence of unusual forms. As a consequence, Giraud's work [1] of seventy-two years ago, though far from exhaustive, still furnishes the fullest, and in some respects the best, account that has been published of the habits of most of our shore birds.[2]

Since Giraud's time important changes have taken place in the limicoline life of Long Island. The Dowitcher is no longer present in the abundance of former days. The Robin Snipe, well known to

[1] J. P. Giraud, Jr. The Birds of Long Island. New York, 1844.

[2] Mr. George H. Mackay's excellent studies of a few species on the Massachusetts coast, published in 'The Auk' over twenty years ago, must not be overlooked. See Vol. VIII, 1891, 17–24 (Golden Plover); IX, 16–21 (Eskimo Curlew); IX, 143–152 (Black-bellied Plover); IX, 294–296 (Red Phalarope); IX, 345–352 (Hudsonian Curlew); X, 25–35 (Knot).

the old-time gunners, has been so decimated that now each occurrence is worthy of note. The Eskimo Curlew is a bird of the island's past, and the Golden Plover bids fair to share its fate. The merest remnant of Bartramian Sandpipers yet keeps a foothold at the extreme eastern end of the island. Certain other species, however, have fared much better, and probably a few have not shown any considerable decrease in the past quarter of a century. Large flocks of Least and Semipalmated Sandpipers are still common sights, and even so persistently sought a species as the Greater Yellowlegs has survived in goodly numbers. Apparently the recent agitation for wild-life conservation has already begun to have an effect toward restoring the numbers of our shore birds.

For a number of seasons past we have been able to give considerable attention to the Limicolæ occurring on the marshes and beaches along the south side of Long Island. Most of these are migrants, which generally hurry past, sometimes flying so high in the air as to escape notice. When they do alight to feed on some favorable spot, they are often extremely wary and difficult of approach; yet if one adopts the regular gunner's method, building a blind of bushes for himself, and luring the birds with a flock of decoys planted on sticks, he may find that not only do a surprising number of visitors come, but that some of them are very tame.

The type of blind varies with the nature of the ground and the materials available. On the beach one may scoop out a pit in the sand and build up its ramparts with stranded boxes, logs, or sticks (Plate VII). At a pool on the salt marshes the high-tide bushes (*Iva oraria*), whose green leaves match the color of the surrounding marsh-grass (*Spartina*), make the best sort of blind (Plate IX). They are stuck upright into the soft ground in the form of a more or less complete circle, within which the hunter sits. Bayberry bushes (*Myrica carolinensis*) furnish a closer cover, but are more conspicuous, and therefore less suitable, than the high-tide bushes. Drifted eel-grass and dead stems of marsh-grass are useful for filling gaps in a scanty blind. Occasionally a gunner may sit behind a mere screen of cloth, but a photographer requires a less conspicuous affair and better concealment for work at closer range. The decoys, which are made of tin, wood, or even cardboard, are known on Long Island as 'stool.' The arrangement of the stool

and the blind for the most successful results, especially when photography is the object, calls for considerable experience and skill on the part of the hunter.

The snipe fly up the wind toward the stool, often setting their wings and sailing in first from one angle, then from another. As they approach, their characteristic whistles add to the thrill of the moment. A skillful imitation of these will often bring them in more surely, or turn a passing bird which otherwise might have merely whistled to the stool. The critical moment comes just before they are ready to alight; when actually among the artificial birds, some individuals (especially of the smaller species) seem to take their security for granted. We have very frequently planted our stool in a foot or more of water, where incoming birds could not judge the depth on account of muddiness or surface reflections. In such a case, they often flutter about from one deceiver to another, dipping their feet into the water, and becoming bewildered by their inability to find bottom (Plate XI, fig. 4). If a little mound of mud or seaweed has been prepared to project above the surface near the decoys, a bird will sometimes alight upon it, giving the camera-hunter a shot that may amply repay him for long days of devotion to the difficult but fascinating sport of snipe photography.

May and August are the months in which these birds occur in greatest numbers. As many species are found through September, but after the first week a majority of them fall off in abundance of individuals. The influence of the weather on their southward migratory flight is frequently noticeable. Clear weather and strong northwest winds bring few birds, and those that appear do not come well to stool. At such times doubtless many birds pass by well out at sea. Protracted southerly winds, moderate southwest breezes, and cloudy or showery weather seem to furnish proper conditions for the best flights over the shores and bays. On favorable feeding grounds the birds may be found at practically any time, and their flights from one spot to another on the marshes or mud-flats may, of course, take any direction. In certain other places, however, the flight is seen to be of a truly migratory nature. For example, along the comparatively narrow channel connecting Moriches and Great South Bays, where feeding grounds are so limited as to scarcely induce the birds to alight, a large majority

of them in the fall come to stool from the eastward and leave to the westward, though usually there is also a small minority traveling in the opposite or other directions. Here the birds generally appear at about sunrise, and are most abundant early in the day.

The present paper aims to furnish an account of the migrations, haunts, social and feeding habits, call-notes, field characters, and general activities of eleven species of shore birds, as we have observed them on Long Island. The migration data have been gathered from every available source, including not only the published writings of Dutcher,[1] Cooke,[2] Braislin,[3] and Eaton,[4] but also the manuscript records of a number of other ornithologists, chiefly fellow-members of the Linnæan Society of New York. For cooperation in this and other respects we are glad to express our appreciation and indebtedness to Messrs. William Floyd, Ludlow Griscom, Arthur H. Helme, William Helmuth, Stanley V. LaDow, Roy Latham, Robert Cushman Murphy, Chas. H. Rogers, H. F. Stone, Henry Thurston, and J. A. Weber. We also have to thank Dr. Frank Overton for generously permitting the use of his photographs of the Northern Phalarope. All the other photographs were taken by the writers.

In the case of each species we have endeavored to give the earliest and latest migration dates, together with the locality and the observer's or the recorder's name wherever possible. In addition to the scientific names and the accepted English names, as given in the A. O. U. Check-List, we include a number of local names that are in more or less common use on Long Island.

Lobipes lobatus. NORTHERN PHALAROPE.— Uncommon transient visitant. In following its usual migration route, this phalarope seems to pass at some distance off the Long Island coast, but occasionally (and especially during stormy weather) it reaches our shores. The spring dates range from April 2, 1911 (Long Cove, Overton and Harper), to June 3, 1894 (Montauk Point, Scott); the fall dates, from August 5, 1893, to October 22, 1888 (Montauk Point, Scott).

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[1] Numerous records furnished for Chapman's Handbook of Birds of Eastern North America (1894) and for Eaton's Birds of New York (1910).

[2] Distribution and Migration of North American Shore Birds. Washington, 1910.

[3] A List of the Birds of Long Island, N. Y. Abstr. Proc. Linn. Soc. N. Y., Nos. 17–19, 1907.

[4] The Birds of New York, Part I. Albany, 1910.

1, 2. NORTHERN PHALAROPE. 3. "OXEYE" AND DOWITCHER.

The presence of the species at Long Cove, on the inner side of Fire Island Beach, at so early a date in the spring, was probably accounted for by a gale that had been blowing for a day or so previously. The wind was strong out of the northwest at dawn, when we looked out from the window of a bayman's shanty and spied two small snipelike birds swimming among the ripples in an indentation of the shore several yards away. A few moments later, having hastened forth with cameras and field-glasses, we found one of the birds feeding along the outskirts of a large floating bed of eel-grass in the cove. It swam easily back and forth, sometimes clambering over a bunch of eel-grass in its way; and though we advanced in the open nearer and nearer, it appeared much more interested in securing its breakfast than in watching our motions. When pressed too closely, however, it gave a jerky, half-petulant little note, *pip*. Several times, too, it took wing for a short distance, but was readily approached again. Once, while being photographed, the bird was directly between the two observers, barely out of arm's reach (Plate VIII).

During the southward movement of shore birds in August, one occasionally finds a Northern Phalarope among the meadows along the south shore. Floating water-weed is a favorite place for the birds to alight. They walk about over it or swim across bits of open water indifferently. Most of these birds are in the dark immature plumage, and very confiding, apparently knowing nothing of man. On taking wing, they utter a chipping note suggesting somewhat that of the Sanderling. An adult bird observed on August 21 had the plumage already very gray.

On August 16, 1913, a single Northern Phalarope was observed to flutter down to the surface of a small pond-hole in the marsh back of the beach near Mastic. It sat on the water like a little duck, and presently crouched on a lump of bog, where two Oxeyes crowded beside it, there being scarcely room for all three birds. It seemed to have considerable attraction for several Oxeyes that were flying about, for they stooled to it nicely, even when it was swimming where they could not alight. Though flushed more than once, it returned always to the same vicinity. In flight its blackish upper surface, with the white stripe near the posterior edge of the wing, was striking.

On the 28th and again on the 30th of August, 1915, two birds were observed on the water-weed which carpeted a considerable portion of the surface of a shallow cove in the marsh back of the beach at Mastic. On each date it was doubtless the same two individuals, which had found a congenial spot and were lingering there. As they moved about, their manner of snapping up food reminded one of the Spotted Sandpiper.

Macrorhamphus griseus griseus. DOWITCHER; DOWITCH.— Though formerly abundant, and still usually referred to as a common transient visitant, this is one of the shore birds whose numbers on Long Island have shown a very marked decrease in the last fifty years. At present it is a regular but scarcely common migrant along the south shore. The bulk of the spring migration takes place in May, extreme dates being April 19

(Seaford, R. L. Peavey) and June 12 (Eaton). The southward flight reaches Long Island as early as July 4 (Eaton), and continues as late as September 29 (Freeport, Braislin).

The Dowitcher frequents the bare tidal shoals and the muddy borders of the marshes, seeking its food usually in the shallow water or close to its edge. At present the birds are not, as a general rule, sufficiently numerous to form flocks of more than a few individuals; and frequently only a single Dowitcher is observed, either by itself or in company with other species, such as Yellowlegs, Stilt Sandpipers, Oxeyes, or Ringnecks.

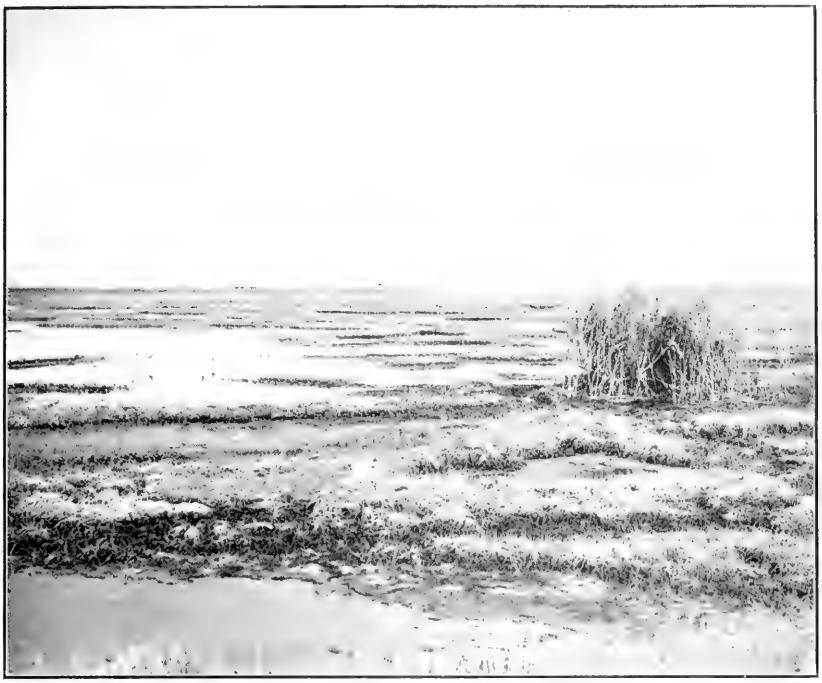
In the August migration of 1913 (which was light for most species), the Dowitchers appeared in somewhat larger force than usual; four or five small, unmixed flocks were seen, which flew low and steadily, and on most occasions failed to act in accordance with their well-deserved reputation for unwary response to decoys. At about sunrise on August 17, however, a flock of seven, accompanied by a Lesser Yellowlegs, stooled beautifully at the edge of a meadow island near Mastic, alighting on a muddy point not far from the blind. The Yellowlegs, which was nearest, soon took alarm and continued its migration to the westward, whistling as it went, but the Dowitchers showed remarkable tameness, and allowed several photographs to be taken before they, too, departed.

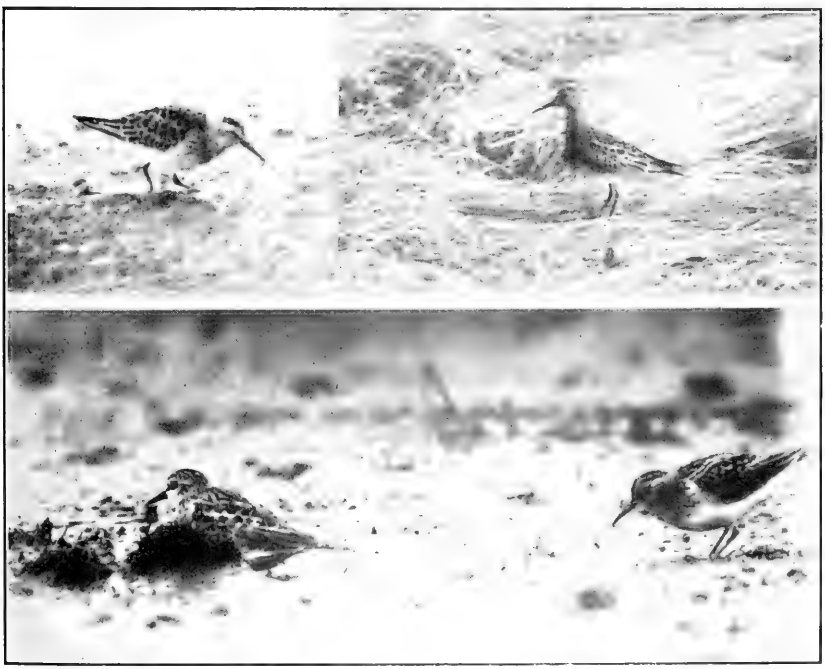
The common note of this species is a soft, rather abrupt whistle, which usually sounds like *wheu-whup*, or *wheu-whup-whup*, but is subject to further variation. Its tone, though a little less shrill, is not very different from that of the Lesser Yellowlegs' whistle. Now and then a rapid series of rolling, guttural notes surprises the hearer.

Though the bodies of the Dowitcher and the Lesser Yellowlegs do not differ greatly in size, the former's bill is noticeably longer, and its legs noticeably shorter. Its stocky build, the darkness of its summer plumage, and the narrow white patch on the back, which forms a very striking mark when the bird is on the wing, are other good field characters. So also is the grayish-white posterior margin of the wing in immature birds. In its steady and well-sustained flight the Dowitcher has a peculiar appearance, for the body is inclined downward from the head toward the tail, while the long bill points earthward at a corresponding angle.

Pisobia maculata. PECTORAL SANDPIPER; KRIEKER; GRASS SNIPE.—An early but rare spring migrant; March 22 (Eaton) to May 30, 1913 (Freeport, Thurston). Fairly common from late July through October; the earliest fall record is July 6, 1911 (East Hampton, W. Helmuth), and the latest, November 10 (Eaton).

Though the common haunt of this species is suggested in one of its vernacular names (Grass Snipe), it is not infrequently found also on mudflats and along the margins of marshy pools and streams. It usually travels and feeds in small bands of its own, but sometimes one or two birds are observed in a scattered flock composed chiefly of the smaller species of snipe. The Kriekers join ranks on the wing, but become more loosely organized after alighting to feed. Each bird moves slowly along, and





1. BLIND AND DECOYS ON SALT MARSHES.
2. WHITE-RUMPED SANDPIPER. 3. PECTORAL SANDPIPER.
4. LEAST SANDPIPERS.

probes into the mud with a rapid drilling motion of its bill, which apparently remains closed, though the tip, at least, must be opened beneath the surface when a morsel is located. We have seen one squat in a skulking attitude on the mud behind a short cat-tail stub, when it had been annoyed by persistent stalking; and we have also seen birds wade into a little stream and swim a foot or two to the other side.

Though the Krieker is an unusually trustful snipe, it is well known, on the other hand, for its lack of response to decoys. We were especially pleased, therefore, with an experience we had at East Pond, Hicks Beach, on September 30, 1911. It was near dusk when a band of eight or ten small snipe appeared, flying low over the eastern end of the pool and heading our way. The birds swung gracefully from side to side as they came on, and having caught sight of our decoys, wheeled in over them. They had scarcely passed by before they turned and dropped in, closely bunched, at the edge of the mud-flat, 18 feet in front of us. There they stood daintily, eyeing the occupants of the scanty blind with curiosity or wonder, as it seemed, rather than with suspicion or alarm; but after some moments they took wing and departed.

The Krieker has two distinct notes — a short *kuk* or *chup*, and a hoarse, rolling whistle, *k-r-r-r-u*, *k-r-r-r-u*.

The heavy streaks on its breast end in a rather abrupt line across the body, and serve as a good field identification mark. These dark markings, however, are of protective value when the Krieker's head is erect, for the breast is then practically a part of the upper surface of the body, where dark coloring is required to render the bird inconspicuous among its surroundings.

Pisobia fuscicollis. WHITE-RUMPED SANDPIPER; BONAPARTE'S OXEYE; BIG OXEYE.— Rare in spring. We find only the following records, all except one within very recent years: June 10, 1882 (six, Mt. Sinai Harbor, Helme); May 21, 1910 (two, Long Beach, LaDow); May 22, 1910 (six, Freeport, Weber and Harper); May 21, 1911 (two, Oak Island, Harper); May 28, 1911 (one, Long Beach, Griscom); May 30, 1911 (five collected by J. A. Weber out of a flock of about 25 on Jamaica Bay); May 23–24, 1915 (fairly common at Gilgo Flats, Johnson, Rogers, Weber, and Harper). Fairly common fall migrant; usually present from the middle of August to the middle of October, and noted as early as July 4 (Eaton) and as late as November 4, 1912 (East Hampton, W. Helmuth).

If one looks carefully through the large mixed flocks of snipe that resort during the migrations to such favored feeding grounds as the Gilgo Flats or the Oak Island pool, he will seldom fail to discover one or more Whiterumps among the others. Separate flocks of this species, consisting usually of only a few individuals, are also observed.

It feeds on the bare tidal flats, at the pools in the marshes, and on the sands of the outer beach. In common with the smaller Oxeyes, it is unsuspicious in disposition. It sometimes crouches on its tarsi when startled, and is then extremely inconspicuous on the mud. We have seen it come over stool, though ordinarily it does not respond to them.

Its flight is much like that of the Least Sandpiper; at times flocks pass by in a direct and unhurried manner, but we have noticed single birds whose flight was swift and darting.

The baymen and gunners do not usually distinguish it from the other Oxeyes, but we have occasionally heard it spoken of as Big Oxeye. It can be readily identified in the field by its slightly larger size and by its white upper tail-coverts, which show conspicuously in flight. On the ground the bird stands low, and is very concealingly colored, like the Krieker, which it resembles also in build. Perhaps as diagnostic as any other characteristic is its note; this is an exceedingly sharp and squeaky, mouse-like *jeet*, which the bird utters on the wing, and which, when once learned, is unmistakable.

Pisobia minutilla. LEAST SANDPIPER; OXEYE; LITTLE OXEYE. — Abundant spring and fall migrant. It is present usually throughout May and from about July 8 to September 20, preceding the Semipalmated Sandpiper by about a week, on the average, both in arriving and in departing on its migrations. It has been recorded from April 20 (Eaton) to June 12 (Orient, Latham), and from June 27 (Orient, Latham) to October 14, 1912 (East Hampton, W. Helmuth).

The Least Sandpiper sometimes occurs on the ocean beach, but is much more characteristic of the marshes and mud-flats; it is also seen commonly on floating beds of eel-grass in quiet coves and bays. It is very gregarious, and travels usually in small bands of three or four to twenty individuals, but may be seen in much greater numbers. Practically every large mixed flock of shore birds on Long Island contains Least Sandpipers; these, however, keep more or less to themselves, though feeding over the same ground with Semipalmated and White-rumped Sandpipers, Ringnecks, and others. The Oxeyes are also very apt to follow the movements of Yellowlegs without associating very closely with them.

Both the Least and the Semipalmated Sandpipers are very easily attracted to stool, but in walking about are apt to become nervous when they see a tall tin Yellowlegs towering above them. The stool are usually set out in the water, but the Oxeyes, with their short legs, prefer to alight on the bare ground, and when there is no convenient mud-bar, will often pass by without a pause.

In securing its food of minute animal life, the Least Sandpiper either picks it up from the surface of the ground, or probes for it with a drilling motion into the mud and sand, sometimes through shallow water, in which it may thrust its bill entirely out of sight. It walks about in a rather leisurely manner, though meanwhile it gleans carefully and industriously.

No more trustful snipe visits the Long Island shores; and it is not a very uncommon experience for the photographer to see some of these little fellows moving about fearlessly within a dozen feet of the place where he stands in full view. At such times, as the members of a small band feed and bathe, rippling the water with their wings, preening their feathers, and even scratching their bills with their toes, they present a charming scene.

1. SEMIPALMATED SANDPIPERS. 2. LEAST AND SEMIPALMATED SANDPIPERS.
3. SEMIPALMATED (AND OTHER?) SANDPIPERS.

The notes of the Least, though confused with those of the Semipalmated Sandpiper, are generally distinguishable. The loudest and most characteristic is a grating *k-r-r-e-e-p*, often heard from single birds just taking wing or already in swift and erratic flight, as well as from small bands maneuvering high in the air. At times it doubtless denotes alarm, and it seems also to signify 'Where are you?' and to be used with the purpose of locating others of the species. There is also a much abbreviated note, which may be represented as *cher*, but is subject to marked variation; this may be used by the members of a flock as a conversational call, or it may represent slight uneasiness when either a single bird or a flock takes a short flight to avoid a person. Still another note is a soft, rolling *k-r-r-r-r-r*, not very different from the whinny of the Semipalmated, but less pronounced and much less frequently heard.

In common with two other members of its genus, the Krieker and the Whiterump, which wear an inconspicuous plumage much like its own, the Least Sandpiper has the curious habit of squatting or crouching when danger is near. We had stalked four of these birds at a pond-hole in a brackish meadow bordering Moriches Bay, and they had become so accustomed to our presence that they were feeding, finally, at a distance of only eight or ten feet. One of us happened to move in a way that alarmed the little sandpipers, so that one of them immediately squatted down on the wet mud, while another crouched with its head lowered. The camera was opportunely focused upon them, and caught them in the act (Plate IX). At such times the birds apparently like to get some little obstruction like a mud-lump, if possible, between themselves and the source of danger.

Ereunetes pusillus. SEMIPALMATED SANDPIPER; OXEYE; BIG OXEYE. — Abundant transient visitant, outnumbering even the Least Sandpiper by probably two to one. Though the Semipalmated is generally a tardier migrant than the other, both species reach the height of their abundance during the latter part of May and through the month of August. Extreme dates for the spring migration of the present species are April 28 and June 13 (Eaton); for the fall migration, July 4 and October 15 (Eaton).

This sandpiper is at home on the marshes, the mud-flats, and the outer beaches. It is observed in almost any numbers, from single birds to one or two hundred together, and occasionally many more. About the third week in May, from the marshes south of Freeport, we have noticed thousands of migrating snipe following the coast eastward in immense and fairly compact flocks; and it is probable that these flocks consisted chiefly of the Semipalmated and Least Sandpipers.

The feeding habits of both species are in general similar, but *Ereunetes* moves about more rapidly in search of food, is stronger on the wing, and shows a greater tendency toward bunching and wheeling. It seems not unlikely that the greater activity of the Semipalmated is associated with its habit of frequenting the surf-beaten shore, while the more leisurely ways of the Least, on the other hand, correspond with its preferred habitat on the quiet mud-flats and marshes. There are few more pleasing sights

along our shores than a band of Oxeyes trotting down the slope of the beach in the wake of each retreating wave, turning just in time to avoid the wash from a new breaker, and keeping barely in advance of its foamy front as they run back over the sands. Sometimes they linger a little too long for some morsel, and the water surges about their legs, forcing them into flight. The members of a flock do not separate widely when feeding, and upon taking wing, they close ranks and move in a compact body. If not disturbed, they fly steadily, but if they become alarmed from some cause, such as a gunshot, they dart from side to side in an erratic course.

The Gilgo Flats, on the inner side of the beach opposite Amityville, are an especially favorable place for observing Semipalmated Sandpipers in large numbers. The flocks start at dawn in search of food, and continue to move about actively for two or three hours. But by eight o'clock on a midsummer morning the birds have temporarily satisfied their hunger, and begin to collect in dense bunches on the inner and drier parts of the flats. Here they rest quietly and doze away with heads tucked in the feathers of their backs. In the space of a few rods as many as three hundred birds may congregate in numerous small and compact groups. At a distance these groups remind one of exposed beds of mussels; or if, at one's approach, some of the birds keep raising and lowering their wings, undecided whether to fly or not, they even suggest a cluster of butterflies on the sand.

Most Semipalmated Sandpipers are very confiding, though some individuals, which doubtless have been much persecuted, exhibit surprising wildness. The members of this species come to stool in greater numbers, probably, than any of the other Long Island shore birds, and many of them pay dearly for their gentleness and sociability, since gunners very frequently turn their weapons upon the little Oxeyes for want of bigger game. Birds with a crippled wing or a dangling leg, or with only one leg, are no uncommon sight, and at times the proportion of cripples to able-bodied birds is sadly large.

One of us in the Northwest has observed a Semipalmated Sandpiper crouching on its tarsi when alarmed, exactly in the manner of the Pectoral, White-rumped, and Least Sandpipers, but we have never noticed this habit in the present species on Long Island.

The ordinary note of this bird is a quick, monosyllabic *ch-r-r-uk*, sometimes shortened to a mere *kuk* or *kip*. A most pleasant little whinnying call, *eh-heh-heh-heh-heh-heh-heh*, is uttered in a contented, sociable tone by a bird either on the ground or on the wing, and is a common sound in migration time on the marshes and tidal flats. Variable as the notes of this species are, they are always distinguished by the absence of the *ēe* sound which is characteristic of the Least Sandpiper's common note.

Each species so resembles the other, both in habits and in appearance, that it is by no means easy to distinguish them in the field except under favorable conditions. The points of difference are really numerous, but all of them are slight. The Semipalmated is a little larger, its general coloration is lighter, its breast less heavily streaked, its back less rusty in

the summer plumage, its bill stouter, and its legs darker. There is also less contrast between the dark middle and the light outer tail-feathers in this species than in the Least Sandpiper, as one may observe when the birds take wing directly away from him. Moreover, one who is familiar with their notes has an excellent means for separating the two species.

The females have decidedly longer bills than the males, and may be readily picked out of a 'bag' of birds by this character.

Calidris leucophæa. SANDERLING; SURF SNIPE.— A very common migrant on Long Island. It is one of the hardiest of our shore birds, being among the first to arrive in the spring as well as among the last to depart in the fall. It is even noted occasionally during the winter. It has been recorded on the migrations from March 15 to June 14, and from July 4 to December 8 (Eaton). On the southward flight it is usually present from late July to late October.

Though the Surf Snipe, true to its name, loves to run up and down the outer beach along the surf-line, it is also found very commonly on a sandy inner beach, such as that bordering Fire Island Inlet, and sometimes on a wide tidal flat along one of the numerous channels at the western end of Great South Bay. It occurs also on the open gravelly points projecting into Long Island Sound. We have seen but one bird — a cripple — actually on the marsh. Even passing birds have been noted but once during several years' observation at the junction of marsh and bay behind the beach at Mastic.

It generally travels in bands of five to twenty individuals of its own species, but larger numbers are occasionally observed together, and many single birds are met with.

The Surf Snipe is less shy than suspicious. In feeding along the beach, it will allow a pedestrian to follow it at fairly close range, and it will almost invariably come close enough to a blind to be at a gunner's mercy; yet it seldom musters the courage to pass directly in front of the blind within good photographic distance. Sometimes its apprehensions seem directed toward the large tin decoys, and it will pass them on the wing instead of walking or trotting among them in its progress along the shore.

The birds feed in a close flock, as they hurry along just where the wash from the sea rolls upon the beach. They obtain their food by rapid probing in the wet sand, whether its surface is bare or covered with a thin film of water; and they undoubtedly fare well upon the small but abundant animal life of the ocean's edge. What seems to be photographic evidence of the flexibility of the upper mandible of this species, was secured at Short Beach on August 14, 1910. In the photograph the bird's bill is apparently open at the tip where it touches the sand, though closed for the basal half of its length (Plate VII).

The Surf Snipe is strong on the wing. Flocks are often observed as they maintain their line of flight either over or just beyond the surf, keeping rather close to the water, and now and again wheeling with perfectly concerted action. When on the ground, the birds are able to move their legs

with machinelike rapidity, and sometimes travel along the beach at a trot faster than a man's walk.

The note of this species is a not very loud *ket, ket, ket,* uttered singly or in a series, and in a slightly complaining tone. We have heard it on a moonlight night from birds flying about over the beach.

The bold white stripe running lengthwise through the middle of the blackish wing is conspicuous in a steadily flying bird, and serves to distinguish the species in any of the varying seasonal plumages.

Totanus melanoleucus. GREATER YELLOWLEGS; BIG YELLOWLEG; WINTER YELLOWLEG; YELPER.— With the exception of a few weeks in June and early July, the Greater Yellowlegs is present on these shores from April to November, or approximately half of each year. It is common on both the spring and the fall migrations, reaching its maximum numbers in the middle of May and in early September. Some exceptionally early spring records are March 9 (Eaton) and March 23, 1903 (Montauk, Braislin), the average date of arrival being about the middle of April. The birds frequently linger into June; several were noted as late as June 17 and 18, 1911, at Gardiner's Island (Harper), while Latham mentions June 19 as the latest date at Orient, and Eaton gives a record for June 22. The earliest date of arrival on the southward flight is July 3 (Orient, Latham), the average being about two weeks later. The latest fall records are November 24 (Eaton) and November 28, 1904 (Mt. Sinai, Murphy); usually the last birds are seen early in the month.

This species is one that has fairly held its own on Long Island in recent years, in spite of relentless persecution. As far as one can judge from shooting records, it was scarcely more numerous in the eighties than to-day. And the birds are still commonly observed in flocks of nearly the same size as in the time of Giraud, who wrote, 'They do not usually associate in large flocks, generally roving about in parties of from five to twelve.' It is largely by reason of their great watchfulness and wariness that they have survived in their present numbers. Doubtless another factor in their preservation is a habit exhibited by the members of a flock while coming in to decoys; they generally keep well separated, and thus do not expose themselves so fully to wholesale slaughter as do birds that bunch closely.

The favorite feeding ground of the Greater Yellowlegs is a large pool in the salt marshes (such as shown in Plate IX), where it generally alights and feeds in one or more inches of water. It is found less commonly along the mud-flats bordering the tidal channels, and only rarely upon the outer beach.

As a flock courses easily but swiftly above the marsh in orderly array, seeking some new haunt, its members frequently give voice to their loud, ringing whistles: *wheu-wheu-wheu,* or *wheu-wheu-wheu, wheu-wheu,* in series of three or more notes. The hunter in his blind gives a whistled imitation of the far-reaching sound, and eagerly scans the air for a glimpse of the oncoming birds. They fly up the wind, responding now and then to his call, and presently catch sight of the stool. If the collection of tin

1. "OXEYES" OVER DECOYS. 2, 3, 4. GREATER YELLOWLEGS.

or wooden birds is well placed, and the hunter resists the temptation to make any movement behind his screen of bushes, the gregarious instinct of the Yellowlegs may overcome their well-founded suspicions and induce them to join their supposed comrades. Upon such an occasion, to fill one's gaze with the large, graceful snipe, as they come low over the marsh, set their long, curving wings, and drop with dangling legs into the pool near the farthest decoys, keeping their wings lifted high over their backs for a moment after alighting, is one of the most fascinating and thrilling experiences to be had on the Long Island marshes. And if the instrument that the hunter then trains upon his game is capable of no louder noise than the click of a shutter, so much the richer is his reward.

When in flocks, the Greater Yellowlegs do not associate closely with other species, and keep to themselves even when feeding in the same pool with a variety of shore birds. We have, however, noticed single birds in the company of other large snipe, such as the Lesser Yellowlegs and the Dowitcher.

Though, as we have already suggested, this species occurs usually in bands of less than ten individuals, we had a flock of about 30 birds under observation for a number of hours on May 20 and 21, 1911, at the well-known Oak Island pool. When we approached the place, numerous Oxeyes merely moved to the farther side of the pool; half a dozen Black-bellied Plovers departed at once, and perhaps for good; the Yellowlegs, too, took flight, but after our blinds were built, they returned again and again, no matter how often disturbed. The pool contained, at that time, only an inch or two of water, and the Yellowlegs continually ran back and forth over the middle of it in an odd fashion. In spite of the extreme length and thinness of their legs, their movements were by no means ungainly. It can only be conjectured that these maneuvers were undertaken for the purpose of securing food, for now and then a bird would dart its bill into the water, as if to snatch up some small inhabitant of the pool, such as a fleeing killifish.

The Greater Yellowlegs is possessed of a varied vocabulary, which seems to have been slighted by most ornithological writers. Its principal notes consist of three very different kinds, all of which may be heard from a single bird in the space of only a few minutes.

A second note is less often heard than the usually described whistle; it seems to be used as a 'summons' call, as when birds on the ground call down a passing flock. It is a very pleasant and musical note, and oft-repeated — *toó-whee, toó-whee, toó-whee, toó-whee, toó-whee.* Hunters may use it to good effect in calling the birds to decoys. Some of them refer to this note as the 'roll'.

A third call is nothing short of astonishing to one who hears it for the first time. It is a curious, discordant cackle, or yelp, which probably gives rise to the vernacular name of 'Yelper.' A solitary Yellowlegs, alighting in a pool beyond the decoys, and entertaining strong suspicions of the blind, though not sufficiently alarmed to depart at once, is very apt to indulge in

this emphatic, henlike cackle: *kaouw, kaouw, kaouw, kaouw.* With each yelp it bobs its head vigorously.

Indeed, there are few of our shore birds that give such striking exhibitions of head-bobbing. The Yellowlegs may express its first mild suspicions by silent bobbing, but presently utters either its piercing whistle or its cackling yelp with the forward thrust of the head, lending so much energy to the movement that its whole body tilts with each bob. One can not help smiling at the bird's comical appearance. As its alarm grows, it bobs with increasing frequency, and finally springs into the air, redoubling its cries as it goes.

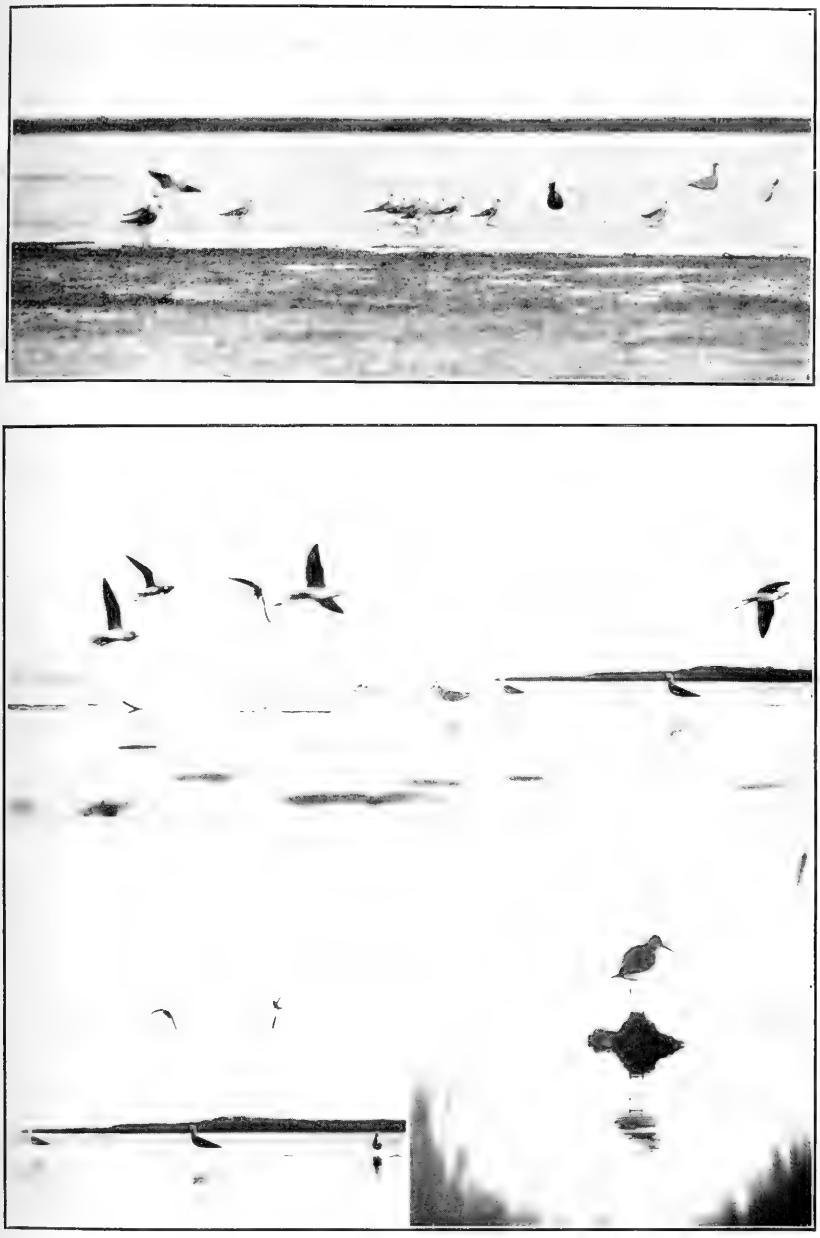
The dark upper parts, whitish tail-coverts and tail, and yellow legs are conspicuous marks which this species shares equally with the Lesser Yellowlegs. The bill of the Greater Yellowlegs is noticeably larger, but either species may be distinguished in the field more readily by its notes than by size.

Totanus flavipes. YELLOWLEGS; LITTLE YELLOWLEG; SUMMER YELLOWLEG; LESSER YELLOWLEGS.— Rare in spring, but a very common fall migrant, generally outnumbering the Greater Yellowlegs from the middle of July to the middle of September. Recorded from April 23 (Orient, Latham) to June 1 (Rockaway, Braislin), and from July 7 (Eaton) to October 28, 1912 (East Hampton, W. Helmuth).

The Lesser Yellowlegs frequents the shallow pools in the salt marshes, and is seen now and then on the mud-flats or on stranded layers of eel-grass along the shores of coves and bays. It is also very partial to brackish meadows with standing water; at such a favorable spot, on the inner beach opposite Mastic, 50 to 100 birds kept congregating for days near the end of August, 1913, despite persecution by gunners.

It is a very gregarious bird, and pairs or small flocks are more frequently observed than solitary individuals. It often associates with other species, such as the Dowitcher, Robin Snipe, and Greater Yellowlegs. In comparison with the last-named species, it generally travels in larger bodies, and is much less suspicious, stooling more readily and alighting closer to the blind. Its flight is similar, though perhaps not quite so strong as that of the larger bird, which at times covers distance with surprising speed. In all its movements and attitudes — whether wading among the decoys in water up to its thighs, bathing, running about over a mud-bar, standing at rest with neck drawn in, scratching its bill with a foot, or curving its slender wings in easy flight — the Lesser Yellowlegs is an exceedingly graceful bird.

In coming to the decoys, it may fly low and easily, or shoot down from a height; sometimes it whistles, and again it drops in without a sound. When the stool are planted on extra long sticks in deep water, the Yellowlegs will often flutter from one to the other, dipping its feet into the water without being able to alight. The bird shown in Plate XII, fig. 4, acted in such a manner until it happened to spy a little mud-lump, upon which it settled, about 16 feet from our blind. From this vantage-point it looked



LESSER YELLOWLEGS.

out over the stool, disregarding the blind and its occupants. Presently a Greater Yellowlegs passed by, and our bird followed it to a neighboring mud-flat. But after an interval of some twenty minutes, apparently the same Yellowlegs returned, and again perched on its favorite mud-lump. When we had secured a number of photographs, we tried to induce the bird to take wing, but the noises and movements we made were unavailing until it slipped off the lump by accident, and then departed.

The ordinary whistle of this species resembles that of the Greater Yellowlegs, but is not quite so loud and clear. It is given in a series of two or singly, *wheu-wheu* or *wheu* — seldom in a series of three or more, as is the larger bird's call. Flocking birds utter a short *wip*, which is frequently repeated, and sometimes runs into a series. There is also a musical 'summons' call, *toó-whee, toó-whee, toó-whee,* almost identical with that of the Greater Yellowlegs, but apparently not so loud. Once a flock of about a dozen birds, just after passing high over our blind, let loose a succession of these notes, as if to entice their inanimate counterparts on the marsh to join them.

In their feeding habits and choice of haunts, the two species of Yellowlegs are very much alike. So far as we have observed, they do not drill in the mud or sand in the manner of a Krieker, Oxeye, or Sanderling, but deftly snatch up their food with thrusts of their long bills, or occasionally search out small morsels by swinging their bills from side to side through shallow water.

Squatarola squatarola. BLACK-BELLIED PLOVER; BLACKBREAST; BULLHEAD (juv.).—Though no longer occurring in the abundance of former days, this strikingly handsome plover is still a rather common transient on Long Island. The migration records extend from April 30, 1902 (Montauk, Scott), to June 17 (Rockaway, Braislin), and from July 1, 1903 (Quogue, Kobbe), to November 12, 1911 (Jones Beach, Griscom). It is usually present on the southward migration from the first week of August to the middle of October, the bulk of the flight taking place in late August and September. Most of the spring birds are seen from the middle to the latter part of May.

The Blackbreast seeks its food at low tide on the mud-flats and the sandy beaches, where it may be distinguished from afar among the Turnstones, Ringnecks, and Sanderlings, that share with it these habitats. With each turn of the tide the plovers fly about more actively, passing to and fro between their feeding grounds and the higher and drier portions of the marshes and shoals, where they remain rather quietly during the period of high water. At times they also alight on the wet marsh.

Nowadays on Long Island they travel generally in small bands of three or four to a dozen individuals; we have, however, observed a flock of as many as 150 near Freeport on the spring migration, and Mr. Henry Thurston reports a flock of about 800 in the same locality on May 30, 1913.

As a rule, other species of shore birds, as well as decoys, have no great attraction for these wary and self-sufficient plovers. A common sight,

however, is a number of Turnstones keeping some Blackbreasts company, and following them when the larger birds fly off. We have observed Robin Snipe, too, associating with them. When one approaches a feeding ground where several different species of the commoner shore birds are present, the Blackbreasts can generally be depended upon to take flight first and farthest from the intruder.

They do not wade in the water so habitually as they run leisurely over the bare flats. On August 24, 1912, however, a pair took us unawares by alighting in a couple of inches of water among our decoys at East Pond, Hicks Beach. One of the birds was changing to winter plumage, but the other was still in nearly full summer dress. They displayed only a little uneasiness while so close to the blind, and though taking their departure after a few moments, they settled again on a mud-bar 50 yards away, where they permitted several long-range photographs from an unconcealed position. The black axillars, which will distinguish this species in any plumage from the Golden Plover, were caught by the camera as one of the birds raised its wings to the fullest extent (Plate XIII).

During this same month, while standing on the open marsh near Freeport, we answered the call of an adult Blackbelly that came flying in our direction. As if recognizing at that instant the dangerous objects ahead, it shot suddenly downward, swerving sharply from its line of flight, somewhat in the manner of a frightened Oxeye. Nevertheless it circled round and round us for the better part of a minute, continually responding to whistled imitations of its melodious notes. It often exhibits this habit of circling when the sportsman in a blind endeavors to lure it within range. Like the Ringneck, it is apt to hover for a moment over the stool in passing by. It is strong and swift on the wing, and its flight is steadier than that of most of our shore birds.

The Blackbelly's trisyllabic whistle, *peé-oooo-eee*, is uttered when the bird is either on the wing or on the ground, and may be heard from afar. It seems perfectly expressive of the bird's wildness and freedom, and is altogether one of the finest sounds of the Long Island coast. The first note, when heard close at hand, has a peculiarly shrill and buzzing quality, but this quality is greatly mellowed by distance. There can be little doubt that the chief accent falls upon this note, though some writers place it upon the second, which is the most prolonged of the three notes. The second and third syllables are nearly alike in tone, and the transition from the one to the other is not at all marked, so that the final syllable now and then appears to be omitted. Another whistle, not quite so frequently heard, is a mellow *kloo-ooo*, or *koo-wee*, with perhaps a slight accent on the second syllable. It seems to be a call of contentment or sociability, and is commonly uttered on a flight of short duration. On several occasions we have heard a small party of these plovers, before or while taking wing, utter a few low, guttural notes, quite unlike their usual whistles; they seemed to be given as calls of attention or warning.

Ægialitis semipalmata. SEMIPALMATED PLOVER; RINGNECK.—

The Ringneck, one of the most daintily dressed and most charming of the Long Island shore birds, is also one of our most familiar species, being exceeded in numbers only by the Least and Semipalmated Sandpipers. A regular and very common migrant, it is present usually throughout most of the month of May, and from late July to the first week in October. Extreme dates for the spring migration are April 19 and June 5 (Eaton); for the fall migration, July 6 (Orient, Latham) and October 22, 1912 (East Hampton, W. Helmuth). On the southward flight it does not become common before the first week in August, when flocks of considerable size may be seen.

This is essentially a bird of the mud-flats, just as the Piping Plover is a bird of the sandy outer beaches. And here is an interesting correlation between plumage and habitat in two closely allied species, the Ringneck's brown back harmonizing with the dark color of the mud, while the Piping Plover's pale plumage renders it inconspicuous on the bright sands. The Ringneck is not given to wading, but feeds along the borders of quiet tidal channels, on the bars and margins of pools in the salt marshes, as well as on the drier, stubbly portions of the marshes, and even occasionally on the outer beach.

It associates freely with the two common species of Oxeyes one or more of the plovers often being seen in a flock of these small snipe; it is also found commonly in the company of the larger shore birds. At other times, it travels in separate bands of three or four to twenty-five or thirty individuals. The members of a flock scatter somewhat in feeding, but on taking wing, they gather into close ranks, their bright under parts showing conspicuously as the flock wheels over the marsh.

The Ringneck is not very wild, nor yet as trustful as an Oxeye, but, on the whole, it much prefers to keep a fair distance between itself and a human being. At nightfall, however, it sometimes permits a close approach, as it runs restlessly about the shore and gives its piping notes. Generally, at the appearance of an intruder, or on other occasions when its suspicions are aroused, it bobs its head in a mildly inquiring way. Decoys do not have the same attraction for this bird as for a Yellowlegs or an Oxeye. When it does come to stool, it may hover for a moment, or even alight, but usually passes by without stopping. Perhaps this is accounted for, in part, by the fact that the decoys in most cases are set out in several inches of water, and the Ringneck therefore finds no suitable place for alighting near them.

Its flight is strong and direct — much less erratic or meandering than that of an Oxeye. Its movements on the ground are not very rapid, and suggest somewhat those of a Robin; it stands quietly on a mud-bar, facing the wind, its head bent slightly forward with an intent air, then it trots forward a few steps, and stops to look about again for a morsel of food. Its legs do not seem to move with the twinkling rapidity of a Piping Plover's, for the mud-flats are less suitable for fast traveling than are the smooth sands over which the latter habitually runs.

The Ringneck's ordinary flight-note or call-note is a sweet and mellow whistle, *tyoo-eep'*. It is given repeatedly by birds on the wing, but those on the ground are generally silent when not disturbed. From hearing this whistle while spending the night on the marshes, we surmise that the birds are more or less active during the hours of darkness. Another and rougher note seems to signify excitement or suspicion; it is usually uttered singly, but sometimes a bird standing on the ground will give a rapid descendo series of these questioning notes, *keup-keup-keup-keup*, etc., the last few almost running together.

EXPLANATION OF PLATES.

PLATE VII.

FIG. 1. Blind and decoys at a pool on the outer beach — the Sanderling's haunt. Long Beach, L. I. September 19, 1909. (F. H.)

FIG. 2. Sanderling tracks. Fire Island Inlet, L. I. May 29, 1911. (F. H.)

FIG. 3. Sanderlings on the outer beach. Mastic, L. I. September 15, 1913. (J. T. N.)

FIG. 4. Sanderling on the inner beach. (Note the bill open only at the tip.) Short Beach, L. I. August 14, 1910. (F. H.)

PLATE VIII.

FIGS. 1, 2. Northern Phalarope. Long Cove, Great South Bay, L. I. April 2, 1911. (Photographed by Frank Overton, M. D.)

FIG. 3. Dowitcher and Oxeye. Mastic, L. I. August 17, 1913. (J. T. N.)

PLATE IX.

FIG. 1. Snipe blind and decoys at a pool on the salt marshes. Freeport, L. I. May 15, 1910. (F. H.)

FIG. 2. White-rumped Sandpiper. East Pond, Hicks Beach, L. I. October 22, 1911. (J. T. N.)

FIG. 3. Pectoral Sandpiper. Mastic, L. I. August 24, 1912. (J. T. N.)

FIG. 4. Least Sandpipers in concealing postures; one bird squatting. Mastic, L. I. September 1, 1912. (F. H.)

PLATE X.

FIG. 1. Semipalmated Sandpipers. Jones Beach, L. I. May 25, 1913. (J. T. N.)

1, 3. BLACK-BELLIED PLOVERS. 2, 4. SEMIPALMATED PLOVERS.

FIG. 2. Least Sandpipers (on left) and Semipalmated Sandpipers (on right). East Pond, Hicks Beach, L. I. September 8, 1912. (F. H.)

FIG. 3. Semipalmated Sandpipers (and probably other species) rising from a mud-flat. Gilgo Flats, Jones Beach, L. I. July 28, 1912. (F. H.)

PLATE XI.

FIG. 1. Oxeyes passing over decoys. Gilgo Flats, Jones Beach, L. I. September 4, 1911. (F. H.)

FIG. 2. Greater Yellowlegs wheeling over decoys. Freeport, L. I. May 15, 1910. (F. H.)

FIG. 3. Greater Yellowlegs coming in to decoys. Freeport, L. I. May 15, 1910. (F. H.)

FIG. 4. Greater Yellowlegs hovering among decoys, with legs dangling, but unable to alight in deep water. Mastic, L. I. September 13, 1915. (F. H.)

PLATE XII.

Lesser Yellowlegs. Mastic, L. I.

FIG. 1. Flock alighted among decoys. Late July, 1913. (J. T. N.)

FIG. 2. Flock passing over decoys. September 11, 1915. (F. H.)

FIG. 3. Two birds dropping in. (In wheeling sharply, one has turned almost over.) September 11, 1915. (F. H.)

FIG. 4. Single bird standing on mud-lump near decoys. September 1, 1912. (F. H.)

PLATE XIII.

FIGS. 1, 3. Black-bellied Plovers. (Note the black axillars showing in one of the flying birds.) East Pond, Hicks Beach, L. I. August 24, 1912. (F. H.)

FIGS. 2, 4. Semipalmated Plovers in front of blind at a pool on the salt marshes. Freeport, L. I. August 21 and 20, 1910. (F. H.)

BIRD-WATCHING AND BIOLOGICAL SCIENCE.

SOME OBSERVATIONS ON THE STUDY OF COURTSHIP IN BIRDS.

BY JULIAN S. HUXLEY, B.A.

(*Concluded from p. 161.*)

Now let us consider a few practical suggestions.

To begin with, the most valuable data are those secured through continuous watching. Choose a single species of bird breeding in a single locality, and resolve to get at the bottom of its life-history. This will mean visiting the place at least two or three times a week, (oftener if possible); make the visits as soon after sunrise as you can, for it is then that almost all diurnal birds show their greatest activity. If this is impracticable, then the middle of the morning is the next best time, and the late afternoon next. The heat of the day is usually poor. If you can be sure of the same pair time after time, so much the better. Anyhow, be resolved at each visit to follow out the behavior of individual pairs or birds for the longest possible period. After you have obtained a general rough idea of the various actions performed by the species, you will find it infinitely better, if you wish to get at their real meaning and connection, to keep your attention on a single bird or pair (even if this involves long spells of apparently useless watching, during periods of rest or feeding), than to jump from one individual to another whenever something exciting happens. This I can personally testify to be of the greatest importance.

Full notes should always be made, and should be made at the moment, or as soon after as possible, if they are not to lose half their value. Every week it is useful to go through your notes and make a little summary to see what new points have been gained, or on what you should especially concentrate during the week to come. A big scribbling pad is better than any bound notebook, as its use permits of the subsequent rearrangement of notes for filing.

Besides the one (or at most two) species you may choose for

thorough investigation in any one year, other birds will constantly be bringing interesting points to your notice. These should, of course, all be put on record. I have tried various methods, and have at last come to regard the card-index and folder system as by far the most convenient. Have a card-index drawer of $3'' \times 5''$ or, preferably, $4'' \times 6''$ cards. Each species on which you have notes is to have its own place; the species should be arranged in some definite classificatory order, preferably that of the A. O. U. Check-List, with guide-cards for the families, and possibly others of another color for the genera. Or the genera and species can be arranged alphabetically within the limits of the family. On the cards belonging to each species your field notes should be summarized very briefly under various headings. I recommend the following sub-division as one affording easy reference: —

(a) Autumn and Winter habits.
(b) Actions connected with the beginning of the breeding season (*i. e.* in monogamous birds, pairing-up habits).
(c) Courtship and Display (including Song).
(d) Fighting, and actions connected with Jealousy (including questions of Territory).
(e) Nest-building, Egg-laying, and associated actions.
(f) Incubation and care of the young.
(g) General Miscellaneous notes, including localities, identification, call-notes, etc.

A few remarks on the scope of these subdivisions will, I think, be useful; perhaps the best way is to put a set of questions which must be answered for any species before we can consider ourselves in possession of its full annual history. I will take the headings in their order.

(a) *Autumn and Winter habits:* (1) Is the *individual, pair, family, flock,* or *composite flock* the unit? (Examples: In the Redbreast, *Erithacus rubecula,* the birds are solitary all through the winter; in early autumn the old birds and the full-grown young have fierce fights. This is due to the fact that the birds are non-migratory and in winter each requires a definite territory to support life. By *composite flock* I mean a flock composed of two or more species. For instance, in Europe Rooks and Jackdaws often feed together, and the small woodland non-migratory birds often band

together into flocks containing four or five species. I have seen three species of Paridæ (*P. major, P. cæruleus* and *P. ater*) together with Goldcrests (*Regulus cristatus*) and Creepers (*Certhia familiaris*) all travelling together through the tree-tops.)

(2) If the flock is the unit, does the pair persist within the flock? (*cf.* the Dabchick, cited above, p. 149). In some birds this is definitely not the case, since the sexes separate and the flocks are almost all of one sex: e. g. *Fringilla cælebs*, the Chaffinch.)

(3) In migratory birds, is the unit the same all through these months, or do the migrating flocks break up into pairs or individuals in their winter home?

(4) Is there any recrudescence of courtship-action in early fall, or in warm days in winter? (After family duties are over and before there is any scarcity of food, many birds go through a modified form of courtship. I have seen a pair of Kingfishers (*Alcedo ispida*) in October, in England, very obviously "courting." It would be of great interest to know in what ways the courtship of autumn differs from the typical courtship. A warm day in late winter often seems to arouse the dormant sexual actions, just as it induces a first attempt at song. This January I saw a Hermit Thrush, though quite alone, several times go through the motions of depressing the tail and drooping and spreading the wings, which on the one hand are the regular motions accompanying coition, and secondly have afforded the basis (by association of ideas) for a large number of the beautiful ceremonies of display.)

(b) *Actions connected with the beginning of the breeding season:* (1) Is the species polygamous, polyandrous, promiscuous, or monogamous? If the last, does it pair for the season, or for life? (This question must be answered first, for naturally all the courtship will stand in relation to the answer to it. One very important point is the numerical proportion of the sexes. In some of the Game-birds it appears that there may be a large excess of males, but in most species the numbers are pretty equal. It is obvious that this point will have an important bearing on courtship, and it figures prominently in discussions of the Sexual Selection theory.)

(2) In those birds that are not monogamous, what actions initiate the breeding season? (very little is known on this point.)

(3) In monogamous birds, what is the date of pairing-up?

And what relation does it have to migration in migratory species? (In the Killdeer it appears to take place before migration (see below), while in the migratory species of Old-world Warblers (Sylviidæ) it begins, as is well-known, after migration. See Eliot Howard ('07) for details on this point.)

(4) What is the mechanism, so to speak, of pairing-up? Is force used by the cock to the hen? (I do not think any cases of this are known.) Are there fights between cocks or between hens for the privilege of staying in the proximity of the bird of the opposite sex, who meanwhile is comparatively passive (the males of Mocking-birds and Thrushes seem to do this, and possibly the females too; Eliot Howard records many cases of such fighting among hens in the Sylviidæ). Does the cock chase the desired hens until one consents to receive his advances? (This seems to be a very general method. It holds in many Ducks, probably in the Grebe, and in such species as the Killdeer, to speak only from my own experience.) Are there any special displays or other ceremonies associated with pairing-up, or does courtship in the sense of definite ceremonies only begin later? (It appears that the latter is frequently true. On this point compare what happens in Man; before some agreement is reached, courtship is merely a series of approaches; it is only later that a purely objective observer, from Mars or elsewhere, would be able to record the existence of definite "ceremonies." On the other hand, the period of "approach" is characterized by a certain amount of "display-action" — attention to dress, showing-off of prowess, etc.— and in birds too there must exist something of the sort. The best-known example is the song of the migratory Sylviidæ in Europe, where the males, who have migrated some days before the females, attract their mates by singing. It will be of great interest to see whether other birds show the same sort of display, only appealing to the eye instead of the ear.)

(c) *Courtship & Display:* (1) *Song:* What are its dates of starting and stopping, and its relation to other activities? (In the Nightingale the song of the male ceases immediately the young are hatched, while the Song Thrush (*Turdus musicus*) sings nine or ten months of the year). Do both sexes sing? and if so, are the songs alike? (In the Cardinal the hens certainly sing, but not so well as the cocks.)

(2) *Courtship-action:* What are their details? Are they alike or not in the two sexes? (Great accuracy is needed, not merely in describing the different displays, but still more in following the sequence of events, and so analyzing the birds' mental states.)

(3) Are there special *structures* brought into action by courtship? (Peacock, Crested Grebe.) If no special structures, are there special *colors* only brought into prominence at courtship? (The Redshank (Huxley, '12) by its actions during display brings into notice the red of its legs, and the white of its tail and of the under surface of its wings, which are usually hidden. The Fulmar and the Kittiwake[1] have the inside of the mouth colored "delicate mauvy-blue" in the one case, "lurid orange-red" in the other (I quote from Selous, '05, pp. 123, 126). This "interior decoration" is displayed in a form of Mutual Courtship. The Ruby-crowned Kinglet gives a very interesting intermediate stage between structure-plus-color and color alone. The crown-feathers are ruby-red and slightly elongated; but the feathers on either side are so inserted as to cover over the bright patch in normal conditions. Only in moments of excitement is the red revealed; and the effect on the hen of such sudden flashing of the brilliant bit of color must be very great.)

Are there neither special structures nor special colors, but only special *actions* of courtship? (This is apparently the case in most of the Sylviidæ. All observations on similar birds will be of great interest, as in such cases courtship is at its most primitive.)

(4) Is there a long period of "engagement" or does coition take place immediately after pairing-up? (The latter seems to be true *e. g.* in the Sylviidæ; the former in many birds, such as the Crested Grebe, the Paridæ, etc. Facts are sorely needed on this point.)

(5) What is the relation of the courtship-actions to coition? (In *e. g.* the Blackcock and Redshank the one is an immediate preliminary and pre-requisite to the other, while in the Crested Grebe there is no direct connection at all, the courtship is "self-exhausting," and special ceremonies of an entirely different nature have been developed in relation to coition.)

(d) *Fighting and Jealousy:* (1) Is the fighting between males

[1] *Fulmarus glacialus* and *Rissa tridactyla.*

fierce and genuine? (Tits, Thrushes, Mocking-birds) or is it degenerate, one might almost say merely symbolic? (Blackcock, Redshank, etc. Selous ('09) has some interesting remarks on this point.)

(2) Is there fighting between females? (Sylviidæ; and I have seen a chase between two female Nighthawks lasting for over thirty minutes.)

(3) How much of the fighting is due to mere sex-passion, and how much to jealousy proper? In other words, is it directed blindly against all others of the same sex, or definitely against a single intruder who is tampering with the mate's affections? (In the Grebe, jealousy is very strongly developed. We should expect to find jealousy where there is monogamy and mutual courtship. A special form of jealousy is seen in the Blackcock (Selous, '09) where the sight of a hen crouching to a cock rouses the anger of all the other cocks, who immediately rush at the successful suitor. Fighting due to mere sex-passion is seen in many Mammals, in such birds as fight previous to pairing-up, and in the ceremonial fights of such polygamists as the Blackcock.)

(4) Does jealousy modify the courtship-actions? (In the Crested Grebe, "Shaking" between the members of a pair after a flirtation by one of them, is of a special type.)

(e) *Nest-building, Egg-laying, etc.:* (1) Do both sexes share in nest-building, or not? If so, do they share equally?

(2) How long does it take to build the nest?

(3) How many nests are built? (The Grebe builds two or three, the European Wren (*Troglodytes parvulus*) and the American Magpie (*Pica p. hudsonia*) often four or five.)

(4) Is there more than one kind of nest? (The Bower of the Bower-bird of Australia is probably a modified nest, while the pairing-platform of the Crested Grebe is undoubtedly so.)

(5) Is there any form of courtship specially connected with nest-building? (Many birds during courtship carry leaves, twigs and other nest-materials in their beaks — *e. g.* Sylviidæ, Crested Grebe. Others that nest on the ground have displays in which kicking and scraping the earth, pressing or rolling the breast on the earth play a part (*e. g.* the Ostrich, and the Peewit (*Vanellus cristatus*); see Selous, '01.)

(6) Does either courtship or coition go on after the laying of the first egg, or all the eggs? (We would expect both to go on till all are laid, but not many facts have been collected on this head.)

(f) *Incubation and Care of the Young:* (1) Do both sexes share in incubation? and if they share, do they share equally? (It is interesting to find the cocks of some species with marked sexual dimorphism sharing the duties of incubation; *e. g.* Ostrich, Blackcap (*Sylvia atricapilla*). This latter, in addition to possessing a black head distinguishing him from the brown-capped hen, is one of the four or five best European songsters, and is reported by many authorities to sing while actually brooding the eggs! In some cases where the sexes share, the cock takes less of the duty, *e. g.* a friend has told me that in case of danger near the nest, the cock Crested Grebe will not go and sit himself, but yet will attempt to drive the hen back.)

(2) Do both sexes share in feeding the young? and if so, do they share equally? (Here too we get indications that the male's assistance is a comparatively recent development of evolution. He is often not quite so bold or assiduous as the female. Old Colonel Montagu brought a Goldcrest's nest from its natural situation, first on to his window-ledge, and then into his room; the male had continued to help feed the young while the nest was on the outside of the window, but refused ever to enter the room; but the hen remained as assiduous as ever, and succeeded in rearing the brood.)

(g) *General Miscellaneous Notes:* Nothing much need be said on this head. It is always well to remember that some actions of birds seem to be gone through simply for the sake of releasing energy in a pleasurable way, simply because the bird enjoys doing them. Gulls, for instance, in early Spring fly round in aërial evolutions, now solitary, now social; I have seen Wagtails (*Motacilla lugubris*) in bright days in Autumn dart and run over the lawn and sing as if possessed. In neither case was there the least connection with courtship. In addition, some actions which have been developed in evolution as part of courtship may be used to liberate energy thus pleasurably (*cf.* from a similar point of view, children singing and dancing when they are happy. They may do it spontaneously, and then the sound or motion will be haphazard; but if they have

been taught particular songs or dances, they will almost certainly reproduce some phrases or motions of these. What they have learned thus serves as a channel through which the emotion can be liberated.) As examples of this in birds, we may take the song of those species, like the common European Thrush (*Turdus musicus*) or the Redbreast (*Erithacus rubecula*), which continue singing almost or quite through the winter. The aërial tumblings of Ravens, Curlews, Herons and other birds should also probably be included here.

If desired, other headings can of course be added, on such topics as food-habits, migration, etc. One interesting point that has not received much attention is the variation of habits in varieties of a single species; *e. g.* the different songs of the Eastern and Western Meadowlark (*Sturnella magna* and *S. neglecta*). In Europe I have noticed that the Marsh Tit (*Parus palustris*) has a long and quite musical song on the Continent, while in England it restricts itself to call-notes.

The best method for keeping the actual field notes is to file them in folders. Each folder has a number corresponding to the number of the species in the card-index. The numbers used in the A. O. U. Check-list may be used with advantage. In the folder the notes had best be dated and arranged chronologically, and reference from the cards to the notes will then be by date.

Let me take a concrete case. In February of this year I have been seeing a little of the earliest pairing-up habits of the Killdeer. While the birds are still in flocks, and the majority of them still far south of their breeding-places, this process is already beginning. Most of the flocks are simply feeding and resting unconcernedly as they have been doing all winter; but here and there one bird will be seen flying up close to another, who in turn will usually take wing and fly off, often to be pursued two or three times. A still smaller proportion of the flock seems to be already paired, and may be seen going through a ceremony together; I have not yet quite got the details of this, but both birds seem to participate, walking round and round each other in a strange formal way with heads pointing in opposite directions and necks straightened stiffly out, at the same time uttering a curious soft note. In passing, I may say that the Killdeer should be a good species in which to study

pairing-up. Personally I believe that the above facts should be interpreted thus — that the cocks fly up to the hens, either indiscriminately, or more probably, I believe, to those they unconsciously prefer; the hens in their turn either do not feel drawn to the suitors, in which case they reject them by repeatedly flying away, or else they are in their turn attracted by one of the cocks. This attraction depends on three factors; — (i.) the physiological state of the hen; (ii.) the instinctive mental (psychic) preference felt by the female for particular males, which must exist in birds as well as it obviously does in Man, though perhaps in different degree; (iii.) the persistence of the cock, which will tend to win the hen if she is doubtful but not unfavorably inclined, although it will make her more obstinate if she is repugnant from the first.

Once a hen consents to let a cock come right up, the next step is not coition, of which there is no question for many weeks, but this mutual courtship-action which to me appears as the link binding the pair together before the time of fertilization and nest-building. Be this interpretation as it may (and I confess that there are many little gaps yet to be bridged over), I yet have some definite facts, and they are filed as follows.

In the card-index the Killdeer (*Oxyechus vociferus*) comes under the family *Charadriidæ,* with the A. O. U. number 273. In my vertical file is a folder labelled 273 Killdeer. In this are my notes, under dates Feb. 7, 15 and Feb. 21, 15. In the card-index after the card of the species follows a card labelled (a) with the remark "common in small flocks throughout winter, Houston." Then one labelled (b), on which is written;

Approach flights of ♂	Feb. 7, 15.	Feb. 21, 15
Chase of ♀ by ♂	Feb. 7, 15.	Feb. 21, 15
Chase repeated twice	Feb. 21, 15	
Some birds paired	Feb. 7, 15	
Paired birds going through a ceremony	Feb. 7, 15	

When I have some more data, I shall go through all my facts and write a short summary of the pairing-up on another card which will also bear the heading (b).

The general system is now clear; it can be easily modified to suit anybody's ideas. Its chief advantages are ease of reference,

and the way in which facts under various headings can be summarized as they accumulate.

I intend to go on collecting data on courtship of birds for a number of years, and will be very grateful if other watchers will send me facts. Of course fragmentary details are not of much value, and in the case of diary notes made on the spot, a short summary under various headings will enormously reduce the labor involved in digesting the notes.

Before I close I would like to mention a few problems that have occurred to me during the short time I have been in America — problems that would be far better attacked by a number of watchers.

In the first place the whole conception of mutual courtship is new, and has to be worked out in detail. As definite problems here, I would suggest the following.

(1) What is the course of events in the Meadowlark, a bird with marked protective coloration above, and with its tail showing recognition marks, but with brilliant and probably sexual coloration on the breast, which is equally developed in both sexes?

(2) What is the meaning of the duets which only a few weeks ago I heard performed by the Barred Owl (*Strix varia*)? One performer gave a variation of the regular hooting, while the other rendered the same musical phrase, but in tones of demoniacal laughter, and alternating its notes with those of its mate. Bendire has a note on this remarkable habit.

In what was probably the Short-eared Owl I have seen remarkable "bowing duets," the birds curtseying to each other in exaggerated fashion. In the Dabchick, the vocal duet is the most prominent feature of courtship, taking the place of the head-shaking of the Great Crested Grebe.

(3) In a single group, like the Sparrows, we find very different gradations of sexual coloration. What is the difference between the courtship of such species as the Chipping Sparrow, the Lark Sparrow, the English Sparrow, and the White-throated Sparrow? In the first two, both sexes are alike, but the first species is sober-colored, the second distinctly gay; the last two show sexual dimorphism in varying degree. Still other species could equally well be chosen for the study.

(4) In the Woodpeckers, both sexes are usually fairly brilliant,

but the male is often distinguished by a very small patch of red on the head. To correlate this with courtship-habits would in itself be interesting; and still more so would be to compare the courtship of the average Woodpecker with that of the Red-Headed Woodpecker, where both sexes are in the first place similar, and in the second place brilliantly colored.

(5) Various similar interesting comparisons within groups can be made. *E. g.* between the Robin and the various Thrushes; or between the sexually dimorphic Ducks and the sexually similar Geese and Swans.

(6) The whole family of Grebes (Podicipidæ) is one in which very interesting results will be forthcoming. There is every variety in the degree of ornament while the sexes are on the whole very similar. For instance, in the Dabchick and the Pied-billed Grebe there is very little ornament, and in the Dabchick at least the mutual displays are largely vocal. In the Great Crested Grebe and the Horned Grebe there is a great deal of ornament accompanied, in the former species at least, by elaborate mutual ceremonies.

(7) In most sea-birds mutual courtship seems to be the rule. From my own unpublished observations it seems to be at its most primitive and unspecialized among the Gulls.

Selous ('05) has some interesting notes on Guillemots, Fulmars and Kittiwakes.

The Puffin (*Fratercula arctica*) in which during the breeding-season the bill *in both sexes* enlarges enormously and becomes brilliantly colored, will undoubtedly furnish interesting data; I recommend it to all those who love the grotesque.

(8) Finally, the Heron family is extremely interesting. In it the sexes always resemble each other; but while the Bitterns are on the whole sober and unornamented, we get crests and breast-plumes in such forms as the Louisiana and the Great Blue Heron, and most elaborate and often exquisite ornaments in species like the Reddish Egret, the Snowy Heron, and the ill-starred American Egret. I have absolutely no doubt in prophesying that these latter birds will show most elaborate and beautiful mutual dances and displays.[1]

[1] Since the above was written, I have had the opportunity to study the courtship of the Snowy Egret and Louisiana Heron on Mr. McIlhenny's remarkable Heron-pond in Louisiana. The results, though shortly to be published *in extenso*, are worth brief mention here.

Besides Mutual Courtship, another interesting subject is that of social gatherings at pairing-time. I had a little opportunity of seeing the gatherings of the Blue Jay last spring in Georgia, and it seemed to me that the gatherings resembled our dances in one respect — in that they "gave opportunities for the young men and women to meet each other." I should welcome all notes on this subject. The Flicker also has gatherings in early spring. As early as February 20th of this year I saw a gathering of ten or twelve in a large tree, but was unable to see anything of what was going on.

The Swifts and Swallows might prove interesting, especially the former, with their aërial chases of an evening. They are said, apparently on good authority, even to perform the act of pairing in mid-air.

Next comes another set of interesting problems — those of the reversal of the usual habits and duties of the sexes. The Phalaropes are the classic instance of this, and would well bear re-investigation. On the other hand, all the Hawks and Falcons show it to some extent, and in some ways would more repay watching, since in them the process is still in its early stages. Here, from what few facts are known, it seems that there may be a regular Darwinian courtship by the cock; this, in these aërial lords, takes the form of a series of wonderful display-flights. In the Kestrel (*Falco tinnunculus*) I myself have witnessed a cock time after time

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As I prophesied in this paper, there is a marked "mutual courtship," though not of quite such an elaborate nature as I had expected from my experience with the Crested Grebe. The most interesting thing about it, perhaps, is the fact that there is a regular honeymoon of two or three days, during which the pair sit together on the nest-site they have just chosen, and, without attempting to start building, are content with running their bills through each other's aigrettes, huddling close up to each other, and now and again giving a burst of quite elaborate mutual display — neck raised, wings drooped, and feathers bristled. After this honeymoon, the mutual displays go on, not merely throughout the period of nest-building, taking place whenever a stick is brought to the nest by one bird, to be laid by the other; but right through the time of incubation and care of the young, occurring whenever one bird relieves the other on the nest.

But at the very beginning, before pairing-up occurs, there appears to be a pure Darwinian courtship, the males showing off their plumage in a special display to the females, who on their part do not use their plumes in display at all until after they are paired up. Thus we get Darwinian display before pairing, and Mutual display after pairing — a state of affairs to me at least entirely unexpected, but showing once more how important are the very earliest manifestations of courtship — the pairing-up habits — and how essential it is to follow the course of events in any one species of bird throughout the whole of the season.

come swooping down the wind straight at the hen (who was perched on a bough), swerving high into the air when barely a yard from her; sometimes he would swing up so close to her that she would start back fluttering so as not to fall off her perch. A friend who knows the Peregrine Falcon in the Welsh mountains tells me that similar but even more startling evolutions are performed by the cock in this species. On the other hand, when it comes to incubation and the feeding of the young, it is the large and strong female who apparently usurps most of the ordinary duties of the male, for she does most of the catching of prey, while he sits longer on the eggs and young (see Heatherly, '13). It is obvious that observations here will be of interest.

In the Belted Kingfisher, the hen has a chestnut breast-band, which is absent in the cock. Here the female would appear to be the brighter, and investigation of the courtship, with this in mind, might be of value.

Finally I would suggest that the nuptial habits of the Turkey Buzzard and Black Vulture would be interesting from a quite special point of view. It is either an obvious, or else a startling fact, according to your point of view, to find that the lower animals have on the whole the same basis of æsthetic standards as ourselves. This is shown, for instance, by the preponderance of colors and forms that are agreeable to *us* in the courtship-structures of birds and other animals, or by the fact that flowers attract bees and butterflies by means of colors and scents that we too find beautiful or pleasant. On the other hand, some flowers rely for their fertilization upon carrion-feeding flies, and the colors they have developed are lurid yellows or fleshy pinks, with odors that are strong and often disagreeable (to us). (See Weismann, the Evolution Theory.)

The American Vultures too are carrion-feeders; such "ornaments" as they possess — the naked colored skin of the head, and the frill of feathers round the neck, are, although striking enough, yet hideous to our eyes. It would be a further notable piece of evidence in favor of Professor Washburn's idea of the animal mind, a further corroboration of the idea that there are spiritual as well as material natural laws underlying biological facts, if it were found that the courtship-action of these scavengers lacked all the normal grace of birds' love-making, and were to our eyes as

repulsive as their food is to our noses and their feeding-habits to our ideas.

In conclusion, I would like to thank 'The Auk' for so courteously extending its pages to me; I hope that these notes and suggestions may do something of what I intended they should do — I hope that they will show that bird-watching is the foundation of a real science, the science of the behavior of birds in their natural environment. Bird-watching, too, is in itself a sport, as all who have tried it well know; but those who attempt to understand the motives of the birds, the connection of their doings and the origin of their various habits, will find themselves not only experiencing the sportsman's thrill, but also the intellectual interest of the detective piecing together the broken chain of evidence, and the human feelings of a spectator at the play.

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Houston, Texas.
October, 1915.

ERRATUM p. 146, line 1, for Toucans read Hornbills.

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ANATIDÆ OF SOUTH GEORGIA.

BY ROBERT CUSHMAN MURPHY.

Plate XIV.

THIS paper is the twelfth [1] dealing with the ornithological results of the South Georgia Expedition of the Brooklyn Museum and the American Museum of Natural History.

Nettion georgicum (Gmel.)

Anas georgica, Gmelin, Syst. Nat., I, 2, 1788, 516.

Querquedula eatoni, von den Steinen, Intern. Polarforsch., 1882–83, Deutsch. Exp. II, 1890, 219 and 273.

[1] A list of the preceding papers, not including several brief notes, follows: (1) Preliminary Description of a New Petrel, 'The Auk,' 1914, 12, 13; (2) A Flock of Tubinares, 'The Ibis,' 1914, 317–319; (3) Observations on Birds of the South Atlantic, 'The Auk,' 1914, 439–457; (4) A Review of the Genus *Phœbetria*, 'The Auk,' 1914, 526–534; (5) Anatomical Notes on the Young of *Phalacrocorax atriceps georgianus*, Sci. Bull. Brooklyn Mus., II, 4, 1914, 95–102; (6) Birds of Fernando Noronha, 'The Auk,' 1915, 41–50; (7) The Atlantic Range of Leach's Petrel, 'The Auk,' 1915, 170–173; (8) The Bird Life of Trinidad Islet, 'The Auk,' 1915, 332–348; (9) The Penguins of South Georgia, Sci. Bull. Brooklyn Mus. II, 5, 1915, 103–133; (10) Notes on American Subantarctic Cormorants, Bull. A. M. N. H., XXXV 1916, 31–48; (11) Two New Diving Petrels, Bull. A. M. N. H., XXXV, 1916, 65–67.

1. SOUTH GEORGIA TEAL. 2. MAGELLANIC GOOSE.

Querquedula antarctica, Cabanis, Journ. f. Ornith., 1888, 118, pl. 1.
Nettion georgicum, Salvadori, Cat. Birds Brit. Mus., XXVII, 1895, 264; Lönnberg, Kungl. Svensk. Vet. Akad. Handl. XL, 5, 1906, 66.

Endemic Anatinæ inhabit several of the subantarctic islands, the species peculiar to South Georgia being the southernmost of the whole group. This little teal was among the birds noted by Captain James Cook in January, 1775, on the occasion of the first recorded landing at South Georgia.

Eleven adults and one duckling were collected by the writer between November, 1912, and March, 1913. A single additional skin was received subsequently from Mr. José G. Correia, of New Bedford, Mass.

Under the new name *Querquedula antarctica*, Cabanis in 1888 published a colored plate of this teal. The figure is poor as regards both contour and coloration, and the bill is shown entirely black. Lönnberg (*loc. cit.* Taf. 2) illustrates the head of a male, showing correctly the distribution of color on the bill, but here again the yellow of the lithograph is very unlike the hue of the living bird's bill. I had Lönnberg's plate with me at South Georgia, and compared it with freshly killed teals.

Lönnberg's description of the species leaves little to be desired. It should be amended to this slight extent, *viz.*, mature females, as well as males, have the central velvety black stripe along the tertials, although on the average it is slightly more pronounced in male specimens. In general, the female is distinguishable only by the dull speculum and slightly smaller size. The entire speculum in each of my eight adult males has a green gloss when viewed obliquely. Birds in fresh plumage have conspicuously whitish breasts, due to wide colorless margins on the feathers which subsequently wear away, leaving only the brown central portions.

Flesh colors. Iris dark brown. Culmen, nail, and distal border of maxilla, black; remainder of tip of bill, slaty blue; sides of maxilla Naples-yellow, becoming greenish where it blends with the blue tip. Legs and feet olive-green, mottled with sooty-brown.

Measurements in millimeters.

Eight males, collected between November 30 and December 30. Length (skins), 418–445; wing, 211–222; tail, 93–104; culmen,

from frontal feathers, 32–36; width of bill at base, 12.5–16; tarsus, 35.5–39; middle toe and claw, 45–51.

Four females, collected between December 1 and March 3. Length (skins), 390–412; wing, 195–207; tail, 85–93; culmen, from frontal feathers, 31–34; width of bill at base, 12–15; tarsus, 35–36; middle toe and claw, 46–49.

	Length	Wing	Tail	Bill		Tarsus	Toe
				culmen	width		
Average of 8 males	432	217	100	34	14	37	48
" " 4 females	404	201	89	33	13	36–	48

The testes of a male shot on December 1, 1912 measured 38 × 19 millimeters.

The crop of a female collected January 2, 1913, contained marine amphipods.

Salvadori (*l. c.*, p. 264), without having seen a specimen of *Nettion georgicum*, concludes that its affinities are with the group of teals containing the South American species *N. flavirostre*, *N. oxypterum*, and *N. andium*. A comparison of my specimens with all of these, however, shows that the South Georgia bird is quite distinct. Its real relationship, hitherto unsuspected, is with the duck known as *Dafila spinicauda* (Vieill.), a widely distributed species, occurring, apparently in the form of several undescribed geographic races, from Brazil to the Straits of Magellan and the Falkland Islands. The South Georgian teal is, indeed, almost a facsimile of *Dafila spinicauda*, smaller, considerably darker (especially on the under surface), but with similar proportions, the same pattern and distribution of color over the whole body including the bill (*fide* R. H. Beck, label), the same wholly black speculum with a green sheen, the same black-striped tertials and pointed tail. Dr. Frank M. Chapman, who first called my attention to the striking resemblance between the South Georgia birds and skins of *Dafila spinicauda* in the magnificent Brewster-Sanford collection, remarked at the same time that the case furnished an excellent example of taxonomic relationship obscured by inaccurate nomenclature.

Considering the similarity of these two ducks, it is rather surprising to discover that *Dafila spinicauda* has only fourteen rectrices, whereas *Nettion georgicum* has sixteen. Usually, among the Anatidæ as well as other groups, the larger species have the greater number of tail feathers, but here the rule is reversed. *Dafila acuta* has sixteen rectrices, so that in this character it is no closer to *D. spinicauda* than the latter is to *Nettion georgicum,* while in all its other characters it is vastly further removed. In short, after comparing the color pattern, the proportionate dimensions of bill, wing, foot and tail, the shape of the central and outermost rectrices, and the graduation of the primaries, in these three species of ducks, I am forced to the conclusion that *Dafila spinicauda,* the closest known relative of *Nettion georgicum,* should likewise be relegated to the genus *Nettion,* or else a new genus, intermediate between *Dafila* and *Nettion,* should be erected to contain it.

Since the establishment of numerous whaling stations at South Georgia, the native teal has fared badly, the whalemen losing no opportunity of bringing the toothsome birds to table. In the neighborhood of Cumberland Bay its numbers have been greatly reduced, although I saw six, all extremely wild, on November 28, 1912. Fortunately, the configuration of the land at South Georgia is of a character to prevent the extermination of the species, for the half dozen northern fiords to which the whaling stations are confined are for the most part separated from adjacent fiords by impassable glaciers and ice-capped ranges. Therefore the teals may be wiped out in one valley, and yet be abundant just beyond the next mountain. Judging from several accounts of South Georgia, particularly that of Klutschak (1881), these birds are not found at all on the southerly or Antarctic slope of the island.

At the isolated Bay of Isles, I found the teals common about the middle of December, which corresponds to our June. They were more numerous on the islets in the bay than on the mainland, and were remarkably unsophisticated, allowing bands of men to walk right up to them as they fished for amphipods from the rocks in the kelp fields at low tide, or dabbled in the fresh water ponds that filled every hollow of the grassy islands. As they fed, they quacked softly from time to time.

On December 29, Mr. Correia and I came across a pair of these birds, whose photograph is here reproduced, while they were feeding in a tiny glacial streamlet on the mainland south of the Bay of Isles. They were well hidden by tall tussock (*Poa flabellata*), and we did not see them until we had almost stumbled over them. They seemed unconcerned, however, and continued prodding about in the mud. When I stepped within six feet, they raised their heads and waddled farther off among the hummocks, from where they peered out through a screen of drooping grass. All but their bright eyes and yellow bills blended completely with the surroundings. Much against our sentiment, Mr. Correia shot the female, as up to that time I had been able to collect only two of this sex. The drake flew off whistling, with a teal's characteristic speed. Two or three of the duck-hunting Norwegian whalemen informed me that if, on the other hand, we had shot the drake, his mate would have refused to leave the spot. If this be true, does it indicate peculiar fidelity, or merely dependence and lack of initiative?

Certainly the female teals as well as the males show plenty of courage and resourcefulness when it comes to the protection of their young. The ever-present enemy at South Georgia is the skua (*Catharacta*), and when a teal and its brood of ducklings are surprised the parent feigns lameness in a manner which needs no description, while the downy young disappear like magic in the tussock grass. I have hunted on hands and knees for half an hour, but, like my predecessors, I failed to locate even one of the silent, practically invisible youngsters. Our ship's fox terrier, however, was more successful. On February 6, 1913, after the dog had been called back from a "wild goose chase," that is from following a mother teal which had been duping him, he sniffed about the spot where the family had been flushed, and at length caught one tiny duckling. It had evidently been recently hatched, and was a pretty, brown, long-tailed, confident little bird. It sat on my hand in the ship's cabin and preened itself, stroking its back with its bill, and scratching its head with its foot. It could also jump lightly from considerable heights to the floor without being injured in the least.

During the last few days of February, we found the teals abun-

dant and exceedingly tame on the east shore of Possession Bay, several miles back from the ocean front. Here they fed in the ponds and in the bare, wet runways between tussock hummocks. Many times pairs came whizzing toward me down the wind, wheeling to face it just before they settled on the ground or water, generally within a few yards of me. I often startled parents with their broods, and heard the sharp note of alarm as the ducklings scampered to cover. Once a misguided skua pounced down upon a female as she was fluttering lamely around me, but the duck flew away with a bound and easily distanced her enemy. On other occasions skuas carried off in their bills teals which the mate of our vessel had just shot. Many previous collectors have likewise been exasperated by this bold trick of the skua.

On February 28, I discovered a teal's nest on top of a hummock, close beside a pond and two hundred yards from the shore of Possession Bay. It was covered by dead, standing blades of grass which completely arched it over. The sitting duck peeped out when I approached, but did not leave until I touched the hummock. The nest was lined with dead grass and a very few feathers, and held five eggs which lay with their small ends together in the deep bowl. The eggs were rounded-ovate, and cream colored, with a highly polished surface. Believing them to be heavily incubated, I did not disturb them.

Members of the German expedition of 1882–83 observed the first pairing of the teals on November 19, the first eggs on December 8, and the first young on December 18. The majority of the young, according to von den Steinen, were nearly full-grown by the end of January; but newly hatched ducklings were seen again in the middle of February, and one still in the down was noted as late as March 15. Possibly the birds normally rear two broods, or it may be that a second laying is often forced through the destruction of the first eggs by skuas.

Five eggs and young is the number reported by Lönnberg, and the number that I noted invariably. The comparative smallness of the brood conforms to a general state of affairs among birds of the far south, where the struggle for existence may be considered as peculiarly severe. Thus the Antarctic terns, both *Sterna vittata* of South Georgia, and *Sterna hirundinacea* of the Powell

Islands (South Orkneys), lay but a single egg as against the larger sets of their northern congeners. It would seem, as a rule, that birds whose downy young are particularly liable to fall a prey to such enemies as predatory carnivores, fish, or turtles, *e. g.* many northern waterfowl, lay a large number of eggs; but that southern species, among which the chief source of danger lies in the destruction of the eggs before hatching, either by exposure to the perpetually chilly weather, or discovery by the skua, have uniformly small sets. Many northern water birds are known to cover their eggs with down or vegetation and to abandon them temporarily. At South Georgia, where the equalized, mean annual temperature is close to the freezing point, even brief exposure means certain death to the eggs, as I observed in the penguin colonies. Under these conditions, it is obvious that a small number of eggs can be more successfully incubated than a large number. It must be admitted, however, that the application of this rule to the one-egg sets of certain tropical birds, such as *Gygis* and *Anöus*, is rather obscure.

I seldom if ever saw more than two dozen South Georgia teals during one day, and I should say that although the species is common, and well distributed along the temperate coast of the island, it has never attained the abundance and relative dominance of its counterpart, *Dafila eatoni*, at the somewhat less polar region of Kerguelen Island in the southern Indian Ocean. At Kerguelen, British officers of the Transit of Venus Expedition are said to have shot more than two thousand teals within a radius of eight miles. Such a slaughter could not be duplicated at South Georgia, although both von den Steinen and Lönnberg report that in winter the teals gather in flocks of a hundred or more along the shores of the fiords. The latter writer says also that the males are more numerous than the females, a statement which my observations tend to confirm.

Chloëphaga magellanica (Gmel.).

The upland goose is an introduced species at South Georgia, a few pairs having been imported from the Falkland Islands in 1910 or 1911 by Mr. J. Innes Wilson, British Magistrate at Cumberland

Bay. The immediate reason for the experiment, as Mr. Wilson informed me, was that the fine bird had become *persona non grata* to sheep ranchers in the Falklands, because it was designed by nature to feed upon grass, and hence was considered an impediment to the fattening of mutton. So the Falklanders had outlawed the goose, and placed a bounty upon its head.

Mr. Wilson freed the transported birds in the admirably adapted, grassy country about Westfiord, Cumberland Bay, where they increased and spread encouragingly, apparently assured of a future in a land in which they would be forever untroubled by the rivalry of sheep. I saw about a dozen adults in this region on December 9, 1912.

Unfortunately, some of the whalemen from a neighboring station have persisted in hunting the geese in defiance of the law. A letter received from South Georgia during 1915 stated that the number had been reduced to six or seven birds which had a very slight chance of repleting the population.

During our stay in Cumberland Bay, the cabin boy of the *Daisy* came aboard one evening in high glee, bringing in his pockets five very young upland geese which he had captured in one of the Westfiord lakes. Ordinarily I should have been glad to receive specimens, but in the case of this species I felt constrained to carry the lively goslings back to their home, and, if the parents did not appear after a time, to attempt to rear the young in captivity. But the former experiment was a complete success. Arriving next morning at the lake, we saw several pairs of adults lurking on the far side. One of the goslings *peeped*, and immediately a guttural clucking came in answer from across the water and a barred goose began to swim straight toward us, followed at a discreet distance by the snow-white gander. I put the young brood in the lake, but each gosling attempted to scramble out, until it heard the call of the approaching mother, when all five turned their tails and swam bravely away. The parents joyfully received their family again, and the flotilla disappeared around a point of land with the youngsters well guarded, side by side between the goose and her pompous mate.

THE CLASSIFICATION OF THE SCOTERS.

BY W. DE W. MILLER.

THE Scoters form a group of sea-ducks allied to the Eiders, marked by their prevailing black plumage and their particolored and variously swollen bills. The unbarred plumage of the females, the unmodified syrinx, and the buffy instead of greenish eggs are other diagnostic features.

The six species are usually combined in one genus, *Oidemia*, with three subgenera. These have at times been recognized as full genera, as by Baird, Brewer, and Ridgway in 1884. Reichenow (1913) considers *Pelionetta* (the Surf Scoter) sufficiently distinct from the two other subgenera combined to stand by itself. The unnaturalness of the latter arrangement is obvious in view of the facts cited below, and on the other hand I believe the recognition of three genera is unnecessary.

The form and feathering of the bill is quite unlike in the three subgenera — indeed no two species agree in these respects and for this reason the value of these differences as generic characters is very doubtful. However, three well-marked structural characters that have been more or less lost sight of, though all three are described by MacGillivray in Audubon's Birds of America, together with a number of other peculiarities, render it necessary, in my opinion, to restrict *Oidemia* to *O. nigra* and *O. americana*. *Melanitta* will then be used generically for the three White-winged Scoters, *M. fusca*, *M. deglandi* and *M. carbo*, and also for the Surf Scoter, *M. perspicillata* (subgenus *Pelionetta*).

Dr. Dwight, in his article in 'The Auk' (July, 1914, p. 293) has called attention to the emarginate outer primary in true *Oidemia*, a character strangely forgotten for many years. Correlated with this is another structural peculiarity that has been largely overlooked though mentioned by Coues in his 'Key.' In *Oidemia* there are sixteen tail-feathers, in *Melanitta* and *Pelionetta* only fourteen. Further, in the first-named the tail is longer and much more graduated, the feathers narrower and more pointed.

The third difference is in the form of the trachea. In the males

of *Melanitta* and *Pelionetta* the trachea is abruptly enlarged at its upper end and again at a point some distance above its bifurcation into the two bronchi. At least the lower of these two bulbous enlargements is possessed by many other genera of Ducks. Both however, are wholly wanting in true *Oidemia*, which also differs in having the bronchi somewhat enlarged. After describing the larynx of *Oidemia americana*, MacGillivray (Birds of America, 1843, p. 346) remarks: "It is indeed very remarkable that this species, so nearly allied to the Velvet (White-winged) and Surf Ducks, should present no dilatations, either at the upper larynx, or in the course of the trachea, as are seen in them * * * The trachea of the male of this species merely resembles that of the female of the other species." MacGillivray states that the trachea of the Surf Scoter "presents the same structure as that of the Velvet Duck," but several differences of specific or subgeneric value are pointed out by William Thompson in the 'Annals of Natural History,' XVIII, 1846, p. 370, and by Herbert Langton in 'The Zoologist' for 1881, Third Series, Vol. V, p. 59. In the first-cited article the trachea of the Surf Scoter is figured, drawn to the same scale as that of the Velvet Scoter (*M. fusca*) in Yarrel's British Birds, Vol. IV, p. 480. The trachea of the Black Scoter (*O. nigra*) is figured on p. 475 of the latter work.

All the Scoters agree in having the syrinx itself normal, while according to Beddard, in all other ducks, so far as known, with the exception of the very different *Biziura* (and probably *Erismatura* also) this organ is modified into a remarkable, usually asymmetrical, bony or partly membranous box. In *Somateria* (*S. mollissima*) the presence of a very slight symmetrical enlargement of the syrinx indicates the relationship of the Somateriæ with the Oidemiæ (Beddard, The Structure and Classification of Birds, pp. 463–4).

The diagnostic characters of the two genera of Scoters as above limited may be summed up as follows:

Oidemia.— Bill smaller, commissure shorter than inner toe with claw; basal portion of maxilla bulbous-enlarged above but scarcely laterally, the swelling bare; outline of facial feathering nearly straight, not angled.

Tenth (outer) primary, in adult male, greatly attenuated, shorter than the eighth. Tail relatively long, decidedly more than twice

the length of tarsus; graduated for decidedly more than one-half its length, and for considerably more than length of tarsus; consisting of sixteen feathers, which are narrow and conspicuously pointed. Plumage in the adult male wholly black (but much paler on inner webs of primaries); in immature birds of both sexes the upper half of the head is dark brown, the lower half whitish. Feet and nail of both mandibles black. Iris dark brown.

Melanitta.— Bill larger, commissure longer than inner toe with claw; basal half of maxilla much enlarged both above and laterally, the swelling more or less extensively feathered either on top or sides; outline of facial feathering strongly angled.

Tenth (outer) primary normal, longer than the eighth. Tail relatively shorter, decidedly less than twice length of tarsus; graduated for less than one-half its length, and for less than length of tarsus; consisting of fourteen feathers, which are rather broad and moderately short-pointed.

Plumage in the adult male black variegated with white; in immature birds of both sexes the head is dark brown with two white blotches on each side. Feet red, nail of both mandibles yellow. Iris white.

In comparison of bill with inner toe, the claw is included in measurement of latter contrary to the diagnoses in the British Museum Catalogue and Ridgway's Manual, as it is found that in true *Oidemia* the length of the commissure instead of being much less than inner toe, without claw, as stated in these works, is scarcely if at all less.

Pelionetta differs conspicuously from *Melanitta* in the form of the bill, the lateral swelling being more developed and wholly bare, and the sides of the maxilla tapering instead of widening to the tip. The outer primary is decidedly narrower than the very broad outer remex of *Melanitta* and the tail is distinctly longer and more graduated, there being in both of these characters an obvious approach to *Oidemia.*

The differences between *Oidemia* and *Melanitta* (including *Pelionetta*) enumerated above are certainly of as great taxonomic value as those on which *Lophodytes, Arctonetta, Nomonyx* and *Charitonetta* are based; and if these are maintained the old genus *Oidemia* must be dismembered. Whether *Pelionetta* should be

generically separated is a difficult question to decide. Agreeing, as it does, in most essential characters with *Melanitta*, I believe that it is best considered congeneric with the latter so long as *Erionetta* is included in *Somateria* and *Marila* is used in a broad sense.

Of the genera of Sea Ducks recognized in the A. O. U. 'Check-List,' perhaps the most doubt has been attached to *Charitonetta* which is not separated from *Clangula* by British authors. MacGillivray, however, states (*t. c.*) that in the Bufflehead the trachea has "scarcely any appearance of dilatation at the part which is so excessively enlarged in the Golden-eyed Duck, which in form and habits is yet very closely allied."

THE BREEDING OF THE PRAIRIE HORNED LARK AT HATLEY, STANSTEAD COUNTY, QUEBEC.

BY H. MOUSLEY.

The Prairie Horned Lark belongs to one of those progressive families of birds, which by their pushing character have so adapted themselves to their natural surroundings as to have increased their breeding range of late years from the central part of the continent even to eastern Massachusetts in 1903, at least this is the generally recognized opinion, I believe, amongst most authorities, although there are others again who contend that the bird has always occurred in small numbers throughout the northeastern states, but that it has passed unnoticed until recent years, when the increase of field collectors has drawn attention to its presence. However this may be, there are other traits in its life history which mark it out as a bird of distinction, the finding of whose nest and eggs is always looked upon by the field student as a pleasurable event. It was only during the spring of the past year, 1915, that I succeeded in finding it breeding at Hatley, although I had been on the

lookout for it for some few years previously. It is the earliest of the small song birds to nest, eggs having been found in some parts of western New York in late February and early March, but here judging from the four nests I was fortunate enough to find, the date for fresh sets appears to be from the second to the third week in April, at which time the ground is generally more or less covered with snow. Such was the case when I found the first nest on April 14 only 240 yards from my house, in a dry undulating field. It was a most interesting one in every way, composed outwardly of soft dry grasses, and heavily lined inside with the plant down and flower heads of the Pearly Everlasting (*Anaphalis margaritacea*). The hole in which it rested had partly been scooped out in a bed of Hair-cap moss (*Polytrichum commune*) which formed the back and sides, the front or south side being clear and the ground sloping gently away. Some little portion of this sloping ground right up to the edge of the nest had been banked up and paved with small pieces of cow-chips varying in size from $\frac{3}{4} \times \frac{1}{2}$ inch to $1\frac{3}{4} \times 1$ inch. From a careful count made of these I found there were 49 in all, besides 8 small pieces of lichen. I am not aware that anything has been written on this subject of paving with regard to the present species, but Prof. Silloway in his 'Birds of Fergus County, Montana,' 1903, I believe first made the fact known to science in the case of the Desert Horned species; and the Rev. P. B. Peabody in a most interesting article in 'The Warbler' (Vol. 2, 1906, pages 20–27) substantiates the fact, and gives a photo of a nest of the Desert Horned Lark showing this paving. In this same article he goes on to say "It was impossible however to conjecture whether or no such clods had been added at varying times after the first completing of the nest." This point as we shall see later on I am glad to be able to clear up, at least so far as regards the one case that came under my notice of the Prairie Horned Lark. I ought perhaps to mention here that it was during the winter of 1914 that I read the above article, and when I found the nest already mentioned above, the thought occurred to me that now was my chance perhaps of finding out at what time during building operations these chips were added. With this object in view I decided to take the set of four eggs and keep a very careful watch on the birds afterwards, in the hope of catching them at their second venture.

How lucky I was will be gathered from a perusal of the following little time table as it were.

1915

April 14 First set of eggs taken at 2 P.M.

15 Larks started second nest, and at 4.30 P.M. the hole was excavated, the female being at work upon it when flushed. It was on the top of a little mound with no cattle droppings near, which had been the case with the first nest, from which it was distant 60 yards.

16 12 A.M. Five pieces of cow-chips laid in place on south side of hole, also one piece of lichen.
4.30 P.M. Eleven more chips added.

17 12.30 A.M. Nine more chips added, also foundation and rim of nest just started.
5 P.M. Foundation and rim of nest well advanced, but no more chips added.

18 12 A.M. Nest full of plant down and flower heads of pearly everlasting not yet padded into place.
5.30 P.M. Plant down now all padded into place forming a most beautiful nest.

19 11.30 A.M. One egg in nest, both birds noted in field but at some distance away.

20 11.30 A.M. Two eggs in nest, female left on my approach and flew away.

21 11.30 A.M. Three eggs in nest, got quite close before female flushed off.

22 11.30 A.M. Four eggs in nest, the female again only flushing off at my near approach.

The four eggs were practically counterparts of the first set, being minutely and evenly speckled all over, and somewhat zoned about the larger end. In the above instance it will be seen that not a vestige of building material was brought to the nest until the whole of the 25 pieces of cow-chips, and one of lichen had been laid in place, but pending further data it would hardly be wise to assume that this is invariably the case.

The next nest to come under my observation was found on April 21 by flushing the female from a set of four slightly incubated eggs. This nest was situated on a high sloping hillside about $1\frac{1}{2}$ miles

from my house, and close to the Hatley cemetery, and was of similar construction to the other two, except that the paving consisted of only five pieces of cow-chip and two of lichen, and the lining in addition to the down and flower heads of the pearly everlasting consisted of four little pieces of paper, two small thistle heads, and some thistle down. It was in a hole alongside a stone, the latter forming the back or north side of the nest, the paving being on the south side as in the case of the other two. The fourth and last nest was found on April 30 and contained three young birds partly fledged. It differed in many ways from the other three, being situated in a low damp meadow, instead of a high and dry one (as in the case of the others), the bird in this matter apparently using very little judgment, and yet again as regards the paving it seemed to have displayed that marvelous instinct which birds seem at times to be endowed with, for instead of using cow-chips as a paving, which in such a wet spongy place would have been of little good, it resorted to the use of very thin and flat stones ranging in size from $\frac{1}{2} \times \frac{3}{8}$ inches to $1 \times \frac{3}{4}$ inches, of which there were thirty. The nest was nine inches from a good sized stone and forty yards from the main road to Stanstead; and I shall always remember the circumstances under which I came to find it, in as much as it disproves the fact so positively asserted in all the best text books that this species never perches in trees. It was while returning from Hatley somewhat late in the afternoon of April 29 on the above mentioned road, that a bird got up some distance ahead of me, and flew into a good sized ash tree which stood at the side of the road. As it arose I felt sure it was a Prairie Horned Lark, but when it perched in the tree, I almost dismissed the thought from my mind, for had I not read that these birds never made use of trees to perch on? However, as the bird allowed me to get opposite the tree and having a pair of field glasses, I took a careful look at it, and sure enough it turned out to be a male Prairie Horned Lark with food in its beak, which pointed to the fact that a nest of young was probably not far off, so I concealed myself, but it was rather a long time before the bird left the tree and alighted on a large boulder in the field, from which it entered the grass. After allowing a short interval to elapse I advanced, when the bird flew up, but I failed to discover any traces of a nest or young birds. As it was now getting

late I decided to leave the place and return again early the next morning. As I did so the bird again got up from the road side and flew into the tree, and as there was a small copse about 150 yards away, I secreted myself in it and awaited developments. It was not long before the bird again flew down on to the large boulder, (as on the previous evening) and disappeared in the grass, but owing to the ground taking a sudden dip, I found it would be impossible to follow the bird to the exact site of the nest from where I was concealed, and that it would be necessary for me to either get on to the other side of the road (where there was unfortunately no cover) or hide at the foot of the ash tree, around which there was some thick underbrush. However, as I wanted to further investigate the habits of this pair of birds at the nest, I remained where I was for about an hour, during which time I watched both parents come and go with food many times. Their method of proceedure was exactly the same on every occasion, and never once did they approach the nest direct, always first alighting in the top of the ash tree, and from there flying down on to the large boulder, and then walking in the grass to the nest, which I found out later on was only some few yards away. Having now thoroughly satisfied myself that under certain conditions Prairie Horned Larks will perch in trees (although this pair of birds may be the exception which proves the rule), I decided to take up my position at the foot of the ash tree and discover the nest. I therefore waited my opportunity until both birds were away, and then concealed myself as well as I could in the scrub surrounding the base of the tree. Here I was able to get a full view of the hollow into which the birds had always disappeared, and I had not long to wait before the male alighted in the tree top, then flew down to the boulder as before, from which it walked direct to the nest, and I was able to mark the exact spot. No wonder on the previous evening I had failed to locate the nest, for of all the most perfect cases of a nest and its contents conforming to their natural surroundings this was the best I think I have ever come across, for on going to it again later on in the day it took me some few minutes to pick it out, although I knew almost the exact spot where to look. I visited the nest again on May 4, to find the young larks had left, but I discovered one in the grass not far off, and soon had the male (by the way the male

seemed to do the major part of the feeding) close round me in a most excited state, and as I continued to retain the young one, he eventually flew up into the ash tree, where he remained until I released it, and removed from the locality. The average dimensions of the four nests found are as follows, viz: Outside diameter $3\frac{3}{4}$ inches, inside $2\frac{1}{4}$, outside depth $2\frac{1}{2}$ inches, inside $1\frac{1}{2}$, and it will be noticed all were lined with the plant down and flower heads of the Pearly Everlasting, a plant which grows very abundantly here, and is much used by many species of birds for nesting purposes, especially by robins who use it largely in the foundations of their nests.

NOTES ON THE EIDER.[1]

BY JOHAN BEETZ, PIASHTE BAY, CANADIAN LABRADOR.[2]

TRANSLATED FROM THE FRENCH AND ANNOTATED

BY CHARLES W. TOWNSEND, M.D.

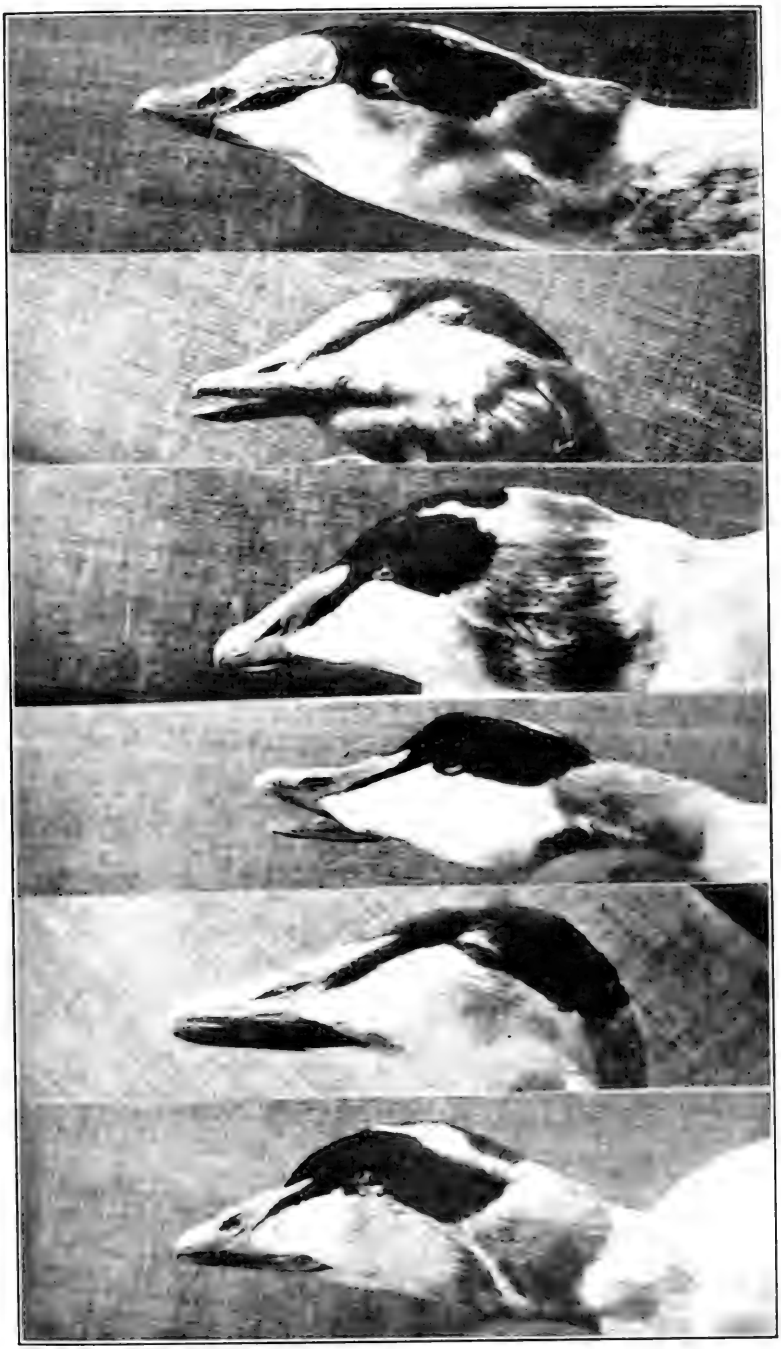
Plate XV.

THE eastern coast of North America possesses four well defined species of Eiders, although naturalists recognize only three. These are the American Eider (*Somateria dresseri dresseri*) with large rounded membranous processes extending backwards from the beak; the Unclassed or Intermediate Eider[3] with semi-rounded processes; the Northern Eider (*S. mollissima borealis*) with pointed processes, and the King Eider (*S. spectabilis*).

[1] Read before the Nuttall Ornithological Club, Dec. 20, 1915.

[2] M. Johan Beetz, who has resided for twenty years at Piashte Bay mid-way between Esquimaux Point and Natashquan — now officially known as Bay *Johan Beetz*,— is a Belgian by birth and a college graduate. With Mr. A. C. Bent I had the pleasure of visiting him in the spring of 1909, and I spent five days at his house in June, 1915. He is a keen observer and has made an interesting and valuable collection of birds of the coast. He has kindly given me permission to translate and annotate this paper on the Eider. C. W. T.

[3] See note at the end of the article.



LABRADOR EIDERS.

The number of eggs in a set of the Eider varies from 6 to 10 accidentally 12. If the eggs of the first laying are taken, the ducks lay a second set of four or five eggs, and sometimes a third of two or three eggs. The first set are well covered with down, which the female plucks from her breast in making the nest. The second laying, when the nest has been destroyed, has very little down in the nest, while the third has none at all, but the eggs are covered with moss, leaves and finely broken little branches.

The three layings here on the north coast of the Gulf of St. Lawrence are between the 10th of May and the 25th of June; very rarely the Eider lays after that date. The female lays an egg every 24 hours until the set is completed. She does not begin to set until 24 hours after the last egg is laid. The duration of the incubation of the Eider is 25 or 26 days. The female Eider does not nest until the age of two years, some not until a year later. The male Eider rarely mates before attaining full adult plumage at three years.

If the female Eider is suddenly frightened from her nest during incubation and has not the time to cover the eggs with down, the bird lets fall on her eggs green and oily excrements totally different from the ordinary excrements [1] of the Eider, and of a frightful odor, so strong that an egg touched with it is refused and even discarded with disgust by the hungriest dog. Even foxes, who love these eggs, will not touch them until the liquid is completely dry on the shells. It then falls off as an unobjectional powder. Ten or fifteen minutes are needed for the complete drying process. If the bird can forsee the danger and has time to prepare — a minute or a minute and a half are necessary — she covers the eggs with down, and then with her beak and feet she covers the whole with moss, leaves and surrounding herbage in so perfect a manner as to completely conceal the nest and deceive the most trained eye.

The first two species of Eiders — the American Eider and the Unclassed Eider — have been in the habit of nesting on the isles

[1] The ordinary excrements of the Eider are formed, as large around as the middle finger and an inch or an inch and a half long. They are composed chiefly of the comminuted shells of the blue or edible mussel, and are to be seen everywhere on the rocky islands and in the neighborhood of the nests. The bird, frightened from the nest, ejects liquid excrements in the same reflex manner as herons and other birds. The excrements do not always touch the eggs but may be deposited on the ground some distance from the nest. C. W. T.

of the Gulf, but since for some years the nesting females have been continually disturbed, and their eggs taken by fishermen and even by strangers coming in egging schooners, these birds have begun to diminish rapidly in numbers. Happily for the last two or three years, this destruction has stopped of itself by the birds' natural instinct for conservation in the following manner: The fox, who has been in the habit of taking for the purpose of feeding its young, the eggs of birds nesting on the main land and on islands easily reached at low tide, has gradually diminished in numbers or at least has retreated to the interior on account of the intense winter hunting for skins, and the summer hunting for live animals for breeding purposes. A large part of the Eiders have profited by the retreat of the fox, and have adopted the habit more and more every year of nesting on the mainland on the borders of the little fresh water lakes so abundant along the coast, or on the islands in these lakes. If the lakes are near the seashore the female uses little paths she has made; if at a distance, she passes too and fro on the wing. On the main land she has more space, conceals her nest better and man is rarely able to rob it. On this account in place of a diminution in numbers of the Eider there is already an increase, and in a few years, when the greater part of the Eiders have adopted the habit of nesting on the mainland, the increase will be very rapid.[1]

Immediately the young are dry after hatching, the female conducts them to the salt water. At the approach of danger — a boat

[1] I am afraid M. Beetz is too optimistic in this. As a result of my own observations I have come to the conclusion that the Eider not only is rapidly diminishing in numbers but that in many places it is almost exterminated, and that its numbers are not kept up by a transference of its breeding habitat to the mainland. Wherever fishermen or Indians are found, the islands are nearly cleared of Eiders, and the small number of birds about, show that they are not nesting concealed on the mainland. For example in the transit of 18 miles through the Petite Rigolette I saw only one flock of thirty and those were near the entrance. In the great lake-like expanse at the mouth of the St. Augustine River, where Eiders up to a comparatively few years ago bred in large numbers on the rocky islands, hardly any were to be seen and none at all in the little lakes of the mainland. The only freshwater lakelet on the coast where I found a female Eider and her brood of ducklings was on the large island of Wapitagun — practically a part of the mainland. At Piashte Bay and Natashquan the Eskimo dogs are confined in the summer, but at the other settlements to the eastward the dogs roam unrestrained, and are as bad as foxes in finding and devouring eggs and young. But even in regions away from any settlement and its dogs I have never found any evidence of the Eider nesting on the mainland except in trifling numbers. C. W. T.

or a bird of prey — the female Eider, who has her brood with her, goes on ahead and even tries to draw on herself the danger by simulating a wounded bird and leading the enemy from her young. All this time she emits croaking cries resembling *Croou Croou Croou.*

In some years weasels pass the summer on the shore and make great destruction of the eggs of the Eider.

But the greatest destroyer of the Eider is without doubt *Larus marinus,* the gull with the black mantle, called English Gull or Great Black-backed Gull, which during the years when there are not enough little fish to feed its young, kills with ease all the young Eiders that it finds. Flying at a great height this Gull sees its prey from afar, and as the young Eider (up to about ten days of age) dives but a very short distance, by sailing just above the water the Gull is able to watch it constantly, and follow it, until, when the young is so fatigued that it is unable to dive more, the Gull seizes it with its powerful beak. If during the journey to the nest, the young still struggles in the beak, the Gull carries the duckling to a height of 30 or 40 rods, and, calculating the strength of the wind, drops it on the rocks where it is killed. The Gull immediately follows and picks up the dead body.

In the same manner the Great Black-backed Gull breaks the mollusks whose shell is too hard to crush with its beak. I have seen in a very strong wind this Gull rise to a height of fifty rods, let lose its prey at more than twenty rods to windward of the rocks and have seen the prey fall directly on the rocks; often the rock is only three or four rods in circumference but never have I seen the bird make a miss. Happily for the conservation of the Eider this Gull is diminishing every year in numbers owing to the destruction of its eggs.[1]

Migration. The four species of Eiders mentioned above arrive in the spring time here on the north shore between the April 15 and June 15; in the last month, May 15 to June 15 — only the two northern species *S. mollissima borealis* and *S. spectabilis* pass. All

[1] The people of the coast do not need any argument like the above to incite them to exterminate this splendid Gull. The eggs and the young birds are excellent eating and are eagerly sought everywhere. Man is of course the chief destroyer of the Eider as of all the water birds of the Labrador Peninsula. If proper methods of conservation of the Eider were adopted there would be no need to fear the effect of the toll taken by the Great Black-backed Gull. C. W. T.

the species in the spring arrive from the south, pass by the west point of the island of Anticosti, strike the north shore at the Mingan islands, often as far west even as Godbout, and then descend the whole length of the shore, pass the Straits of Belle Isle and go north. In the autumn, in September, October and November only three of these species — *S. dresseri*, the intermediate species and *S. mollissima borealis* — return by the Gulf as far as Mingan and even Godbout and these strike the western point of the island of Anticosti to continue their migration to the south. Many of these species — partly the young hatched late — winter around Anticosti and on the north shore of the Gulf of St. Lawrence. The greater part of these that winter are the intermediate and Northern Eiders, very few of the American Eiders and none of the King Eiders. The migration in the autumn of the King Eider is by Newfoundland as well as by the eastern point of Anticosti. In certain winters many King Eiders stay about Anticosti.

It is a curious fact that between June 15 and July 15 on the highway of the north coast between Godbout and Chateau Bay all the male American Eiders leave their females and migrate between Chateau and Cape Chidley. Here the spring and the period of nesting are each a month later, and it would seem to be a possibility that by the mating of the male *S. dresseri* with the female *S. mollissima borealis* there would be created a mixed species, not classed, intermediate with membranous processes semi-rounded. This should be an easy and very interesting subject to investigate.

Moults. All the species of Eiders male as well as female do not reach full adult plumage until the age of two years and two months, that is to say until August of the third year after their hatching out. All young Eiders have four moults of the body feathers and one moult of down before assuming the complete adult plumage. The first moult takes place in September when they are about four months old; the second moult occurs the following spring in May when they are about eleven months old; the third moult occurs in the September following at the age of about sixteen months; the fourth moult occurs in June when the subject is about two years old; the fifth moult into the complete adult plumage takes place after the end of August or the beginning of September when the bird is two years and two months old, and is complete at the age of about two years and three and a half months.

The moult of the down occurs in September of the first year at the age of four months; the second moult of the down begins in June at two years of age and continues all the summer and is complete at the end of August.

The adult Eider has two annual moults, the first in April and May and is partial as it does not include the large wing and tail feathers; the second moult occurs during the last of August and the first of September and is complete including the large feathers of the wings and tail.

As a food the flesh of the Eider is good for the table fifty days after it is hatched and continues to be good until the age of one and a half years. During this period the young bird eats only prawns and much herbage. After a year and a half the flesh has an oily taste due to the fact that the bird takes at a great depth molluscs and little fish. The very old subjects do not resort to the deep water but return to the food of the young. Their flesh loses its oily taste but is firmer than that of the young.

Note. A study of the adult male specimens sent me by M. Beetz, as well as those in the Museum of Comparative Zoölogy at Cambridge, shows all degrees of gradation in the size of the membranous processes from the long, broad rounded ones of *dresseri* to the shorter acute ones of *borealis* as is to be seen in the accompanying photograph. The amount of green also varies. In typical *dresseri* it is extensive on the sides and back of the neck and forms a border to the dark cap, extending forward beyond the eye. In typical *borealis* it is less extensive on the sides and back of the neck and does not border the dark cap. In M. Beetz's intermediate form the amount of green varies, and it does not border the dark cap. Baird, Brewer and Ridgway [1] were unable to find any other differences between *dresseri* and *borealis* except in the size of the membranous processes. They say "the extent of the green of the head is quite variable, according to the individual." Coues [2] speaking of the membranous processes in the two species says: "The difference is obvious in comparison of specimens, and may

[1] The Water Birds of North America. 1884, Vol. II, p. 77.
[2] Key to North American Birds. Fifth Edition, 1903, Vol. II, p. 904.

now be held of specific value, as no intermediate specimens are forthcoming." It remained for M. Johan Beetz to point out the fact that there is an intermediate form between *dresseri* and *borealis*. Instead of this form being a new species, as M. Beetz suggests, it seems to me, however, that his important discovery shows that *dresseri* intergrades with *borealis*, and that like *borealis* it should be classed as a subspecies of *mollissima*. If this view is accepted this Eider should be reduced from its specific station and be listed as *Somateria mollissima dresseri*. A study of the breeding Eiders about Hamilton Inlet, the supposed dividing line between the ranges of *borealis* on the north and *dresserii* on the south, would be of interest.—C. W. T.

NOTES ON THE BIRDS OF THE ELK MOUNTAIN REGION, GUNNISON COUNTY, COLORADO.

BY EDWARD R. WARREN.

Plates XVI–XVIII.

THE region covered by the following notes is the northwestern portion of Gunnison County, which is in the western third of the State, about midway between the north and south boundaries. The county is of irregular shape, and the easterly boundary is the Continental Divide, with several summits attaining an elevation of more than 14,000 feet above sea level. The Elk Mountain Range branches from the Divide with a somewhat northwesterly trend, and forms the northerly boundary as far as Snow Mass Peak, whose elevation is 13,970 feet, and whence the line runs due west over an exceedingly rough country, as the writer can testify from personal acquaintance, to the Huntsman's Hills, a comparatively low divide; thence northwesterly along the Hills to intersect the summit of the Grand Mesa, which also forms a part of the boundary for a short distance. The west boundary of the County is the

1. GALENA PARK, 10,300 FT. SNOW MASS PEAK, RIGHT CENTER.
2. HILLSIDE RANCH AND LAKE.

meridian 107°–30′ West. The region within this area comprises the greater portion of the Elk Mountain Group or Range, most of whose summits are over 12,000 feet in altitude, and from that to nearly 14,000; in fact Maroon Peak is 14,126 feet.

When one is on a summit like that of Mt. Emmons, which, though comparatively low — but a little over 12,000 feet, gives an extended view in all directions, he is impressed by the panorama spread before him, of mountains everywhere, from the south around to the southeast, only the southeasterly arc of the circle has but a few high peaks. The rest is a mass of mountains and all is a region of grand and wonderful scenery, if one has the time and facilities for seeing it, for much of it must be explored on horseback or afoot if the traveler wishes to get to some of the best things.

The general elevation of the region will be understood if the reader is told that Crested Butte is 8,900 feet, Marble 7,950 feet, and the junction of the Muddy and Anthracite Creeks, which form the North Fork of the Gunnison, about 6,500 feet. Most of the country which the notes refer to is above 9,000 feet. The greater part of the region belongs to the Gunnison River watershed, though Rock Creek or Crystal River, in the northern part, drains into the Grand River. With the exception of the agricultural and coal lands most of the area is in the Gunnison and Sopris National Forests.

Most of the region under discussion has rather long winters, with deep snows, and cool summers, sometimes with considerable rain. The mercury often goes well below zero in winter, though the dry atmosphere makes it more bearable than it might otherwise be, at least out of doors. With the deep winter snows, and high elevations, the snow often remains on the upper parts of the mountains well into the summer, some deep banks often persisting until the snows of the next autumn fall.

The life zones of most of the region treated of in this paper are the Canadian, Hudsonian, and Arctic-Alpine. There is a little Transition south of Crested Butte, and the country on lower Muddy and Anthracite Creeks and that about Marble, is also Transition. Timberline is at about 12,000 feet, and the Hudsonian covers about 2,000 feet below this. The variety of trees in the Canadian and

Hudsonian zones is quite limited, comprising Lodge-pole Pine, Douglas's Fir, Engelmann's Spruce, Balsam, Aspen, and a few species of Willows. Wild flowers of many species grow in profusion, making of the open parts of the mountainsides, even above timberline, veritable flower gardens. Engelmann's Spruce is the tree which reaches the highest limit, and the stunted trees at timberline are this species. My notes bearing on the breeding ranges of the various species of birds are rather meagre, but such as they are go to show that most of the land birds occupy parts at least of both the Hudsonian and Canadian when nesting. However, I have never seen the Mourning Dove, Magpie, Long-crested Jay, Western Tanager and Yellow Warbler nesting above the Canadian and most of these are restricted to the lower part of that zone. The Rocky Mountain Jay, and presumably the Clarke's Nutcracker, breed only in the Hudsonian, while the Ptarmigan, Brown-capped Rosy Finch and Pipit breed in the Arctic-Alpine.

While a great portion of the years from the spring of 1882 until the autumn of 1902 were spent in the region, sometimes the summer only, and sometimes the entire year, I did but little ornithological work during most of that period, and kept no notes until the last four years of that time, and then not as systematically as might have been desirable. But little bird collecting was done, mammals and photography occupying most of the time I could give from other pursuits to such work. Since 1902 I have made four visits to the region, the last in June, 1915, when I spent practically the whole of that month there, devoting most of my time to bird study, with the result of filling in many gaps in my data, and yet leaving much to be learned. The broken character of the country renders it difficult to make anything like a thorough, detailed study of its bird life, unless one is able to devote practically his whole time for several seasons to the work. These notes make no pretense of being complete; I have worked them up as best I could, knowing it to be somewhat unlikely that I would do much more there myself and thinking they would at least serve as a basis for future work on the part of others.

The area covered may be roughly described as that portion of Gunnison County north of a line 8 miles south of Crested Butte, between East Brush and Cement Creeks on the east, and Muddy

Creek on the west. This does not imply that I have worked that whole region, but I have notes on something from almost every portion of it, and much of my data is applicable to the whole, as a matter of fact to the whole of the northern part of the County. I have been somewhat doubtful as to the advisability of including the region about Muddy Creek, or "the Muddy," as it is colloquially termed, but I spent nearly the whole of one summer, and portions of the two succeeding summers there, surveying, and gained some interesting information in spite of working strenuously, which it seems unwise not to use. Perhaps if I had not worked so strenuously at surveying I might have made more bird notes, but when the surveying notes had been written up after supper in camp, I was usually ready for bed, and too tired to think about anything else.

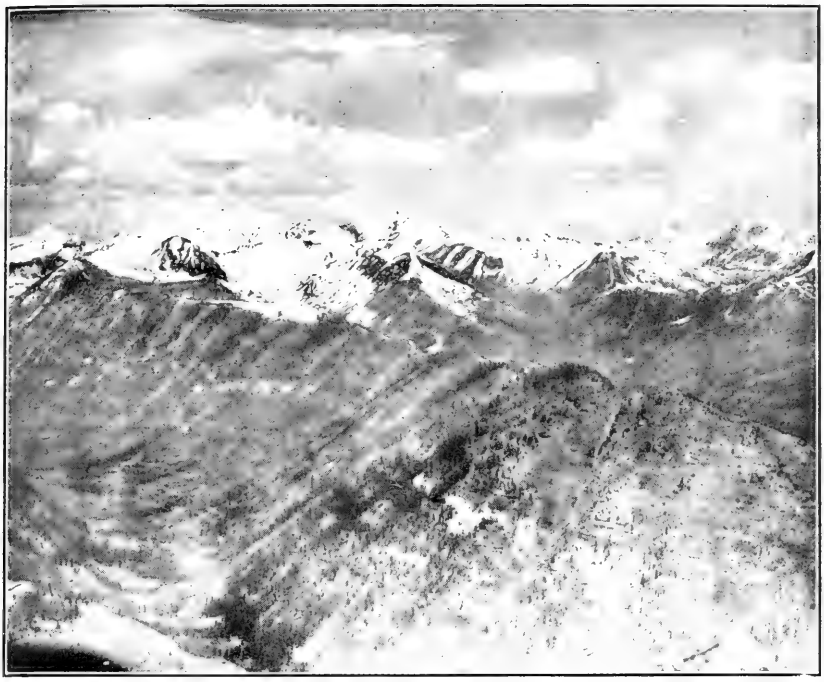
In the last thirty odd years there has been considerable change in the region. The years 1880–81 witnessed a big mining boom in Gunnison County, and the Elk Mountains had their share of the mushroom prosperity which accompanies such things. Irwin, Gothic, and Scofield were quite good-sized places, the former with several thousand people. In 1882, when I first went there, the boom began to fall off, in fact there was no boom. Fewer people came in, and these dwindled away year by year, until now these towns are nearly deserted, and most of the buildings have been taken down for the lumber in them and carried away. Crested Butte was also settled in the boom days, but it had coal mines to support it, these were an inducement for the railroad to come, and for many years large shipments of coal and coke were made, and are still going on. In those early days practically everything was dependent on the mining industry, both coal and metal, and there were but few ranches. Now most of the desirable land in the East and Slate River Valleys is occupied, the principal, one may say only, crop, being hay.

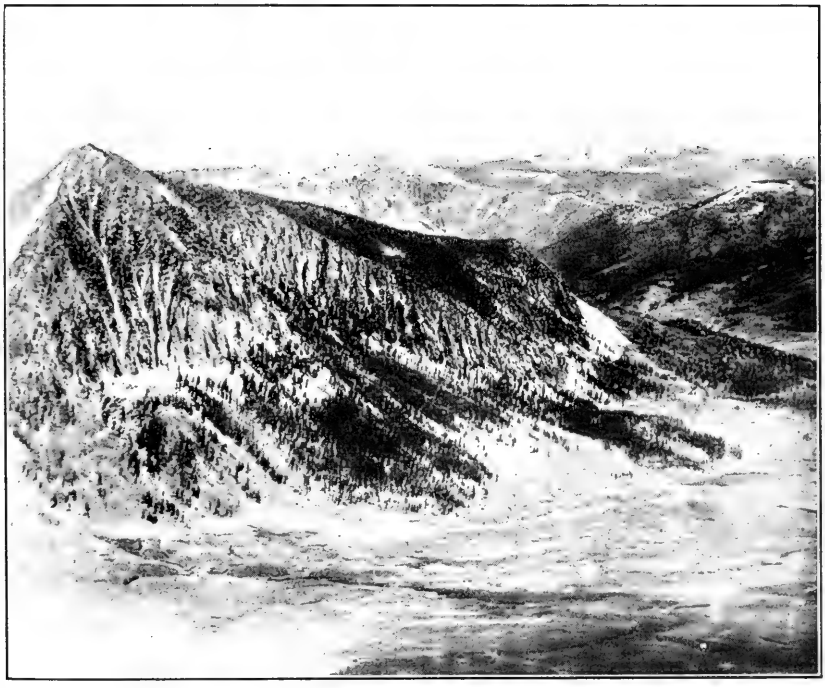
With the lapse of time there has also been a change in the character of the population. Once the miners were practically all English-speaking, if not American-born. When the coal mines were opened many coal miners of British birth came, some from eastern states, others directly from the "old country." It was not long, however, before southeastern Europeans, commonly called Austrians, as

well as Italians, began to arrive, and now they are a noticeable element of the population of Crested Butte. As elsewhere in the United States, these foreigners are exceedingly destructive to bird life. I have made mention of specific cases under the species involved, but wish here to make mention of a condition which is perhaps new or unusual.

As everyone knows, Colorado, in the latter part of 1913 and the earlier months of 1914 was afflicted with a very serious coal miner's strike. While the disturbances were all in the southern Colorado coal fields, the miners at Crested Butte struck to keep their brethren company. Some small mines accepted the union terms and kept on working, but not employing many men. The Colorado Fuel & Iron Company's mine, employing some 300 men, remained closed and the men were out of work. I should state here that the company was getting ready to reopen the mine and resume operations in the summer of 1915, but that is something which takes time after such a long shutdown. These idle men, largely of the nationalities previously mentioned, being out of work and not earning any money, though it is safe to say there was not one who had not money laid by, took their guns and scoured the whole country killing for the pot anything which had a morsel of meat on it. They are tireless walkers and go everywhere so that nothing escaped them. This last June I noticed an entire absence of woodchucks in places where they used to be plentiful. No doubt exterminated by the miners. I think it likely, though I have no positive information to that effect, that this condition obtains all through the districts affected by the strike. It is certainly to be hoped that the Federal migratory bird law will be held constitutional by the United States Supreme Court, and that it will be vigorously enforced all through these coal mining districts where there is such a large population absolutely without any regard for bird life. The State deputy game wardens seem to take little interest in enforcing the law for the protection of insectivorous birds, though we have the excellent A. O. U. model law on our statute books.

A few words descriptive of the Hillside Ranch, which is the property of friends of the writer, often referred to in the succeeding pages, may not be amiss. The place is located at the base of





1. NORTHWARD FROM MT. EMMONS.
2. PART OF CRESTED BUTTE MT. FROM MT. EMMONS. HILLSIDE LAKE AT BASE OF MOUNTAIN ON THE RIGHT.

Crested Butte Mountain, a little over two miles due east of the town of the same name, and has an elevation of about 9,200 feet. On the ranch is a lake of some thirty acres, partly natural and partly artificial, having been formed by enlarging by means of a dam a small pond which was fed by springs. This is the lake and ranch referred to as "Decker's" in Sclater's History of the Birds of Colorado, but as the place is now known as Hillside Ranch, I have used that name in these notes. Most of the land is somewhat rolling and hilly, and was covered with sage brush before clearing. On the mountainsides immediately above are Douglas's Spruces and Lodge-pole Pines. About the lake shores and along the outlet from the lake, are many willows, as also on the lower part of the ranch where are a number of streamlets coming from springs on the hillside just above. All these willows are good haunts for birds and many nest among them. In the Douglas's Firs above the lake I found an Audubon's Warbler breeding. Robins nested everywhere about the place. In the open ground Vesper Sparrows and Green-tailed Towhees nested in the grass and about the sage brush. Some water birds come to the lake, especially in migration, but most of my records of these are very unsatisfactory.

My acknowledgments are due to the U. S. Biological Survey for the identification of certain birds, the insects collected on the snow on Mt. Emmons, and the contents of the stomachs of two Rosy Finches.

It should perhaps be stated that, unless otherwise mentioned, all spring and autumn dates refer to Crested Butte or the region about there.

Colymbus nigricollis californicus. EARED GREBE. "HELL-DIVER."— A common migrant, especially in spring. As many as 21 have been seen in a flock on Hillside Lake. I examined the stomachs of several killed on this lake in the spring of 1899; I was desirous of ascertaining if they were eating trout fry, of which there were many in the lake, but I found no indications that they were destroying the fish. What was in the stomachs was so much digested as to be practically unrecognizable, but I think it was largely crustacea and aquatic insects, of which there are many in the lake.

Podilymbus podiceps. PIED-BILLED GREBE.— I have but one record of this species, a bird seen on Nichols's Lake in October, 1899.

Mergus americanus. AMERICAN MERGANSER.— Two were shot on

Hillside Lake, October 28, 1899. When on Muddy Creek, in July, 1901, Adams and Hooker spoke of seeing a " Wood Duck " with a brood of young swimming in the creek. From the description they gave of the bird it appeared to be this species. They called it Wood Duck because it nested in trees.

Anas platyrhynchos. MALLARD.— Fairly common in migration about Crested Butte. Seen as late as October 14, 1905. In 1901 and 1902 the species seemed common on the numerous little ponds found in the high ground between Muddy Creek and Ragged Mountain, and were no doubt breeding there. November 2, 1901, three were seen on Muddy Creek, not far below the Botsford Ranch.

Nettion carolinense. GREEN-WINGED TEAL.— Not uncommon in migration about Crested Butte. Carl Bergman told me that a teal of some species raised a brood of young at the Hillside Lake in 1914, but he could not say if it was the present or the following species.

Querquedula discors. BLUE-WINGED TEAL.— Probably not uncommon in migration. I have one record for Marble, a freshly killed bird which I found dead in Yule Creek, October 4, 1902.

Spatula clypeata. SPOONBILL. SHOVELLER.— Has been taken at Hillside Lake.

Marila americana. REDHEAD.— I saw three which were killed on Hillside Lake, October 18, 1902.

Erismatura jamaicensis. RUDDY DUCK.— One was killed on Hillside Lake, May 31, 1899.

Botaurus lentiginosus. BITTERN.— I saw one which had been killed at Green Lake, above Crested Butte, October 22, 1900.

Nycticorax nycticorax nævius. BLACK-CROWNED NIGHT HERON.— One was killed near Crested Butte some time in May, 1915. I saw the mounted specimen. No one there had ever seen such a bird.

Grus mexicana. SANDHILL CRANE.— In 1901, '02 and '03 there were a few Cranes about the little ponds near Muddy Creek, already mentioned in speaking of the Mallard. June 5, 1903, C. F. Frey and myself found a nest with two eggs. A full description of this was published in the Condor, VI, No. 2, March, 1904, p. 39. The nest was on one of several tussocks of grass which lay more or less in a line on a mudbank or island, and made of swamp grass, irregular in shape, and about two feet across, a mere platform. On this lay the two large eggs, looking, as Frey said, like turkey eggs. While I was taking pictures of the nest on the seventh the parent birds, and the female (I suppose) especially, kept flying about, uttering their outlandish notes.

Porzana carolina. SORA.— One seen at Hillside Lake, September 23, 1900.

Fulica americana. COOT.— Common migrant about Crested Butte. I saw a " Mudhen " on Hillside Lake, June 20, 1915, and the people at the ranch had noticed it a few days previously.

Catoptrophorus semipalmatus inornatus. WESTERN WILLET.—

May 22, 1899, a flock of eight or ten birds came to Hillside Lake, of which four were secured.

Actitis macularia. SPOTTED SANDPIPER.— A common summer resident along the streams, both in the Crested Butte region and on Muddy Creek.

Oxyechus vociferus. KILLDEER.— A common summer resident in suitable places in the region about Crested Butte; my notes make no mention of it on Muddy Creek, though it should be there. June 21, 1900, young, apparently a day or two old, were seen with the parent on the East River road, near Brush Creek.

Dendragapus obscurus obscurus. DUSKY GROUSE.— A common resident, though much reduced in numbers during the past twenty years by persistent hunting, especially by the Austrians and Italians, most of whom have no regard for close seasons or game laws, and no scruples about killing a bird on the nest or with a brood of newly hatched young. It is found everywhere from the upper limit of heavy green timber down. June 20, 1900, a nest with seven eggs was found near the Jarvis Ranch on East River. June 5, 1902, a nest and four eggs were found near Deep Creek, at the base of Ragged Mountain. It was under a big log, just a depression with grass above it and lined with a few feathers. There must be considerable irregularity about the nesting of this species for one often finds broods of young of quite different ages at the same time in the same locality.

Lagopus leucurus leucurus. WHITE-TAILED PTARMIGAN.— The Ptarmigan is a fairly common resident living above timberline in the summer, descending to the valleys in winter when driven down by the deep snow. During the last four years of my residence at Crested Butte, from 1899 to 1902, I paid much attention to these birds, looking for them, studying and photographing them at every opportunity and at all seasons. In summer they are apt to be rather difficult to find as they are scattered about the mountain tops, often singly, or females with young, though one may run across a flock of male birds who are enjoying bachelor life while their wives attend to the family duties. The birds are often, one may say usually, remarkably tame. I have known a female to squat down on the ground and the young to get under her and to pay no attention whatever to me when I placed a camera on a rock close by, focussed, adjusted the shutter, and made several exposures. I have never been so fortunate as to find a nest, though I have spent considerable time in the search for one, but it is one of those things one finds by stumbling upon them rather than by search. In late summer the birds often go to some particular place for water once a day, usually the middle or latter part of the forenoon. This is when the last remnants of the preceding winter's snow have disappeared, for they will eat snow readily enough, and at extreme high altitudes springs are not at all common. The change to the winter plumage begins after the middle of September, and is nearly complete the last of October, and fully so the first week in November. The reverse change

begins in May, toward the latter part of the month. I cannot say just when they descend to the valleys in fall; no doubt it depends much upon the weather. I have seen them at timberline November 9, and at the same altitude early in May. In winter the Ptarmigan seem to prefer to frequent the creek bottoms which are overgrown with willows on whose buds they largely feed. In such places their tracks can be seen going from one clump of bushes to another, looking much as if a flock of chickens had been wandering about. In summer they seem to eat anything, insects, plant buds and seeds are all acceptable.

Centocerus urophasianus. SAGE GROUSE.— Rare in the region, coming but little farther north up East River than Jack's Cabin.

Columba fasciata fasciata. BAND-TAILED PIGEON.— There used to be a few Band-tails on the North Fork of the Gunnison, and on Muddy and Anthracite Creeks, also on the lower west slope of Ragged Mountain. I saw two May 27, 1901, a short distance west of the base of that mountain, while surveying, and had an excellent opportunity to observe them with the transit telescope.

Zenaidura macroura marginella. WESTERN MOURNING DOVE.— A common summer resident in suitable country up to 9,500 feet. In June, 1915, during four weeks of field work I saw this species but once, though I used to see it commonly in previous years in the very same localities where I was working this year. I ascribe this scarcity to the cause mentioned in the introduction, their slaughter by foreigners.

My earliest date is May 14, 1900, at Hillside Ranch, and latest October 9, 1910, at the same place, when one was seen. A nest with two eggs was found on Ferris Creek, June 17, 1902, and one with two half-grown young at Killian's ranch July 24, 1902, both of these nests being on the ground.

Circus hudsonius. MARSH HAWK.— Common, especially in autumn, when it is often seen hunting over the meadows; I am not sure if it breeds. Seen as late as October 14, 1905; one seen at Hillside Ranch, June 26, 1903.

Accipiter velox. SHARP-SHINNED HAWK.— One seen at Hillside Ranch, June 9, 1915.

Buteo borealis calurus. WESTERN REDTAIL.— Common summer resident. Earliest date of arrival April 1, 1901; latest autumn date October 19, 1905. This useful large hawk seems well distributed over the region, from the lower portions up to the highest mountains; it is especially abundant in autumn. In May, 1901, in the country between Muddy Creek and Ragged Mountain were several nests which I thought belonged to this species, though but one was actually occupied, and I saw a hawk perched on another nest, which, however, showed no signs of recent use. This was in a scrub oak about 12 feet from the ground, a mere platform of twigs. The occupied nest was in a dead Quaking Aspen, first noted May 24. Rifle shots fired at the nest failed to drive the sitting bird off, though some of the bullets tore through the twigs beneath her. The tree was cut down June 30. The nest contained a half-grown young bird, and there had been another which had died when very young, and whose dried-up body was in the nest.

The Italian miners, and possibly also the Austrians, eat every hawk and owl they can kill, and this species suffers with the rest. In the autumn of 1910, beside a cabin on the slope of Crested Mountain which had been occupied by some Italian timber cutters, I found a good sized heap of hawk and owl feathers, representing quite a number of birds which had found their way to the pot.

Buteo swainsoni. SWAINSON'S HAWK.— My only record for the region is one which I killed on Slate River, above Crested Butte, September 1, 1900.

Archibuteo ferrugineus. FERRUGINOUS ROUGHLEG.— Seen occasionally; my notes all refer to fall specimens. October 13, 1900, near Crested Butte, is my latest date. One seen at Scofield, 10,150 feet, October 12, 1902, in a snowstorm.

Aquila chrysaëtos. GOLDEN EAGLE.— Not uncommon. I do not positively know of it breeding, but it was seen June 3, 1902, on Muddy Creek, and in Washington Gulch, July 22 of same year. It is also about in winter, at least to some extent, for one was caught in a coyote trap set near a dead horse December 13, 1901. It was liberated, and it or another was caught a few days later.

Falco sparverius sparverius. SPARROW HAWK.— A common summer resident. April 16, 1901, is my earliest date, and October 13, 1901, my latest. Rather frequently seen chasing larger hawks, such as the Redtail. I have seen two tormenting one of these, and once saw one Sparrow Hawk after three Redtails.

Asio wilsonianus. LONG-EARED OWL.— I have only two records of this species: one seen on the Gothic road, two miles from Crested Butte, September 7, 1900, and one found dead near Green Lake, September 20, 1900.

Asio flammeus. SHORT-EARED OWL.— I have never seen this species about Crested Butte, but have seen it on Muddy Creek. In June, 1903, one was in a dense thicket while my assistant was setting a corner there, and kept hanging about very close. I have some recollection of having seen it at other times, but no notes.

Bubo virginianus pallescens. WESTERN HORNED OWL.— Probably a common resident. I have seen it at Marble, Crested Butte, and on Muddy Creek.

Glaucidium gnoma pinicola. ROCKY MOUNTAIN PYGMY OWL.— One was seen on the high mesa west of Muddy Creek, July 22, 1901. I have never seen or heard of it in the Crested Butte region.

Ceryle alcyon. BELTED KINGFISHER.— Not uncommon along the streams in summer; probably breeds, in fact one was seen to enter a hole in a high bank above Muddy Creek, at Adams's ranch, July 15, 1901. September 6, 1902, is the latest date I have, at Hillside Lake.

Dryobates villosus monticola. ROCKY MOUNTAIN HAIRY WOODPECKER.— A not uncommon resident; have seen it at all seasons of the year; found up to at least 11,000 feet.

Dryobates pubescens homorus. BATCHELDER'S WOODPECKER.— Probably rare; I have but one record, a bird seen at the Hillside Ranch, January 12, 1909.

Sphyrapicus varius nuchalis. RED-NAPED SAPSUCKER.— A common summer resident, going to above 10,000 feet. Its favorite nesting sites appear to be dead aspens. June 20, 1902, a brood of young was seen flying about Hillside Ranch. A female collected June 6, 1915, at about 9,500 feet, was evidently breeding, its breast and abdomen being bare of feathers. July 8, 1900, while watching a flycatcher's nest, I saw a Red-naped Sapsucker, and possibly two, though I was not sure as to that, flying back and forth, and noticed that it went into a particular bunch of willows farther along the side-hill from where I was. When I got through with the flycatchers I went there and the Sapsucker flew out. Looking about I saw quite a number of the willow branches which had the bark perforated in circles and the bird was evidently going there after sap.

I have never seen Williamson's Sapsucker in the region, though it should occur there, and no doubt some other observer will find it.

Asyndesmus lewisi. LEWIS'S WOODPECKER.— Not uncommon in summer on Muddy Creek.

Colaptes cafer collaris. RED-SHAFTED FLICKER.— Moderately common summer resident all over the region; I have seen it as high as the timber extends, up to say 11,500 feet. My earliest date is April 13, 1901, at Crested Butte; latest September 28, 1910, on Brush Creek.

Chordeiles virginianus henryi. WESTERN NIGHTHAWK.— A common summer resident near Crested Butte, frequenting the open ground, especially in East and Slate River valleys. I do not think it breeds much above 9,000 feet in this region, for there is not much suitable country above that elevation, though it may wander much higher when hunting. July 9, 1903, two eggs were found at Pogna's ranch, East River; a dog flushed the bird and stepped on one of the eggs, which did not appear to have been much incubated. July 26, 1903, a ranchman showed me at his place on East River two young hatched within the preceding week. These were covered with a light grayish buff down, somewhat speckled, and were almost invisible on the ground. Two days later the only bird found showed considerable growth, and the wing quills showed a little. On cloudy days the Nighthawks are often seen hawking over the streams, and will fly so close to fishermen that they might easily be touched with a rod. In June 1915, they came about Hillside Lake in the evenings, evidently after the mosquitos and other insects which were abundant there.

Selasphorus platycercus. BROAD-TAILED HUMMINGBIRD.— Common summer resident. I saw a nest at Adams's ranch on Muddy Creek, June 13, 1901, with two eggs. It was saddled on a dead limb on a small cottonwood about five feet above ground, and was largely covered with lichens. The bird sat very closely, allowing me to come within a foot. June 23, there were two young in the nest, and July first they were nearly ready to fly. A Hummingbird came into the kitchen at Adams's; I caught

it and induced it to take some syrup; then it flew from my hand and went up a hole in the ceiling where I could not get at it. Coming down again an hour or two later I captured it again. It was either exhausted or frightened so that it seemed at the point of death, and I laid it outside on a block in the sun, where it soon revived and flew away. Perhaps it was playing possum.

August 3, 1902, I was about some clumps of willows at Hillside Ranch, when I saw a Hummingbird, and then more, four altogether, I think. A male was most in evidence; I was quite close to him, three feet, as he perched in the willow. His throat gave a fine display of color, in some lights almost black, again flashing lilac red, almost ruby. I thought at first they had taken shelter in those thick bushes from a shower which had just passed, but I saw at least one hover beside a twig and apparently pick up something from the bark; bees and flies were crawling over the bark, seemingly after the same thing; the bark of many of the twigs was perforated and girdled by sapsuckers; indeed, I had seen at least one fly away from there. Though I looked closely I could see nothing in the way of sap.

In June, 1915, Hummingbirds were seen several times at Hillside Ranch, about the catkins on the willows. The first half of the month these seemed to be their favorite feeding grounds; later I saw them about Larkspur and other flowers. I succeeded in taking several fairly good photographs of one bird at the willows. Sometimes this bird fed while poised on the wing, and again it would perch on a twig by the catkin and take what it wished.

Selasphorus rufus. RUFOUS HUMMINGBIRD.— Mr. T. A. Boughton of Marble told me of a Hummingbird which visited the flowers in his garden in 1914, and which from his description could have been nothing but a Rufous Hummer.

Tyrannus verticalis. WESTERN KINGBIRD.— Seen on Muddy Creek, but does not reach as high an altitude as that of Crested Butte. June 12, 1901, a pair were building a nest near my camp on the mesa west of Muddy Creek. It was on a partly burnt dead aspen, on a sort of shelf or niche on one side, about 25 feet above the ground. The nest was built and the eggs were laid during the time I was there, from the 12th to the 20th, at which latter date the bird was sitting.

Sayornis saya. SAY'S PHŒBE.— My only record is one seen about the corrals at Hillside Ranch, August 6, 1903.

Nuttallornis borealis. OLIVE-SIDED FLYCATCHER.— Summer resident, but I have little evidence on which to base a statement as to its abundance. I failed to see it in 1915 in many localities which I would consider well suited to it. One was seen at Pittsburgh, 9,500 feet, and one or two near the Hillside Ranch, possibly the same individual seen on different occasions.

Myiochanes richardsoni richardsoni. WESTERN WOOD PEEWEE.— I did not, for some reason, note this species near Crested Butte until 1915, when on June 8 I took one on the south slope of Crested Butte Mountain, at about 9,500 feet; this was a male and its breast was bare of feathers as

if incubating. A few days later I saw one or more at Hillside Ranch, and on June 15 a female was collected on the ridge north of Crested Butte Mountain among aspens. June 23 and 24 I saw the species at Marble. I should consider it a not uncommon summer resident and breeder, going at least as high as 9,500 feet.

June 28, 1901, I found a nest near my camp north of Deep Creek in the Muddy country; it was in an aspen tree about seven feet above ground, saddled on a small branch, and was constructed from the fine fibrous bark from dead aspens; it contained 3 eggs at the time. July 13 the young were showing pin feathers.

Empidonax wrighti. WRIGHT'S FLYCATCHER.— Summer resident; appears to be common to at least 9,500 feet. In 1900 I found three nests of this species, one at Hillside Ranch, one on the Irwin road west of Crested Butte, and one by the Gothic road not far from Gothic. Each of these nests contained three eggs. The first was found June 17, that near Gothic June 29, and the other July 2. That at Hillside was observed regularly, and the following data noted: June 24, eggs still unhatched; July 1, 3 young; July 8, young pretty well feathered and very lively; they were decidedly yellow below. The parent came to nest to feed young while I was close by; July 15, nest deserted.

At the nest on the Irwin road the young were just hatching July 9; on 19th were getting well feathered; July 23 I found the nest destroyed and the young gone, work of a cat, I suspect.

In 1915 this species was noted several times; one was collected at about 9,500 feet on the northwest slope of Crested Butte Mountain, June 15. June 10 I discovered an empty nest at Hillside Ranch, which at the time I supposed to be a MacGillivray's Warbler's, though the height from the ground, 7 feet, was quite unusual for that species, but a pair of the Warblers were about the willow thicket, evidently having a nest there, and I saw the female flush from so close to the nest that I thought she came from it. When I found the nest to be empty I at once left it without any further careful examination, not wishing to chance causing the bird to desert the nest. On the sixteenth I thought the set of eggs should be complete, so went to the nest again. The Warblers were about as before, but when I climbed to the nest and found two pure white eggs instead of the spotted ones I had expected I saw my error and after examining the nest decided it was a Flycatcher's. That was in the morning. In the afternoon as I passed by a bird was on the nest, but so much above me and in such a position that I could not see much more than the top of her head and a whitish eye ring; she might very well have been a female MacGillivray's with the view I then obtained. The morning of the 18th she was on the nest again, sitting very close, even staying on when I cut twigs close beside the nest which interfered with photographing. The nest then contained four fresh eggs. The nest, eggs, and female were collected, and are now in the Colorado College collection. The nest is constructed almost entirely of bark fibre, lined with a little hair, soft vegetable material, and a

1. NEST OF WRIGHT'S FLYCATCHER. 2. NEST OF MCGILLIVRAY'S WARBLER.

few feathers. I noted a few breast feathers from a Robin among the latter. The outside diameter of the nest was $3\frac{1}{2}$ inches; the inside 2 inches; the depth outside approximately 3 ins., being quite irregular; and inside $1\frac{5}{8}$ ins. It was in some rather large willows, built in a fork made by the trunk and a small branch.

Otocoris alpestris leucolæma. DESERT HORNED LARK.— A common summer resident, living in the open valley, and also above timberline on the grassy slopes. The time of arrival in the spring no doubt varies with the season and amount of snow. The winter of 1901–2 was rather a mild winter, with little snow and early spring, and February 24, 1902, a Horned Lark was seen by the roadside below the town, though the snow had not yet gone, and March 17 several were seen at the same place. The latest date I have recorded, September 23, 1902, I collected one at about timberline on the ridge above Elk Basin, and there was a good bit of snow there at that date. The following year I saw it in the same region the last of June, and on the thirtieth of that month I found a nest with four eggs on the slope at the head of Elk Basin. This nest was on the ground with practically no protection in the way of surrounding or overhanging vegetation. In 1915 the species did not seem to be as common as of old; possibly its habits of frequenting the roads and roadsides have made it an easy prey for the foreigners.

Pica pica hudsonia. MAGPIE.— Common resident and breeder. Nests mainly along streams, building largely in the willows, but also in the coniferous trees, and in the cottonwoods when there are any. Judging from the data at hand difference of altitude does not make much difference in the time of breeding. Thus at Crested Butte, 9,000 feet, I found newly hatched young May 27, 1900, and on West Muddy Creek, 7,000 feet, I found young of the same age May 28, 1902. The young at Crested Butte were observed closely, and were out of the nest in the branches at the age of four weeks, though as yet unable to fly, and when 5 weeks old could fly a little, and quite well at 6 weeks of age. On West Muddy Creek, June 20, 1903, young about four weeks old were found. I am doubtful if it breeds above 9,500 feet. The Magpie sometimes goes to timberline, one being seen at that elevation above Independence Basin, September 23, 1902. It is a nuisance in winter when one is trying to trap about animal carcasses as they are continually getting into the traps.

This is another of the species which I found to be rare about Crested Butte in 1915, and I saw very few during four weeks in June. I was told, however, that there were many about that spring; perhaps they also went into the pot with the other birds.

Cyanocitta stelleri diademata. LONG-CRESTED JAY.— Not uncommon; probably breeds as notes indicate its presence throughout the summer. I think it must go somewhat lower during the most severe portion of the winter as I have no records for that season. The latest is November 24 and 25, 1899, at the Keystone Mine, west of Crested Butte, 10,000 feet. One or two seen frequently about Hillside Ranch in June, 1915. In late

September, 1910, when camped on Middle Brush Creek at 9,750 feet, I saw a few about. Generally but one or two are seen at a time. On Muddy Creek the species is more common, as the altitude is lower. When at Adams's ranch in September, 1902, I saw these Jays carrying heads of grain from the shocks in the field and hiding them in trees. Several birds were constantly going back and forth on this errand.

Perisoreus canadensis capitalis. ROCKY MOUNTAIN JAY. CAMP BIRD.— A common resident of the higher altitudes, making its home for the most part in the heavy timber from 10,500 to 11,500 feet, but wandering lower in the fall and early winter, and a few occasionally winter at quite low altitudes about ranches and mines. It must breed before the snow is gone as I shot a young one, full fledged but not long from the nest, May 31, 1900, which would indicate that the eggs must be laid in April, when the snow is still deep at that altitude, and the nights, if not the days, cold. The "Camp Robber," as it is often called, often becomes very tame and familiar and will take food from the hand. In the fall of 1900 some were very tame at the "Twin Springs," on the south slope of Mt. Emmons, though no one was at that time living in the cabin there. They would take bread from my fingers, and one tried to steal a whole slice from my lunch which was on the ground close beside me, though I was dividing with them quite fairly. Like all their family they are great hands to carry away and hide food, and when fed a bird will usually eat a mouthful or two, take all it can hold in its bill, and fly off with it, presently returning to repeat the performance. Some, at least, of the adult birds moult in June, as I have seen them with short tails, or parts of the tail missing; the plumage of others was very ragged at that date. I have also seen birds in mid-September which had not yet completed the moult.

Corvus corax sinuatus. RAVEN.— Not common, occasionally seen. In 1885–6 there always used to be a few about the Augusta Mine at the head of Poverty Gulch, 12,500 feet, feeding on the refuse thrown out by the cook. C. F. Frey told me that Ravens bred in the cliffs on Anthracite Creek above the "Watson Ranch." Possibly the Ravens at the Augusta may have come from there as this mine is at the head of a branch of Anthracite Creek. In June, 1901, a number were seen near the trail between Anthracite and Muddy Creeks; a band of sheep was lambing there and a good many dead lambs were about.

Corvus brachyrhynchos brachyrhynchos. CROW.— Early in 1901 H. A. Decker saw several birds near Crested Butte which he was sure were Crows. He said they "cawed," and were not as large as Ravens, with which he was familiar. Confirmatory of this, October 27, 1905, I saw 6 or 8 birds a few miles north of Gunnison, or 20 miles south of Crested Butte, which I had no doubt were Crows.

Nucifraga columbiana. CLARKE'S NUTCRACKER.— Not common, at least about Crested Butte, though at Anderson's ranch, Marble, the last of September, 1900, a good many were coming about the house for scraps, and were quite tame. They seemed to rather bully the Camp Birds and

Long-crested Jays which were also about. My records for Crested Butte are few and scattering. I saw it at Hillside Ranch twice in June, 1915. On the tenth, while photographing an Audubon's Warbler's nest, two came around, and I think they would have robbed the nest when I left if I had not taken it with me. I am inclined to think the species is more common in the northern part of the region than the southern, though I know of no reason why this should be the case.

Molothrus ater ater. COWBIRD.— Apparently a rare summer resident. Seen at Pogna's ranch, 7 miles below Crested Butte, July 9, 1903. One seen at Marble, June 25, 1915.

Xanthocephalus xanthocephalus. YELLOW-HEADED BLACKBIRD.— Only a straggler at Crested Butte, and I have but two personal records, May 8 and September 22, 1900. I was told of one at Hillside Ranch in the spring of 1915. These were all males. A male was seen at Adam's ranch on Muddy Creek, June 14, 1903, and Adams spoke as if he had never seen it there before.

Agelaius phœniceus fortis. THICK-BILLED REDWING.— Not particularly common at Crested Butte, though there are always some about in summer. Earliest date is March 20, 1900; latest November 27, 1901. No doubt these dates vary much with the season. July 26, 1902, some young were seen just beginning to fly, presumably at Meridian Lake, as I was doing some surveying there at that date. There were some at Hillside Lake all through June, 1915, and on the fourth a nest with five fresh eggs was collected, built in some willows by the lake shore. On the Muddy I used to see these Blackbirds about the little ponds and marshy spots.

Sturnella neglecta. WESTERN MEADOWLARK.— Formerly a common summer resident and breeder in open ground. In 1915 Meadowlarks did not appear to be nearly as abundant as formerly, possibly for the reason previously mentioned in connection with other species. I have seen it up to about 9,500 feet. I have no early spring dates; seen as late as October 5, 1910. June 6, 1901, there was a nest at Hillside Ranch with 6 young; it was empty two days later; possibly the young were eaten by a snake.

Icterus bullocki. BULLOCK'S ORIOLE.— Seen at Adams's Ranch, Muddy Creek, May 19, 1901.

Euphagus cyanocephalus. BREWER'S BLACKBIRD.— Common summer resident and breeder. Seen as early as April 1, 1900, and as late as November 14, 1901, but the majority are gone by the middle of October. By the last of July they have gathered in large flocks and are numerous about the streets of Crested Butte. These Blackbirds were nesting in some spruce trees in the corral at Adams's ranch, and May 31, 1901, I found a nest with 5 eggs and the following day two nests with 6 eggs in each in nearby trees. June 15 a young bird not able to fly was found in the corral; possibly it had fallen from one of these nests. May 29, 1902, I found a nest with eggs in the same corral. In 1915 I discovered several nests with eggs in the willows along the shore of Hillside Lake. Two of these contained 5 eggs each; a set collected June 6 was heavily incubated and would

have hatched in a few days. The other set of five was found June 10, and I sometimes saw the female on the nest, but I think she eventually deserted it; the eggs were there up to June 29, but were gone on the afternoon of the 30th except for a few fragments of shell. Whenever I went along the lake shore several blackbirds of both sexes always kept me company, perching on the willows and uttering notes of distress. June 26 I saw the first young of the year out of the nest and one or two were seen almost daily after that.

In the town of Crested Butte I used to see partial albinos quite frequently; it is possible there may have been a family with a tendency toward albinism breeding thereabouts. Thus from my notebooks:

Sept. 7, 1900. This morning as I was coming up from breakfast saw a young Blackbird, or a female, with a white spot as big as my thumb in the middle of its back.

Sept. 10, 1900. Had a close view of what was probably the same albino seen on the 7th. It had other white feathers on it besides the patch on the back, including some under wings.

Sept. 22, 1900. One seen on street which had the outside edge of left wing white; should think the outer two or three primaries were white.

Oct. 7, 1901. A female about town with a number of white feathers scattered through its plumage, and it also had one leg crippled in some way.

Oct. 11, 1901. There are, as last year, a number of partially albino Blackbirds about, I have seen several.

If my memory serves me right, I saw others in other years, before I made any notes.

Pinicola enucleator montana. ROCKY MOUNTAIN PINE GROSBEAK. — I have seen this species on a few occasions, high up in the timber; twice near the Venango mine, Irwin, in July and October, and on Mt. Emmons. Late in September, 1910, I saw quite a number on Middel Brush Creek. These various records were at altitudes from 9,800 to nearly 11,000 feet.

Carpodacus cassini. CASSIN'S PURPLE FINCH.— I saw Cassin's Finches several times in June, 1915, at Hillside Ranch; in Rustler Gulch, at 10,000 feet; at Scofield, 10,150 feet; and near the Keystone Mine. September 24, 1910, I saw a flock of 25 or more on Middle Brush Creek, and secured one. From these data one may conclude that the species is at least a summer resident; whether it stays during the winter remains to be proven.

Loxia curvirostra minor. CROSSBILL.— Seen on Mt. Emmons, at 11,000 feet, September 21, 1901; also two seen near Scofield, October 13, 1900.

Leucosticte tephrocotis tephrocotis. GRAY-CROWNED ROSY FINCH. — Rosy Finches come about in large flocks in autumn and winter, rather erratically; I have seen them in the town of Crested Butte and at Hillside Ranch; some, if not a majority, of these winter birds are Gray-crowned. The winter of 1886–7 I spent at the Domingo Mine above Dark Cañon, between 11,000 and 12,000 feet, and pleasant days through the winter Rosy Finches used to come and feed on the refuse we threw out. I col-

lected none of these birds and kept no notes, but have a distinct recollection that I saw black individuals among them. A flock at Hillside Ranch, March 29, 1902, seemed to be all, or nearly all, Gray-crowned.

Leucosticte australis. BROWN-CAPPED ROSY FINCH.— A summer resident on the mountain tops, above timberline, and no doubt helps form the winter flocks. My summer notes often mention seeing it at high altitudes. July 11, 1902, one was seen on Mt. Emmons, hopping along on a snowbank picking at the snow; I could not tell if it was eating snow to quench its thirst or picking up food. September 23 of the same year a flock of 50 or more was seen on the same mountain; the birds lit quite close to me once, feeding on the grass and weed seeds. June 28, 1915, I saw several in Elk Basin at 11,500 feet, in a loose sort of flock. I shot two females, which I have no doubt were breeding as their breasts and abdomens were denuded of feathers and the ova in the ovaries were small. It may be that they had young as their crops were filled with small seeds which possibly were intended for food for their broods. I had no time to make any search for their nests. The crops and stomachs were sent to the Biological Survey for examination and I received the following report:

Stomach A. Over 2400 seeds of *Alsine* [Chickweed], 80%; about 80 of a Composite like *Bidens* (shelled), 15%; and a few of *Eragrostis, Polygonum* and unidentified trace; 2 *Corizus hyalinus*, 11 *Corizus indentataus*, a few *Balclutha impicta*, etc., 4%; 1 *Trypeta* sp., fragments of beetle, etc., trace, remains of several spiders, 1%.

Stomach B. About 40 seeds of Composite like *Bidens* and fragments, 50%; about 320 of Alsine, 35%; and 100 of *Eragrostis*, 10%; 3 *Corizus indentatus*, 1 fly and traces of beetle, 5%.

While the report refers to the Alsine as probably *media*, it is more likely to be *umbellata* or *baicalensis*, which are synonymous, and which species is found at high altitudes in Colorado, while the other is not, to the best of my information.

Acanthis linaria linaria. REDPOLL.— I have but two records for this species, a flock seen about the corral at Hillside Ranch, October 21, 1900, and a single bird at the same place, November 11 of the same year.

Spinus pinus. PINE SISKIN.— Probably a summer resident and breeder; I have seen the species in summer and autumn, and once in January, on the 31st, 1902. June 30, 1903, I saw two in the corral at Hillside Ranch, one of which seemed to be gathering hair for nesting material. In June, 1915, I saw a pair frequently at Hillside Ranch, and occasionally other individuals. It was also seen in and near Crested Butte.

Sclater, in "A History of the Birds of Colorado," p. 345, records from my MS. notes the Arkansas Goldfinch, *Astragalinus p. psaltria*, as occurring at Crested Butte. The date of this record was June 5, 1900. I wish to state here that I am convinced that I was mistaken in my identification and that the birds seen were really Pine Siskins.

Passer domesticus. HOUSE SPARROW. ENGLISH SPARROW.— First seen at Crested Butte December 1, 1900. I was away all the winter, but

on my return in April, 1901, I saw the birds about the town. I do not think they have ever been especially abundant.

Poœcetes gramineus confinis. WESTERN VESPER SPARROW.— A common summer resident and breeder. Arrives late in April or early in May; I have a note that I thought I saw one April 21, 1901. Remains until at least the middle of September, and I have a note that one was seen November 3, 1902, though this is extraordinarily late. Nests abundantly, laying from 3 to 5 eggs. The following notes give an idea of the nesting dates:

May 27, 1900, nest with 3 eggs at Hillside Ranch; hatched between June 3 and 8. Another nest with 4 young larger than those in the first was found on the 8th.

4 eggs, June 5, 1900, at Genright's ranch.

4 eggs, June 13, 1900, Hillside Ranch, still unhatched on 17th, and deserted on 24th, with one dead young bird in it, and 3 eggs.

June 15, 1902, 4 eggs, Hillside Ranch, low down in sage brush; 3 well grown young in this June 22.

4 eggs, June 19, 1902, near Crested Butte.

3 eggs, July 10, 1903, at Hillside Ranch; 2 young in this July 26, about 5 days old.

June 26, 1915, a nest with 4 well incubated eggs.

Nearly all these nests were on the ground, often under an Artemisia bush, but not infrequently under a tuft of grass or a cinquefoil bush. The above notes show that the nesting season may extend over a period of several weeks; very possibly late sets are second layings due to the destruction of the first set. The species was also common on Muddy Creek.

Zonotrichia leucophrys leucophrys. WHITE-CROWNED SPARROW.— Common summer resident. Arrives about the first week in May, and leaves the middle of October. I do not think it nests below 9,500 feet. The early part of June, 1915, White-crowns were common about Hillside Ranch, 9,200 feet, and I was also noting it elsewhere; the twelfth was the last date on which I saw it at the ranch, though I observed it often at somewhat higher elevations, and on the 17th collected a nest with four nearly fresh eggs 2 miles west of Crested Butte, at about 9,500 feet; this was built in a tuft of grass on the ground, in a damp spot near a little brook, with willow thickets all about. That same day many were seen on the hillside below the Keystone Mine, and I saw several old nests which I thought belonged to this species in the willows there. As there were exactly similar localities and conditions at the Hillside Ranch I came to the conclusion that they did not breed there because of the low elevation. June 23, 1915, I saw some in Galena Park, 10,300 feet, when the snow had been gone from there but a few days. I have also seen the species up to nearly 12,000 feet.

Spizella monticola ochracea. WESTERN TREE SPARROW.— Has been seen in autumn, when it is quite common about Crested Butte in late September and in October; also noted at Marble in October. No spring records.

Spizella passerina arizonæ. WESTERN CHIPPING SPARROW.— Rather common summer resident. I do not know what its range in altitude is, I have seen it a little above 9,000 feet.

Junco shufeldti. SHUFELDT'S JUNCO.— A number of black-headed Juncos taken near Crested Butte were identified by H. C. Oberholser of the Biological Survey as *shufeldti*. It occurs during the spring and autumn migrations, and at the latter season, at least, appears to be quite common. None of the Juncos seem to winter in the region.

Junco mearnsi. PINK-SIDED JUNCO.— Common in migration; arrives as early as September 24, and remains through October. A note of October 17, 1902, speaks of this as being the most abundant of the three species of Junco seen on the Irwin road. Ranges at least to nearly 11,000 feet.

Junco phæonotus caniceps. GRAY-HEADED JUNCO.— Common summer resident and breeder; I have no records to indicate the date of the spring arrivals, except that it was seen at Hillside Ranch, April 20, 1901. It remains through October. June 8, 1915, I found a nest with 3 eggs in a tall tuft of dead grass on the south slope of Crested Butte Mountain; July 5, 1900, a nest with 4 newly hatched young was discovered under a bunch of grass beside an old timber road south of Coal Creek, 5 miles west of Crested Butte; July 11, 1902, young just able to fly seen on the "Smith Trail," west of Crested Butte.

Melospiza melodia montana. MOUNTAIN SONG SPARROW.— My records of this species for the region are decidedly scanty; it seems to be a summer resident, but is apparently rare. One was seen at Hillside Ranch, June 9, 1915. A Song Sparrow had a nest containing four eggs near a spring on the mesa west of Muddy Creek, at about 7,500 feet. One night a herd of cattle were about the spring and partly upset the nest; I straightened it up the next morning, and the bird went on incubating, but I do not know if she hatched the eggs.

Melospiza lincolni lincolni. LINCOLN'S SPARROW.— Summer resident and breeder; not uncommon. I have no definite records as to the vertical distribution of this species, my own being from 9,000 to 10,000 feet, nor have I any dates of arrival and departure.

Pipilo maculatus montanus. MOUNTAIN TOWHEE.— One seen on Anthracite Creek, near Layton's ranch, September, 1902; never seen in the Crested Butte region, which is too high.

Oreospiza chlorura. GREEN-TAILED TOWHEE.— Common summer resident and breeder, preferring the open ground and sage brush, going to nearly 10,000 feet at least. I have no records indicating the date of its arrival in spring, nor the lateness of its stay in autumn, except September 7, 1902. About Crested Butte this Towhee seems to prefer to place its nest in a sage brush, a foot or less above the ground. Nests with eggs found June 19, 1900; June 16, 1902; June 22, 1902; all near Crested Butte. These nests were all built of small twigs, lined with grass and horsehair. July 10, 1903, 3 young about ten days old were seen at Hillside Ranch. On Muddy Creek, June 15, 1903, I discovered 3 nests with eggs, and one with young on the 20th.

A ranchman I knew called this species " Redtop," a rather appropriate name.

Zamelodia melanocephala. BLACK-HEADED GROSBEAK.— I used to see this bird quite frequently about the scrub oaks on Muddy Creek, and it was apparently a common summer resident in that region.

Passerina amœna. LAZULI BUNTING.— A pair seen at Adams's ranch on Muddy Creek, June 13, 1903.

Piranga ludoviciana. WESTERN TANAGER.— A summer visitor, status uncertain. I have seen this Tanager occasionally in summer, and with one exception all the birds observed were males. The dates are June 2, 1900; June 6, 1901; July 1, 1903; and June 7 and 13, 1915, all at Hillside ranch. A pair were seen on the last date, but were not seen again, though looked for. July 16, 1902, when going up High Bridge Creek, I saw a male Tanager flying over; I thought it had something in its mouth, and it may have been feeding young. One was seen at Crystal, 8,900 feet, August 10, 1902.

Petrochelidon lunifrons lunifrons. CLIFF SWALLOW.— Common summer resident and breeder. Builds its nest under the eaves of houses, and even under the cornices of the false fronts of store buildings on the main street of Crested Butte.

At Hillside Ranch, in June, 1902, I made the following notes:

22nd, " When I got up this morning there were quite a number of Cliff Swallows about the eaves on the east side of the upper house (a one story log structure). There was one nest started, apparently the day before. By night it was about done, another half done, and the beginnings of several others. It is strange how they all came there at once, for they have not been about before, though Violet-green Swallows are flying around all the time.

June 29. There are now 30 Swallows' nests on the upper house, mostly on the east side. I do not think there are any eggs yet. It was interesting to look up and see the birds' heads peeping out of the nests, and from many of the nests two heads."

August 31, 1902, a note says " No swallows about now."

October 18 I took down one of the above nests, photographed and measured it. It was 8 ins. wide across the back end, $8\frac{1}{2}$ ins. long; $3\frac{1}{4}$ ins. deep inside and 4 ins. deep outside at the back. There was not very much of a nest inside, only a few straws laid together.

The following year there were no nests at this place. In 1915 there were two or three occupied nests on another house at Hillside Ranch, but none on the above mentioned.

Hirundo erythrogastra. BARN SWALLOW.— Summer resident; locally common. At Jarvis's ranch, East River, June 19, 1900, Barn Swallows were nesting about the wagon and cattle sheds. One nest was a very curious affair. Several strands of baling wire had been strung over a pole rafter which ran along the middle of the shed and twisted together below and bent up into a sort of hook. On this hook a pair of Swallows had built up a nest probably 5 inches high, and bearing a curious resemblance in its

shape to an oriole's nest. The separate pellets of mud from which it was built could be seen plainly. The next evening I looked up at the nest about dusk and saw one bird in it and the other perched on the wires below.

Iridoprocne bicolor. TREE SWALLOW.— Not until 1915 did I succeed in identifying Tree Swallows in the region, in fact I am quite sure I never saw them there before. On June 13 of that year while driving past Nichols's Lake on a road which at one place is sufficiently high above the water so the one could look down upon the swallows flying about I noted several Tree Swallows among the many Violet-green and Cliff Swallows there. I also saw the species at Hillside Ranch, and tried to collect some, but unsuccessfully. The birds flew about erratically and one had to wait for a good view before being able to decide if the bird was a Tree or Violet-green; the Cliff Swallows were easily separated.

Toward sunset many swallows of the various species were usually flying about the lake, and they changed their beat continually, sometimes out over the lake and above the dam, then away over in another corner sometimes flying quite low, and then again they were all to be seen high in the air circling about like a swarm of insects, but at all times evidently hunting. Occasionally they would all seem to disappear for a few minutes and then return.

Tachycineta thalassina lepida. NORTHERN VIOLET-GREEN SWALLOW.— Abundant summer resident and breeder. Earliest spring date May 10, 1900. In common with the other species of swallow is gone by about September first. Often nests in abandoned woodpecker's holes in dead aspens, of which there are a good many. On Muddy Creek it was nesting in holes in the sandstone cliffs along the stream. In 1900 I saw a dead aspen beside the Irwin road west of Crested Butte in which a Swallow and a House Wren had their nests in separate holes. July 16, 1903, I observed a nest at Hillside Ranch in an aspen about 8 feet above ground. Often the female would enter the nest without first alighting at the entrance, flying directly into the hole. Once I saw the male on the ground, picking at something, possibly ants. The next day I opened the nest by cutting out a section below the hole and found eggs; they seemed to be entirely buried and covered by the nest material. July 29 I found the nest deserted, no eggs left; it seemed a short time for the young to have been raised, 12 days.

At Marble, June 23–25, 1915, this was the only Swallow seen, and was abundant. It was seen in Galena Park 10,300 feet, on the same two days. It is often seen flying higher than timberline about the summits of the mountains, but I cannot say what is the highest elevation at which it breeds.

Lanius borealis. NORTHERN SHRIKE.— Visitor in late fall and early winter; I have no spring records.

Lanius ludovicianus excubitorides. WHITE-RUMPED SHRIKE.— A few seen about Crested Butte, late in August and early in September.

Vireosylva gilva swainsoni. WESTERN WARBLING VIREO.— I have but one record for this species, a female collected on Owens Creek, on the northwesterly slope of Crested Butte Mountain, 9,500 feet, June 15, 1915. It was collecting food when shot, so may have had young. It is quite likely a fairly common summer resident and breeder.

Dendroica æstiva æstiva. YELLOW WARBLER.— Summer resident, common; breeding limit is apparently a little above 9,000 feet. A pair had a nest at Adams's ranch on Muddy Creek in early part of June, 1903. In 1915 Yellow Warblers were very common about the Hillside Ranch and I discovered no less than six nests, all built in willows, 2 along the lake shore, 2 near the outlet of the lake, and 2 in willows on the meadow; all these last near running water. One nest was collected and I had a rather curious experience. It was found on the 9th and collected on the 16th of June. I was passing on the morning of the last-named date and looking into the nest saw four eggs. I returned about half an hour later with camera, cut out some interfering twigs, set up and focussed, and then discovered I had forgotten the plateholders, so went after them, returning in less than ten minutes, and took two pictures. I saw the female about while doing this. Then I went to remove the eggs and was surprised to find but one; looking about the remains of the others were discovered on the ground below. Query: Did the bird destroy the eggs between the first and second visits, or after I had set the camera and was absent after the plateholders?

Dendroica auduboni auduboni. AUDUBON'S WARBLER.— Summer resident and breeder; common. It breeds to at least 11,200 feet, judging from localities where I have seen the species in summer, and possibly somewhat higher. I saw one October 4, 1902, on the slope of Whitehouse Mountain, above Yule Creek.

June 10, 1915, I found an Audubon's Warbler's nest at Hillside Ranch. It was on a hill above the lake, in a Douglas's fir tree, on a branch about 8 feet above ground, and 4 feet out from the trunk. Twigs hung below, hiding it, and another twig projected over it above, hiding it from that point of view. I was obliged to cut off the latter twig in order to photograph the nest, and then the picture did not prove to be a success, thanks to the wind. I discovered the nest by watching the female as she worked about the tree hunting insects; when she disappeared on this branch and did not reappear after some time I investigated and flushed her from the nest. This is made of fine strips of dead bark on the outside, lined with horsehair and a few feathers, some of which are Long-crested Jay's, and others hen feathers. The nest is $3\frac{1}{2}$ ins. diameter outside, 2 inside; and the cavity $1\frac{3}{4}$ ins. deep. There were four eggs, very slightly incubated. On June 13 I saw a female Audubon's in willows along the lake-shore not far from where this nest was apparently collecting strips of dead bark for building material. Possibly the pair were building a second nest.

June 11, 1915, at an elevation of 11,200 feet on Mt. Emmons, in heavy Engelmann's Spruce timber, where the snow was three feet deep and no bare ground about, I saw at least two Audubon's Warblers about the

spruces. One was seen on Spring Creek, at the foot of Ragged Mountain, about 8,000 feet, May 14, 1902.

Oporornis tolmiei. MACGILLIVRAY'S WARBLER.— Summer resident and breeder; not uncommon. I do not know its vertical range, above 9,000 feet at least. As related under Wright's Flycatcher, a pair appeared to have a nest at Hillside Ranch, though I failed to locate it after diligent search. June 15, 1902, I did find a nest in the bushes on the shore of Hillside Lake. It was empty then, but on the 22nd contained 4 eggs, which were unhatched on the 29th; July 4 there were young in the nest.

Wilsonia pusilla pileolata. PILEOLATED WARBLER.— Common summer resident and breeder; from my observations made in 1915 I think about 9,500 feet marks the lower limit of its breeding range as after the first week in June I found none below that altitude, though common enough about the willows along the streams higher than that. A family was seen at Hillside Ranch, September 7, 1902.

Anthus rubescens. PIPIT.— Summer resident and breeder, living from near timberline up; have seen it at these elevations as late as September 23, 1902. June 27, 1903, I found a nest on the grassy slope above Elk Basin, containing 4 eggs. The nest was quite deep, and hidden under a bunch of grass facing southwest, being almost entirely concealed. July 13 I visited the nest again, found 3 young about two thirds grown and one unhatched egg. October 7, 1910, several were seen by the roadside not far from Crested Butte.

June 11, 1915, I ascended the south slope of Mt. Emmons to the summit, a little over 12,000 feet. The season was late, and everything was covered with snow, probably averaging three feet in depth, only a few bare patches being visible. On this snow I found many insects, all of them alive, and apparently carried there by the wind. Just above the limit of the large Engelmann's Spruces I saw one or two Robins on the snow picking up these insects, which were found from this line up to the summit. Higher up Pipits were feeding on them also. A number of the insects were secured and were identified for me by the Biological Survey, which reported four species of Hemiptera, two of Hymenoptera, two Diptera, and one Coleoptera. At this date the Pipits seemed to be paired, though probably had not yet built nests, as there was no place for them to build except on the snow.

Cinclus mexicanus unicolor. WATER OUSEL. DIPPER.— Frequently seen along the streams in summer, in fact all through the season of open water. There are usually one or two about Hillside Ranch in winter, where there is always some open water at the outlet of the lake, and also a little below where water from springs flows into the outlet and keeps open places here and there. A pair had a nest at Carey's on Muddy Creek, and were said to have nested there for several years. C. F. Frey said a pair nested in the same place near the Watson ranch on Anthracite Creek for a number of years.

Dumetella carolinensis. CATBIRD.— A pair nested for three years

in a dense thicket of Choke Cherry at Adams's ranch on Muddy Creek, 1901–2–3; the nest itself was not found except once in the fall after the leaves had gone. The male was always singing near the nest. This species does not occur in the Crested Butte region.

Salpinctes obsoletus obsoletus. ROCK WREN.— Summer resident; breeds. Apparently rare about Crested Butte. A brood of young from the nest were seen at Hillside Ranch, August 16, 1902. None seen there in 1915, but one noted June 28 just west of Crested Butte.

Troglodytes aëdon parkmani. WESTERN HOUSE WREN.— Common summer resident and breeder. Earliest spring date, May 5, 1900, at Crested Butte. Latest fall date, September 7, 1902, but doubtless remains later. Ranges to at least 10,500 feet. As everywhere breeds in all sorts of locations. As noted under that species a pair had a nest in the same tree with a Violet-green Swallow. A pair nested in between the slabs at a corner of a shed at Hillside Ranch in 1903, which had left the nest July 20. A family of young seen on Coon Creek, July 14, 1900. A Wren was noted at nest hole in dead aspen on south slope of Crested Butte Mountain, carrying food for young, June 8, 1915. During that month a pair had a nest somewhere about the log house in which I stayed at Hillside Ranch, but I could never discover its situation; in fact I think they changed its location for a second brood. June 11, and for several days after they were busy carrying food to the nest; then they seemed to be making ready for a new brood, and I thought they were occupying an old Cliff Swallow's nest under the eaves on the end as I saw a Wren in it several times, but finally concluded I was mistaken. There may have been some crevice in the roof, under the log ridge poles, into which they could get. The latter part of the month the male spent much of his time on a projecting pole at the end of the roof, singing.

Sitta carolinensis nelsoni. ROCKY MOUNTAIN NUTHATCH.— One observed at Hillside Ranch, carrying food, June 29, 1903. The only record I have of the species.

Sitta pygmæa pygmæa. PYGMY NUTHATCH.— One seen on Middle Brush Creek, September 28, 1910. My only record.

Penthestes atricapillus septentrionalis. LONG-TAILED CHICKADEE.— Resident, moderately common, but not seen as frequently as the next species, and possibly does not go as high. I have notes for all seasons. Seen at Marble; also on Muddy Creek.

Penthestes gambeli gambeli. MOUNTAIN CHICKADEE.— Resident; common; seen at all seasons; goes to timberline. One day in September, 1901, I was surveying near Irwin, and while standing by the transit a little band of Mountain Chickadees came very close to me and I could hear their notes very distinctly. They seemed to say "chick-a-dee-a-dee-a-dee," not "chick-a-dee-dee" as the Black-caps do. And the tone was also different, but I cannot describe it. I did not hear them use the "phe-be" call, nor would they answer when I whistled it.

Regulus calendula calendula. RUBY-CROWNED KINGLET.— Summer

resident; seems to be common. Usually noted in spring and fall. May 6, 1900, is my earliest date, at Hillside Ranch, where the willows along the lake shore appear to be a favorite resort for them in migration.

Myadestes townsendi. TOWNSEND'S SOLITAIRE.— Presumably a summer resident and breeder, and possibly a few winter. One seen at Hillside Ranch, March 10, 1902; also seen there June 5, 1915. Several noted early in October, 1910, on the south slope of Crested Butte Mountain, up to 11,000 feet.

Hylocichla guttata guttata. ALASKA HERMIT THRUSH.— Several seen, and one collected, on Middle Brush Creek, 9,800 feet, September 25, 26 and 27, 1910. One seen on south slope of Crested Butte Mountain, October 3, 1910.

Hylocichla guttata auduboni. AUDUBON'S HERMIT THRUSH.— I have but one record of this species for the region, a dead, thoroughly desiccated specimen I picked up on the Marble tramroad, Yule Creek, at about 9,000 feet. This was June 24, 1915. It may have been killed by striking a telephone or power wire. The species ought to be a summer resident.

Planesticus migratorius propinquus. WESTERN ROBIN.— Abundant summer resident and breeder. Earliest spring date April 1, 1900, and latest autumn date, October 27, 1900, both at Crested Butte. Begins nesting in May, and young are hatched last of that month and early in June. The following notes made about Crested Butte give an idea of the nesting:

June 2, 4 young about a week old; June 6, 3 young just hatched and 1 egg; June 9, 3 young about ready to fly; June 14, 3 young, well feathered; June 19, 4 eggs; July 12, 4 eggs; this last nest contained 3 young and one egg on 15th. The preceding nests were all noted in 1900. The following were observed in 1902: June 15, a nest with 4 young nearly ready to fly, and another nest with 4 eggs which did not hatch until after the 22d; July 20, 3 eggs, and in another nest 3 young which would have left the nest in a week. In 1915, the following notes were made: June 6, 2 young hatching; June 9, 2 well grown young; June 10, 3 well grown young, had left by the 16th; June 19, 4 eggs. The last of June many well grown young were about. Judging from the preceding dates they probably raise two broods in a season. I saw one nest in rather an odd situation. A large dead aspen had the bark split and partly separated from the trunk, and the nest was built between the bark and the trunk. I once found an old nest on the top of an old aspen stub, with no protection at all from the weather. October 4, 1910, one seen at 11,000 feet on Crested Butte Mountain.

Sialia currucoides. MOUNTAIN BLUEBIRD.— Abundant summer resident. Earliest spring date, March 14, 1900; latest autumn date, October 27, 1900. Nests in all sorts of situations, old woodpecker holes, holes in walls of stone buildings, in false fronts of buildings in town, in bird houses, almost anywhere. The first week in July there are usually a good many young just from the nest about Crested Butte, and I have seen them feeding young at Irwin, August 3. Seen at timberline, September 20, 1900. Seen in Galena Park, 10,300 feet, June 23, 1915.

GENERAL NOTES.

Recent Occurrence of Iceland Gulls near New York.— During the past few years there have been some sight identifications of the Iceland Gull (*Larus leucopterus*) near New York City, which indicate that this species, though rare, occurs here every year or two between the middle of January and end of March. In this connection attention is called to remarks on the occurrence of the Iceland Gull near Boston and its satisfactory identification in life in 'The Auk,' July, 1908 (F. H. Allen, *Larus kumlieni* and other northern Gulls in the neighborhood of Boston, p. 296). As the validity of "sight" records depends on the circumstances under which they are made, we quote pertinent matters from the notes of the respective observers.—

1906, March 5. Observations by Dr. W. H. Wiegmann.

"The following observations were made [on a single Iceland Gull] opposite the Hoboken terminal of the Lackawanna R. R. and adjacent northerly pier . . . . Size noticeably smaller than the numerous Herring Gulls present: body more bulky with shorter and broader wings: entire head, neck, under surface of wings and under parts, pure white: mantle lighter than in *argentatus*: bill yellow, no carmine spot observed; distal ends of primaries white . . . . *Larus leucopterus* would fly towards water, settle and pick up some drifted garbage; then was at a distance of less than 50 ft. from my position. I also saw the bird pass over me at 25 feet."

1912. Observations by Ludlow Griscom.

"Feb. 6th. Hudson River from Liberty St. Ferry. Just as I was leaving the slip, several gulls flew by about 50 yds. away, and I saw at once that one of them was one of the white-winged species, a fact immediately verified by my prism glasses. At first the birds flew away, but a minute later wheeled with the other gulls and hovered over the same spot while the ferry came nearer, giving perfect views. It [the Iceland Gull] was noticeably smaller than the Herring Gulls, the head and bill appearing much slighter and more slender. The bird was an adult pure white with pearl gray on mantle and wings. The red spot on the lower mandible was noted also. As the ferry came very near indeed, all the gulls rose in the air and flew directly over my head at a maximum distance of 30 feet just clearing the upper deck, when every marking, except the red spot on the bill, could be seen with the naked eye."

"March 29th. Central Park, New York City.

Mr. S. V. LaDow and I saw an adult Iceland Gull with a large flock of Herring Gulls on the Reservoir. The smaller size and slenderer head and bill was again noted . . . . [In my absence] the Iceland Gull approached within 20 feet of Mr. La Dow thus giving him an incomparable observation."

1915 and 1916. Observations by J. T. Nichols.

"Feb. 13, 1915. Fort Lee Ferry, New York City. An immature plumaged Gull, paler and more uniform than a young Herring, with the primaries largely white, seemed about the size of Herring Gulls which flew up with it from an ice-pan in the river. It could only have been an Iceland Gull or very small Glaucous Gull, in all probability but not positively the former."

"Jan. 19, 1916. Twenty-third Street Ferry. New York City. An adult plumaged Iceland Gull seen nicely among Herring Gulls, though without glasses, at close range, from the front of the boat. The delicate grey of the mantle extended well out on the wing not sharply contrasted with its white tip. It was appreciably smaller than the Herring Gulls, the head and bill less heavy, and had an etherial look which I accredited to its having a paler mantle, although by then my chance had passed for direct comparison of the tone of same. Its head and neck were clouded with brownish, its feet pink."— Ludlow Griscom and J. T. Nichols, *New York City.*

The Arctic Tern in Central New York.— On May 20, 1915, I was fortunate enough to collect an adult female of this species mixed in with Common and Black Terns and Bonaparte's Gulls at the north end of Cayuga Lake. As Brewster and Townsend have shown, it is distinguishable in life from the Common Tern by its all crimson bill and more deeply forked tail. Early writers on New York State ornithology mention this species without definite data, and Bergtold gives it as an accidental visitor near Buffalo. The only definite record for the state is a male in Mr. Dutcher's possession taken on Ram Island shoals, July 1, 1884.

The record is of particular interest to my mind, however, in furnishing a definite date for the spring migration of this species, about which little or nothing is known. It seems to arrive on the New England breeding grounds about May 15, though I have been unable to locate a definite record. It has been noted near Mt. McKinley, Alaska, May 30, 1908. In localities where it is only a transient, definite data are again lacking. An extremely early specimen was taken at Ann Arbor, Michigan, April 9, 1875. There are two records for Hawaii, May 9, 1891, and April 30, 1902. Considering the breeding range, one would think that there must be at least three migration routes through the United States, one along each coast and one through the interior, as it breeds in Wisconsin and abundantly in North Central Canada. The scarcity of records is correspondingly remarkable.— Ludlow Griscom, *Ithaca, N. Y.*

American Merganser, wintering at Boston, Mass.— I have noted this species (*Mergus americanus*) on Charles River, Boston, Mass., this winter as follows:

Dec. 24, 1915. I saw a single bird in the female plumage.

Dec. 25, 1915. Saw a single bird in female plumage in the morning, in the afternoon saw three.

Dec. 31, 1915. Saw seven in plumage of the female, the river was skimmed over with ice, they were in an open space.

Jan. 4, 1916. I saw the seven again today, also saw a new one, a drake, in full plumage.

Jan. 13, 1916. Saw four, one drake, three in female plumage; another full plumaged drake joined them in the P. M.

Jan. 22, 1916. I saw thirteen, four drakes in full plumage, the others in the female plumage.

Jan. 30, 1916. I saw eleven, four of which were drakes in full plumage. They were widely separated.

Feb. 6, 1916. Saw twenty at 8 o'clock A. M., five of them drakes, later there were nine drakes.

Feb. 7, 1916. Saw them all again this morning.

Feb. 10, 1916. River closed with ice, birds all gone.

I have noticed a number of times this winter a feature in the courtship of the drakes, while resting on the water. They would send out a stream of water with their feet, or foot, between three and four feet directly behind them. I would also mention that they are astonishingly swift swimmers under water, and that coming up under the ice apparently caused them little inconvenience.— GEORGE H. MACKAY, *Nantucket, Mass.*

The European Widgeon in Central New York.— On April 11, 1915, Prof. A. A. Allen and I were in the Montezuma marshes at the outlet of Lake Cayuga, attempting to photograph the wild fowl. Leaving Prof. Allen in the blind I wandered over the marsh to " Black Lake " where a handsome drake of this species was discovered in a flock of Baldpate. An hour or so later we both returned, and the European Widgeon was observed at fairly close range through prism glasses for a quarter of an hour, every detail of plumage being satisfactorily made out. The species has not been recorded from the Cayuga Lake Basin in many years, and through Prof. Allen's courtesy I am able to record our observation.— LUDLOW GRISCOM, *Ithaca, N. Y.*

Limicolæ at Porto Rico in July.— While studying the fishes of Porto Rico in behalf of the N. Y. Academy of Sciences and Insular Government; Guanica Lake, July 27, 1914: the writer observed a Least Tern (*Sterna antillarum*), about a dozen Lesser Yellowlegs (*Totanus flavipes*), as many Least Sandpipers (*Pisobia minutilla*), a couple of Semipalmated Sandpipers (*Ereunetes pusillus*), and a single Greater Yellowlegs (*Totanus melanoleucus*). The Tern is a more recent occurrence than noted by Wetmore, Birds of Porto Rico, 1916 (U. S. Dept. Ag., Bull. No. 326), and the date for the Shore Birds is earlier than any he gives for them on their southward migration, earlier than, at first thought, one would expect them to reach the West Indies. But many early south-bound Limicolæ probably move very rapidly, reaching localities in widely separated latitudes on approximately the same dates. This was first called to the writer's attention by

some of these birds which he chanced to observe in Bermuda in 1903. In the Zoölogist for Nov., 1877, Reid records the Turnstone (*Arenaria interpres morinella*) as having occurred in Bermuda Aug. 3, the Lesser Yellowlegs July 13, dates which correspond closely with the arrival of these species on Long Island, New York. He gives the Ringneck (*Ægialitis semipalmata*) and Greater Yellowlegs as arriving early in August, the Semipalmated Sandpiper, the first of August or a few days earlier; which is little later than the arrival of the main flight of these same species on Long Island. A Turnstone has been noted at Cooper's Island, Bermuda, by H. Bowditch, July 27 (Am. Naturalist, 1904, p. 557), which would be an exceptionally early date for higher latitudes.— J. T. Nichols, *New York City.*

Krider's Hawk (*Buteo borealis kriderí*) in Alaska.— Krider's Hawk, the type specimen of which was taken in Winnebago County, Iowa, September, 1872, ranges according to the 1910 Check-List of the American Ornithologists' Union, from the "great plains, from Wyoming, North Dakota, and Minnesota, south to Nebraska and Missouri, and in winter to Wisconsin, Illinois, Texas, Louisiana, and Mississippi." It is, therefore, of no little interest to record a specimen from Eagle, Alaska, which was secured for the Coe College Museum, (No. 336), through Rev. Dr. C. F. Ensign, formerly a missionary at that station. The exact date on which the specimen was collected is not available, but it was during the winter of 1903. The bird was submitted for final identification to Mr. Robert Ridgway of the National Museum, Washington, D. C. Mr. Ensign says that hawks like this one are not common in that part of Alaska, and whether others seen were of this variety may be questioned.

The bird is fairly light for an immature specimen of this variety, the middle breast practically unspotted, the belly showing an incomplete belt of scattered brownish spots. The feathers of the head are whitish basally, the shafts appearing as dark penciled lines, each shaft bordered on either side with dusky brown. The tail is crossed by eight distinct narrow dusky bands, the spaces between the bands being rusty whitish, the under surface of the tail and body markedly white. Tibiæ spotted somewhat with faint buff.

The measurements of the specimen taken (from the skin) are as follows:

Length	600 millimeters.
Wing	400 "
Tail	260 "
Tarsus	75 "
Bill (including cere)	37 "

Krider's Hawks have been reported to me not infrequently from various parts of Iowa, and especially from the region about Eagle Lake, in Hancock County, Iowa. It is a conspicuous bird in the field, being recognized even by those who are not ornithologists, as a much lighter colored hawk than the common Red-tail.— B. H. Bailey, M. D., *Dept. Zoölogy, Coe College, Cedar Rapids, Iowa.*

The Type Locality of *Colaptes cafer*.— According to the A. O. U. Check-List *Colaptes cafer* described by Gmelin in 1788 is an extralimital species, and the type locality, erroneously given as Cape of Good Hope, is generally assumed to be Mexico.

Gmelin's original description (Syst. Nat., 13th ed., I, p. 431), is as follows:

P. supra fuscus, subtus vinaceus nigro-guttatus, alis subtus, scapisque remigum et retricam miniatis.

Habitat ad caput bonæ spei, aurato multum similis, sed minor.

Rostrum fuscum, ad utrumque latus stria rubra notatum; cauda acuta, rectricibus apice bifurcis.

There is no citation here as there is under most of the other species to indicate the original source of the description. It is well known however, that Gmelin's descriptions were not made from specimens but were compiled from the works of previous authors and in the case of birds from the west coast of North America his information was obtained almost entirely from Latham's 'Synopsis.'

Latham did not recognize the Red-shafted Flicker as a distinct species nor did he give it a name, but in his General Synopsis of Birds (II, p. 599, 1782), after the account of the Gold-winged Woodpecker he adds the following note:

49a. "I have lately seen, in the Museum above referred to [the Leverian Museum of Sir Ashton Lever to which Latham had free access], a bird which appears to be a mere variety, though brought from a far different country. This was *much like the last* described in colour, *but rather less in size.* The *bill* exactly made like that bird [the Gold-winged Woodpecker], and *brown: on each side* of the jaw is a *stripe of crimson,* like a whisker: the *under parts of the wings* of a pale red colour, not unlike what is called *red lead:* and the *shafts of the quills and tail,* which in the other bird are yellow, in this are *red:* the plumage on the *upper parts* of the body is *brown: beneath vinaceous, marked with* round *black spots: tail* black, *pointed,* and *each feather bifurcated at the tip,* exactly like the American one.

"This was brought from the *Cape of Good Hope.* I have seen two specimens of this bird."

It will be seen by a comparison of Gmelin's description with the extract from Latham which I have italicized that practically every word even to the locality is found in Latham's account. Five years later, in 1787, in his Supplement to the Synopsis of Birds (Vol. I, p. 111) Latham makes this significant statement:

"Gold-winged Woodpecker. Gen. Syn., II, p. 597, No. 49."

Captain Cook in his last voyage found this bird at Nootka Sound.[1]

Turning to the page cited, we find that Cook in speaking of the birds found at Nootka Sound mentions two species of woodpeckers, one of which, evidently the Red-shafted Flicker, is described as follows:

"The other is a larger, and much more elegant bird, of a dusky brown

[1] Voy., II., p. 297.

colour, on the upper part, richly waved with black, except about the head; the belly of a reddish cast, with round black spots; a black spot on the breast; and the under-side of the wings and tail a plain scarlet colour, though blackish above; with a crimson streak running from the angle of the mouth, a little down the neck on each side."

A reëxamination of these descriptions in chronological order shows: (1) that the bird found by Cook at Nootka Sound in 1778 and that described by Latham in 1782 are one and the same species, even without reference to Latham's statement in the Supplement; (2) that the birds described by Latham and Gmelin are identical and Gmelin's description is evidently taken from Latham. Gmelin's description of *cafer* follows the description of *auratus* based on Latham's Gold-winged Woodpecker No. 49, and precedes the description of *olivaceus* based on Latham's 'Crimson-breasted Woodpecker'[1] No. 50, so that the sequence of these three species is the same in both books.

Latham's connection with Gmelin's description was evidently recognized by contemporaneous authors as is shown by the citation of the reference to the 'Synopsis' in the synonymy of *cafer* by Donndorff in 1794 (Ornith. Beyträge zur XIII Ausgabe Linn. Natursyst., p. 518) and Suckow in 1800 (Anfangsgr. Thiere, II, p. 547).[2] Later Wagler, in 1827, proposed *lathami* as a substitute for Gmelin's inappropriate name *cafer* (Syst. Avium, Picus, sp. 85). The reason that Gmelin included no reference to Latham was probably due either to inadvertence or to the fact that Latham gave no distinctive name or number to the Red-shafted Flicker.

The locality 'Cape of Good Hope' which has caused so much confusion also shows the close connection between the two descriptions. It may be regarded as a case of transposed labels on the specimens or a typographical error, but it is interesting to note that on Cook's chart of his routes in the Pacific Ocean the entrance to Nootka Sound is marked Bay of Good Hope ('B. of G. Hope'). It is mentioned in the text as Hope Bay, the name being given by Cook upon first sighting this point on the coast and "hoping, from the appearance of the land, to find in it a good harbor" (II, p. 264). Possibly this troublesome 'Cape of Good Hope' which has always been associated with South Africa may have been only a misprint for the long forgotten 'Bay of Good Hope' on the west coast of Vancouver Island. Latham's statement that Captain Cook found the *Gold-winged Woodpecker* at Nootka Sound is not to be taken literally for at that time Latham regarded the Red-shafted Fli ker as merely a variety of his Gold-winged Woodpecker and both he and Cook described the red-shafted and not the yellow-shafted bird.

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[1] This specimen which was also in the Leverian Museum later passed into the possession of the Bullock Museum and on the disposal of that collection was sold on May 18, 1819, to Baron Laugier for 12 shillings (Hist. Coll. Nat. Hist., Depts. Nat. Mus., II, 223, 1906). I have been unable to ascertain the history of the flickers.

[2] For the opportunity of consulting these rare works I am indebted to Dr. C. W. Richmond of the U. S. National Museum.

I therefore designate Nootka Sound as the type locality of Gmelin's *Picus cafer*.

Admitting that Gmelin's description really belongs to the bird found by Cook at this locality, several changes in nomenclature are unavoidable. Gmelin's name must be adopted for the Northwest coast Flicker which thus becomes *Colaptes cafer cafer* and *Colaptes c. saturatior* is reduced to synonymy. *Colaptes mexicanus* of Swainson should be restored as the name of the Mexican bird in accordance with the usage of most English ornithologists but in the form *Colaptes cafer mexicanus*. No change is necessary in the name of the California bird which remains *Colaptes c. collaris* (Vigors) or in that of the Guadalupe Flicker, *Colaptes c. rufipileus* (Ridgway). Such a solution of the *cafer* difficulty seems reasonable and has much in its favor. It is inconceivable that such a conspicuous bird as the Red-shafted Flicker which was represented in England at the time of the return of Cook's expedition by at least two specimens, two published descriptions, and a colored plate[1] should have remained unnamed for nearly half a century until Swainson in 1827 described the bird brought from Mexico by Bullock, and Vigors in 1829 named the flicker obtained on the Pacific Coast during the Voyage of H. M. S. 'Blossom.' Moreover the transfer of the name *cafer* to the Northwest Coast Flicker connects the history of the bird with that of Capt. James Cook, the famous navigator and explorer, to whom undoubtedly belongs the honor of collecting the first specimens which were carried to Europe.— T. S. Palmer, *Washington, D. C.*

The Scissor-tailed Flycatcher in New Mexico.— The Scissor-tailed Flycatcher has long been known as an inhabitant of western Texas almost to the New Mexico line, but up to the present time has had no unquestionable published record for the latter State. A recent letter from Mr. E. H. Byers says that the species is nesting this summer at Hobbs, New Mexico, close to the Texas line and about 45 miles north of the southeastern corner of New Mexico.

Mr. Byers was familiar with the bird in former years in eastern Texas, and was pleased to welcome an old acquaintance when it first appeared at Hobbs in June, 1912, and raised a family in a mesquite bush about a mile from water and from the nearest human habitation. Since then the numbers have increased until the summer of 1915 they were fairly common and ranged at least ten miles into New Mexico from the Texas line. But instead of nesting in isolated places, most of the species have built in the trees near houses where there are reservoirs supplied by windmills. One pair actually built their nest on a windmill at the middle of the vane,

[1] This plate was drawn by William W. Ellis, the artist, who accompanied Captain Cook on his third voyage. The plate is No. 19 and is marked "King George's Sound (= Nootka Sound) W. Ellis, del. etc., 1778." According to Sharpe, this plate which represents *Colaptes auratus* is now in the Museum of Natural History at South Kensington, England (Hist. Coll. Brit. Mus., II, 173, 200).

where their summer home was constantly shifting in a 30-foot circle and often at high speed. The eggs had been laid, and incubation begun, when an unusually severe storm tore the fabric from its fastening.— WELLS W. COOKE, *Biological Survey, Washington, D. C.*

Evening Grosbeak at Williamsport, Pa.— On April 20, 1916, and again on April 28 on a morning walk through one of our parks I chanced on some birds that were entirely new to me. I was able to observe them carefully and submitted a description of them to Dr. Witmer Stone who at once pronounced them to be Evening Grosbeaks (*Hesperiphona vespertina vespertina*). A subsequent visit to the same spot early in May failed to discover them.— (MISS) BERT L. GAGE, *Williamsport, Pa.*

Evening Grosbeak at Rochester, N. Y.— About the middle of March we had a report from a correspondent in Massachusetts that the Evening Grosbeak (*Hesperiphona vespertina vespertina*) had appeared there, so that it may be of interest to report that two pairs were seen here on March 19 and 20 feeding in thorn apple bushes on the outskirts of the city.— F. H. WARD, *Rochester, N. Y.*

Evening Grosbeak at Lowville, N. Y. — The Evening Grosbeaks (*Hesperiphona vespertina vespertina*) have been very plentiful here during the past winter and spring, they came in the latter part of December and were common up to the 15th of May when the bulk of them disappeared. Two or three were seen as late as May 17. There was a flock of about fifty birds which made their home in the village feeding mainly on maple seeds. They also fed on Sumac seeds of which they appeared to be very fond. There was a good proportion of male birds in all stages of plumage. This is the first instance, to my knowledge, of this species having been here in such numbers.— JAMES H. MILLER, *Lowville, N. Y.*

The Calaveras Warbler in Colorado.— The undersigned has to record the occurrence of this warbler (*Vermivora rubricapilla gutturalis*) in Colorado, having collected a male of this subspecies in Carver Cañon (altitude about 7000 ft.), eight miles west of Sedalia, Colo., on September 12, 1915. Inasmuch as this seems to be the first record for this State, and in order that there might be no question as to identification, the skin was sent to W. DeW. Miller of the American Museum of Natural History, who kindly examined it, and independently diagnosed it as "a typical example of *Vermivora rubricapilla gutturalis.*"— W. H. BERGTOLD, *Denver, Colo.*

The Catbird in Winter in Massachusetts.— In January, 1916, I saw a calling Catbird (*Dumetella carolinensis*) near dusk in the Botanic Garden, Cambridge, Massachusetts. On the 29th of February I saw him again in a yard on Garden Street near the Botanic Garden, and again on 10 March. This has been an unusually severe winter and the past month,

according to the Weather Bureau, the snowiest February since 1893, but this bird seems to be in good condition.

My only other record of the Catbird in winter is that of an individual which I observed in Stoughton on December 4, 1910. My latest date for an undoubted migrant is October 22, 1913, when I heard one calling in North Stoughton.— S. F. Blake, *Stoughton, Mass.*

Breeding of the Golden-crowned Kinglet in Norfolk County, Massachusetts.— On June 16, 1908, I discovered in Stoughton, Massachusetts, a breeding pair of Golden-crowned Kinglets (*Regulus satrapa satrapa*) with their nest, apparently the first to be found in the east-central part of the state since the nest with three eggs found by N. Vickary at Lynn in May or June, 1889. My attention was first attracted by the familiar call-notes of the birds coming from the edge of a rather close growth of Red Cedar (*Juniperus virginiana*) and deciduous trees at the base of a low hill close to a little-travelled wood-road. Pushing in among the trees, I soon caught a glimpse of the female Kinglet being pursued by a Black-and-white Warbler. The male soon came into view, and very soon the female disappeared in the top of a red cedar about twenty feet high. After a few minutes' wait I climbed a nearby tree and found her sitting on the nest. This was placed 18 feet 10 inches above the ground on the upper side of a small branch about a foot long, near the trunk and about a foot and a half from the top of the tree, rather firmly fastened and requiring some effort to dislodge. The nest is a firm ball of green moss (chiefly *Thelia hirtella*, identified by Dr. W. G. Farlow) with some bark, lichens, and feathers, measuring 11 cm. in length, 9 cm. in breadth, and 6.5 cm. in height. The cavity, 4.5 cm. deep and 4 cm. in diameter at the top, is slightly enlarged below and lined chiefly with fine bark strips and a few feathers including some from the head of the female Kinglet. The eight eggs in the nest contained small embryos. They are elliptical-ovate in outline, with the smaller end rather blunt, dull white in ground color, finely speckled all over, but especially at the larger end where a more or less distinct wreath is formed, with pale ashy-brown; on a single egg the markings are very faint. They measure in inches .54 × .41, .54 × .42, .55 × .41, .55 × .41, .55 × .41, .56 × .41, .57 × .41, .57 × .41, averaging .55 × .41.

Although on June 16, 1908, when this nest was found and taken, only a single pair of the birds was seen, I feel convinced that at least two pairs of the birds must have been nesting there, for on 6 July I saw at the same locality at least three Golden-crowned Kinglets, apparently young birds, as no crown patch was visible. Brewster found that a pair whose nest was nearly finished and being provided with lining on June 13 in Worcester County, Massachusetts, required sixteen days to complete it and lay their set of nine eggs, and that another nest nearly completed on June 16 did not acquire its full set of nine eggs until the same date (June 29). It is impossible to suppose that my pair, whose nest was taken on June 16, could

have built another nest, laid eggs, and brought out nearly fullgrown young in twenty days, and there must certainly have been at least one other pair in the vicinity. On August 4 I again saw three Kinglets at the same locality, after which date they were not seen again. One at least of those seen on this date had the crown-patch of the adult.

The first well identified nest of the Golden-crowned Kinglet seems to have been that found by H. D. Minot (Land-birds and Game-birds of New England, ed. 1. 56 (1877)) in the White Mountains of New Hampshire on July 16, 1876. This nest, which contained young birds, was four feet from the ground in a hemlock, pensile like the majority of recorded nests. Mr. Vickery's Lynn nest (O. & O. xiv. 95, 111 (1889)), which contained only three eggs, was in a spruce tree and likewise suspended from a limb. Both the nests of the Golden-crown recorded by H. Austen (O. & O. xiv. 93–94 (1889); xv. 106 (1890)) from the vicinity of Halifax, Nova Scotia, were "suspended .... on twigs .... fully three to eight inches underneath the main branch .... fastened by the side with moss to the small branches." One of two nests of the Ruby-crown, however, was built on a limb (l. c. xv. 106), while the other was suspended. Brewster's account (Auk, v. 337–344 (1888)), the fullest that has yet appeared of the nesting of the Golden-crowned Kinglet, gives details of three nests found in Winchendon (Mass.), or vicinity, all of which were pensile.

A brief record of the taking of the present nest has already appeared in 'The Taxidermist' (no. 4, p. 7 (Oct. 1908)).— S. F. Blake, *Stoughton, Massachusetts.*

A Record of Townsend's Solitaire (*Myadestes townsendi*).— A male Townsend's Solitaire was taken at Collegeville, Minnesota, Dec. 20, 1909. Although far from its normal haunts, the bird was very active and its melodious warble broke the monotony of the winter day. Coues remarks, that this bird is "capable of musical expression in an exalted degree."

When found, it was feeding in a young evergreen grove, planted about a mile and a half from the railway station and only a few hundred feet from Observatory Hill. Dr. Thomas S. Roberts of Minnesota State University, Minneapolis, kindly verified my identification.

Ridgway (Birds of North and Middle Am., Part IV, page 165) says that it has been found "straggling, in autumn or winter to Kansas (Wallace, October) .... and northwestern Illinois (Waukegan, Dec. 16, 1875). Since its breeding range "extends from the Coast Ranges to the Black Hills of North Dakota" (Ridgway loc. cit.), the Minnesota record of Dec. 20, 1909, is interesting. The mounted specimen was added to the bird collection of St. John's University Museum, Collegeville, Minnesota.— Severin Gertken, *Collegeville, Minn.*

Regular Breeding of Alice's Thrush in Arctic East Siberia.— In a paper entitled, Notes on the Birds and Mammals of the Arctic Coast of East Siberia (Proc. of the New Engl. Zoöl. Club, Vol. V, 1914) on page 37

we recorded the regular occurrence of Alice's Thrush — *Hylocichla aliciæ aliciæ* (Baird), as a breeding bird in suitable places along the coastal regions of Arctic East Siberia, west to the Kolyma. At that time we had received from Mr. Johan Koren only a set of eggs, the parent birds to which were lost, and his notes.

On a more recent trip to the same general region, in the summer of 1915, we asked Koren to look out especially for the bird and to get us a specimen. This he did, and wrote that he found Alice's Thrush breeding commonly, particularly along the smaller side streams of the Kolyma, that are overhung by alders. He sent us an adult female, No. 21800, Coll. of John E. Thayer shot at Neshon Kolymsk, June 8, 1915, which is precisely like Alaskan breeding birds.

The earlier records of Alice's Thrush in East Siberia in the breeding season are — Krit. Obz. Orn. Fauna Vost. Sibiri, 1877, 32, Cape Tschukotsk, (see Stejneger, Auk, I, 1884, 166) and Palmén, Vega — Exp., 1887, 262 Tschuktsch-halfön and Pitlekaj. These were apparently taken by Hartert as indicating only the casual occurrence of *Hylocichla aliciæ* in East Siberia, and the species was not given a formal place in his Vogel der Pälaarktischen Fauna.

In all probability the individuals of the Siberian colony, travel back and forth each year across Bering Sea and winter with the main bulk of the species in tropical America; just as Asiatic birds,— *Acanthapneuste borealis borealis* (Blasius); *Œnanthe œnanthe œnanthe* (Linn.); *Cyanosylva suecica robusta* (Burturlin); *Budytes flavus alascensis* Ridg. and *Sterna aleutica* Baird — now breeding regularly each year in Alaska still migrate southward and winter wholly on the Asiatic side of the Pacific.— John E. Thayer and Outram Bangs, *Mus. Comp. Zoöl., Cambridge, Mass.*

Some Unusual Records for Massachusetts.— The Boston Society of Natural History has recently acquired the following rarities for its collection of mounted birds.

Piranga rubra rubra (*Linne*). Summer Tanager.— A male taken at Deer Island, Boston harbor, Mass., April 11, 1916. The plumage and general condition of this specimen led us to believe that this bird had not been in captivity. It was taken on the window-ledge of a pumping station.

Antrostomus carolinensis (*Gmel.*) Chuck-will's-widow.— An individual seen flying about the docks at East Boston, Mass., on Oct. 13, 1915, and captured by Mr. N. Hagman. It was not sexed.

Aluco pratincola (*Bp.*). Barn Owl.— A female specimen of this owl taken by Mr. Chas. Fowle on June 10, 1915, at Lexington, Mass.

Somateria spectabilis (*Linné*). King Eider.— An immature female taken at Newburyport, Mass., by Mr. C. H. Richardson on November 19, 1915.— W. Sprague Brooks, *Boston Soc. Nat. Hist.*

Bird Notes from the Chicago Area.— Aluco pratincola. Barn Owl.— An adult female of this species was given me by Mr. George Dunk-

ley of Chicago, who shot it while hunting Jack Snipe on the marshes in the vicinity of Hyde Lake, South Chicago, Ill., Oct. 14, 1915. The specimen is in the Harris Extension collection.

Bubo virginianus virginianus. Great Horned Owl.— Woodruff (Birds of the Chicago Area, 1907, p. 106) says of this species, "The Great Horned Owl was a common resident many years ago, but now it is very rare." At the present time, however, individuals may frequently be seen in the more heavily wooded portions of the sand dune region, near Millers, Ind., and three nests were found in the spring of 1914, a short distance east of that village. One, located March 15 in an old Crow's nest about forty feet up a small scrub pine, contained three slightly incubated eggs. March 17, two heavily incubated eggs were collected from a nest in a cavity in the top of a very large dead pine stub, the female was shot as she left the nest. The third, from which three downy young, ranging in age from about one to five or six days old, and adult female were collected April 4,— was located in a cavity in broken off top of large dead pine tree, about twenty feet from the ground. A few miles east and outside the limits of the "Area," two more nests were found; one in old Crow's nest a few feet up a very small Scrub Pine sapling, with a two-thirds grown nestling, contained the remains of a Bittern. The other, from which three young in downy stage were secured April 4, 1915, contained the remains of a cottontail rabbit, and a half eaten Meadow Lark.

In all cases the parent birds were extremely wary, seldom even a glimpse of the male being offered, and the same was true of the female, except while incubating or brooding newly hatched young, at which times a very close approach was allowed. A very noticeable increase in the number of Ruffed Grouse seen lately in this region, may, in part, be due to the thinning out of the Horned Owls.

Hespesiphona vespertina vespertina. Evening Grosbeak.— First noted this winter (1916) February 6, when a female was taken from a flock of four, near Mineral Springs, Ind., from which date they were noted in increasing numbers in different parts of the dune regions. Six males were secured from a flock of about seventy-five, just east of Gary, Ind., March 30, and two females the same day from a flock of about forty, near Millers. Last noted April 1, when a flock of eight was seen near Gary.

Dendroica discolor. Prairie Warbler.— A fine male of this species was secured May 16, 1915, in the brush near Eggers, South Chicago, Ill.— H. L. Stoddard, *N. W. Harris Public School Extension of Field Museum, Chicago, Ill.*

Notes from Leon Co., Florida.— Butorides virescens virescens. Little Green Heron.— An example of this species was seen Jan. 3 and 4, 1916, in the marshes bordering Lake Iamonia. The only thing conspicuous about it was its extreme shyness, a fruitless hour being spent in trying to collect it. The Green Heron is considered rare in the United States in winter according to the Check-List. Barring one record for the South

Carolina coast, all others come from the subtropical parts of Florida. It seems, therefore, surprising to find it so far inland, especially as freezing weather had prevailed a week previously.

Colinus virginianus floridanus. Florida Bob-white.— Mr. R. W. Williams, Jr., in his preliminary list of the birds of Leon Co. (Auk, XXI, 1904, p. 453) gives *virginianus* as the local form, although he had seen intermediates and suspected the occurrence of *floridanus* in the southern part of the county. On Horseshoe Plantation, in the extreme northern part of the county, my relatives had often spoken of shooting small dark quail, and wondered what they were. On Jan. 1, 1916, six males were shot and brought to me, all alike in size and coloration. One was preserved, and Dr. Dwight, who kindly compared it with his series, pronounces it a typical *floridanus*, making the first county record, and so far as I can find the northernmost point from which typical examples of this subspecies have been taken. In considering the status of the species in this section it should be born in mind that it is full of quail preserves which are continually being restocked with northern birds. It is now, of course, impossible to determine definitely which was the original resident form.

Certhia familiaris americana. Brown Creeper.— The only definite records for Florida that I can find are the two specimens from Leon Co. recorded by Williams. Wayne in his notes on the birds of the Wacissa and Aucilla River Regions (Auk, XII, 1895, pp. 362–367) lists the Brown Creeper but gives no information about it. It seems, therefore, advisable to record two individuals which I saw on the Horseshoe Plantation, one on Dec. 25, 1915, and another in a totally different part of the plantation on Dec. 26. Unfortunately I was at that time ignorant of the bird's rarity in Florida so made no effort to collect a specimen.— Ludlow Griscom, *Ithaca, N. Y.*

RECENT LITERATURE.

Ridgway's 'The Birds of North and Middle America' Part VII.[1]—While less bulky than its predecessors Part VII of Mr. Ridgway's great work follows them closely in style and execution. As heretofore the footnotes are replete with synonymy and citations of types and type localities for many extralimital genera and species which render the volume a storehouse of information for those working on the neotropical avifauna, who extend their researches beyond the isthmus. For America north of Panama it is, like the preceding parts, a monograph.

As an illustration of the thoroughness of Mr. Ridgway's studies, he states on p. 108 that he has examined representatives of all of the American genera of Parrots but *Cyanopsitta*, specimens of which, by the way, are in the collection of the Philadelphia Academy.

Most of the new names that he has found it necessary to establish as the work proceeded have been published in the Proceedings of the Biological Society of Washington and we notice only two in the present volume. *Œnænas plumbea chapmani* (p. 325), Gualea, Ecuador; and *Zenaidura macroura caurina* (p. 348), Oregon. Mr. Ridgway's practice of proposing new names in footnotes with not even heavy-faced type to attract attention to them is unfortunate, in view of the trouble that obscurely published names have caused in the past. The latter of these new forms moreover is proposed "provisionally" based on "three very poor specimens," with a "provisional type" designated. The author is surely aware that there is no difference nomenclaturally between "provisional" and other names or types and this *Zenaidura m. caurina* must rest for all time on an admittedly unsatisfactory type specimen.

The nomenclature of the North American species differs somewhat from that of the A. O. U. Check-List. *Conuropsis carolinensis interior* appears as *C. c. ludovicianus*, the Louisiana bird belonging to the interior race in Mr. Ridgway's opinion; Linnæus however is wrongly cited as the authority for the name. *Coccyzus minor minor* should apparently be omitted from the Check-List as all the unquestioned Florida birds seen by Mr. Ridgway are *C. m. maynardi*, while Audubon's specimen, said to be from Florida proves to be *C. m. nesiotes*. Among the doves the genera *Geotrygon* and *Columba* are subdivided, our species of the former becoming *Oreopeleia*, while *Columba fasciata* and *flavirostris* fall in *Chloroenas*, and *C. leucocephala*

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[1] The Birds | of | North and Middle America: | A Descriptive Catalogue | of the | Higher Groups, Genera, Species, and Subspecies of Birds | known to occur in North America, from the | Arctic Lands to the Isthmus of Panama | the West Indies and other Islands | of the Caribbean Sea, and the | Galapagos Archipelago. | By | Robert Ridgway, | Curator, Division of Birds. | Part VII.

Family Cuculidæ. Family Psittacidæ. Family Columbidæ. Bulletin of the United States National Museum. No. 50. Washington: Government Printing Office. 1916. [dated May 5, received May 29]. pp. i–xiii + 1–543, pll. I–XXIV.

and *squamosa* in *Patagioenas*. Following Todd, and we think rightly, the Ground Dove of the Southern States is called *Chæmepelia passerina passerina*, while the Bermuda form is regarded as identical with *C. p. bahamensis*. *Melopelia asiatica trudeaui* Aud. appears as *M. a. mearnsi* Ridgw., since Mr. Ridgway considers Audubon's description and plate to represent the eastern form. Audubon's type is in the collection of the Academy of Natural Sciences of Philadelphia (see Cat. Types in Colln. Phila. Acad. *Proc. A. N. S.* Phila. 1899) and proves, as Mr. Ridgway suggests, to be true *asiatica*.

The type of *Psittacula lineola* Cassin is also in this collection, as recorded in the same paper, yet Mr. Ridgway quotes a letter from Prof. Heilprin, written over thirty years ago, to the effect that it had disappeared.

In a work of such proportions however, it is inevitable that some publications are overlooked and the above facts are offered not in a spirit of criticism but to supplement the history of these cases.

All ornithologists will congratulate themselves as well as Mr. Ridgway upon the appearance of Part VII and will earnestly hope that he may be able to push the remaining parts to an early completion. The families still to be considered, while they contain, as a rule, fewer species and races, have received less critical study than those which have gone before and it is therefore greatly to be desired that we should have the benefit of Mr. Ridgway's careful treatment in them as well as in the Passerine and Picarian groups.— W. S.

Todd's 'Birds of the Isle of Pines.' [1]— Mr. Todd's latest contribution to neotropical ornithological literature is an admirable monograph of the birds of the Isle of Pines. The work is based primarily upon a collection of 842 skins obtained by Mr. Gustav A. Link of the taxidermic force of the Carnegie Museum during a residence of a year on the island, in 1912 and 1913. Much additional material was examined, however, and the literature exhaustively studied, so that practically all that is known of the bird life of the island is incorporated in this paper.

Besides the annotated list which covers 142 species, there is an outline of the Geography and Physiography of the Isle of Pines and notes on 'Climate'; 'Previous Work'; 'Seasonal Occurrence'; 'Faunal Affinities' and 'List of Localities,' as well as several half tone plates of scenery and a map.

The affinities of the fauna are naturally with that of Cuba. In fact of 126 species breeding in western Cuba, 85 are found also on the Isle of Pines, while eight others are represented there by closely related forms, only one of which is regarded by Mr. Todd as sufficiently distinct to warrant specific rank.

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[1] The Birds of the Isle of Pines. By W. E. Clyde Todd. Ann. Carnegie Mus., Vol. X, Nos. 1–2, 1916. pp. 146–296, pl. XXII–XXVII. January 31, 1916 [received, March 6, 1916].

The annotated list follows the classification set forth in Mr. Ridgway's 'Birds of North and Middle America.' Under each species is a full bibliography for the Isle of Pines, to which, in the reviewer's opinion, might have been added a reference to the original publication of the name employed, which is usually of great assistance to those using the paper. There follows a discussion of the occurrence and habits of each species on the island, and of its systematic status.

We find described as new *Amazona leucocephala palmarum* (p. 228), Isle of Pines; *Vireo gundlachii orientalis* (p. 256) Guantánamo, Cuba; and *Holoquiscalus caymanensis dispar* (p. 276), Isle of Pines,— the last being renamed on an erratum insert *Q. c. caribæus, dispar* proving untenable. The species and subspecies of *Holoquiscalus* and the races of *Jacana spinosa* are considered at length and reasons are set forth for the rejection of *Podilymbus podiceps antillarum* Bangs and *Agelaius subniger* Bangs, as well as the races of *Squatarola squatarola* recently proposed by Thayer and Bangs, and the West Indian races of the Green Heron proposed by Oberholser. As Mr. Todd is confessedly not following the A. O. U. Check-List where the "latest and best authorities" differ from it, attention might be called to the fact that by Opinion 62 of the International Commission on Zoological Nomenclature (March, 1914) the genera *Herodias* and *Urubitinga* become untenable, being synonyms respectively of *Egretta* and *Morphnus*.

Mr. Todd's careful study of the material before him brings out many interesting points, among others the fact that *Sturnella magna hippocrepis* is nearest to *S. m. argutula* and not to *S. neglecta* as stated by Ridgway, while *Seiurus noveboracensis notabilis* is the form occurring on the Isle of Pines in spite of Prof. Cooke's reference of all West Indian records to typical *noveboracensis*.

The bibliography comprises 64 titles of which 42 are of articles by A. C. Read published in newspapers, 'The Oölogist,' and 'Bird Lore's' Christmas lists. Much space in Mr. Todd's list is taken up with discrediting or rejecting records of Mr. Read, which seem to be almost entirely based upon sight or upon specimens shot but not preserved. It would seem that this represents a waste of time and energy as the records which are accepted as probable are severely discounted by the obvious inaccuracy of the others. Would it not be best to ignore such publications absolutely as the surest way to discourage them in future? This however detracts in no way from Mr. Todd's admirable paper which will stand as authority on the birds of the Isle of Pines for many years to come.— W. S.

Wetmore's 'Birds of Porto Rico.'[1]— This notable paper is the first comprehensive work on the food habits of neotropical birds, besides being a handy popular list of the birds of Porto Rico. From both aspects it is most welcome, not only to residents of the island but to others as well.

[1] Birds of Porto Rico. By Alex Wetmore. U. S. Dept. Agr. Bull. No. 326. pp. 1–140, pll. I–X. March 24, 1916.

The immensely valuable agricultural interests of Porto Rico have suffered severely from insect pests and it seemed desirable, in seeking means to combat them, to obtain at the outset definite data on the food habits of the native birds, in order to formulate plans for the better protection of those of greatest economic importance. Mr. Alex Wetmore, Assistant Biologist of the Biological Survey, U. S. Department of Agriculture, was selected for carrying out this investigation and judging from his report a better choice could not have been made. During a residence of nine months on the island, December 13, 1911 to September 11, 1912, he visited forty-four localities obtaining 2200 stomachs and a mass of data. Upon this material and a thorough study of the literature the report has been based.

The brief introduction discusses the birds found in the various agricultural districts — the cane fields, coffee plantations, and citrus groves; and the bird enemies of some of the principal insect pests — the mole cricket, sugarcane root-borer, weevil stalk-borer and May beetle.

Then follow instructions for increasing birds, based on experience in the United States, and a discussion on the introduction of exotic species. Of several species introduced in the past, only the Hooded Weaver-finch (*Spermestes cucullatus*) has become generally distributed and fortunately it has not proved injurious. Mr. Wetmore is opposed on general principles to introducing foreign birds, but thinks it possible that the Barn Owl might be a valuable adjunct to the native avifauna as a check on the rats.

In the annotated list the several native names of each species are added to the English and technical names, and a good account of the habits and distribution is presented. Then follows an analysis of the food, based upon the examination of stomach contents. The information thus obtained in the case of North American birds which winter in Porto Rico is of particular interest as it rounds out our knowledge of the food habits of these species.

Mr. Wetmore found the "Martinete" or native variety of the Green Heron, to be the greatest destroyer of the injurious mole cricket, while the Blackbird (*Holoquiscalus brachypterus*) seems to be the greatest enemy of the root-borer. The little owl (*Gymnasio nudipes*) feeds largely upon the May beetle. There was no evidence that any of the Porto Rican birds were injurious, with the exception of two hawks which however, are not common.

Porto Rico, like the other Greater Antilles is very poor in bird species compared with Central America and Mr. Wetmore's list comprises only 162 species with 16 others, the occurrence of which he thinks requires confirmation. Of this number only about 50 are resident land birds. As an indication of the abundance of bird life on the island several censuses are given. One on May 24 at Yauco yielded 391 individuals of 35 species in four hours, over a distance of five miles; while on June 28 near Lares 335 individuals of 27 species were seen. The several half tone plates represent Porto Rican birds from drawings by Fuertes and photographs of stomach contents.

Mr. Wetmore's report will serve a valuable purpose in stimulating inter-

est in the birds of the island among the residents and the author is to be congratulated upon an admirable piece of work.— W. S.

Hersey's 'List of Birds Observed in Alaska and Siberia.'[1]— Mr. Hersey's trip along the Alaskan coast during the summer of 1914 was undertaken in the interest of Mr. A. C. Bent to obtain data for his continuation of the 'Life Histories of North American Birds.' Notes on 105 species are contained in the list of which 74 are water-birds.

The "repeated occurrence" of Fisher's Petrel (*Æstrelata fisheri*) was one of the pleasures of the trip, but the scarcity of the Emperor Goose and Spectacled Eider seems to point to the greatly increased rarity of these species in the near future.

The practice of treating two species collectively in the annotated list is unfortunate as it leads to ambiguity. On p. 13 for instance it is impossible to tell whether the four gulls that followed the vessel to Ketchikan included any Western Gulls or whether they were all Herring Gulls. If any of the former were present the occurrence constitutes a new record for Alaska.

Mr. Hersey's list is a welcome addition to the literature of the Alaskan coast and the western arctic region, and the extensive notes obtained for Mr. Bent will doubtless add largely to the accuracy and interest of his accounts of the northwestern waterfowl.— W. S.

Brooks' 'Notes on Birds from East Siberia and Arctic Alaska.'[2]— Messrs. W. Sprague Brooks and Joseph Dixon accompanied the 'Polar Bear' hunting party, organized by graduates of Harvard University in the spring of 1913, and remained in the Arctic regions for some fifteen months, making collections for the Museum of Comparative Zoölogy. The paper before us comprises Mr. Brooks' report on the birds, of which 160 species were observed. Notes of interest on the habits and distribution of many of the species are presented. Five forms are considered worthy of differentiation. A gull from Ellesmere Land allied to *L. kumlieni* is named *Larus thayeri* (p. 373) in honor of Col. J. E. Thayer through whose generosity the collection was obtained. The other new forms are *Histrionicus h. pacificus* (p. 393), Cape Shipunski, Kamchatka, including all the Pacific coast Harlequins; *Œdemia deglandi dixoni* (p. 393), Humphrey Pt., Alaska; *Nannus hiemalis semidiensis* (p. 400), Semidi Islands, Alaska; *Leucosticte grisconucha maxima* (p. 405), Commander Islands.

Messrs. Brooks and Dixon deserve much credit for securing so many interesting specimens and for visiting so many localities. They have added materially to our knowledge of the birds of the great northwestern arctic coast.— W. S.

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[1] A List of the Birds Observed in Alaska and Northeastern Siberia During the Summer of 1914. By F. Seymour Hersey. Smithson. Misc. Collns. Vol. 66, No. 2, pp. 1–33. 1916.

[2] Notes on Birds from East Siberia and Arctic Alaska. By W. Sprague Brooks. Bull. Mus. Comp. Zoöl. Vol. LIX, No. 5. pp. 361–413. September, 1915.

'The Birds of Australia.'[1]—Volume five of Mr. Mathews' great work is to be issued in four instead of three parts as previously announced and the second of these is before us. It continues the treatment of the Raptores covering the Kites, part of the Falcons and a few other species. The same lengthy discussion of nomenclature characterizes this number, which has figured in its predecessors.

The genus *Falco* as presented in the A. O. U. Check-List seems to Mr. Mathews to be a bad case of "lumping" and while he would admit that *Rhynchodon* is perhaps a subgenus, he claims that *Hierofalco*, *Tinnunculus* and *Cerchneis* are perfectly good genera.

We note *Haliastur sphenurus sarasini*, subsp. nov. (p. 169), New Caledonia, *Lophastur subcristatus kempi*, subsp. nov. (p. 220), Cape York, Australia; and *Falco longipennis samueli*, nom. nov. (p. 232) for *F. melanotus* White and Mellor, Flinders Island, Australia; as new names.—W. S.

Cassinia, 1915.[2]—The proceedings of the Delaware Valley Ornithological Club for 1915 show a continuation of the remarkable vitality that characterizes this organization. An average attendance of 24 at the 16 meetings held during the year is reported, and no fewer than 53 observers submitted migration records. Upon the material contained in these reports is based Dr. Stone's annual résumé of the spring migration. That of 1915 was characterized by abnormally early arrival of species coming in April or earlier and irregular occurrence of the later migrants. Dr. Stone contributes also another of the series of biographies he has published in 'Cassinia,' the present being that of Titian Peale. Other articles include 'Nesting birds of Pocono Lake,' with excellent illustrations of the nests of 2 species, of Empidonax, by J. Fletcher Street; 'Days with the Blue-gray Gnatcatcher and the Prothonotary Warbler' by Geo. H. Stuart 3rd, in which no locality is cited, a protective measure no doubt, yet even a county record would have added to the scientific value of the article; 'Eggs and Nestling Destruction' by Julian K. Potter, showing an average loss of 40 per cent, large yet less than some other studies have brought out; and 'Mortality among birds at Philadelphia, May 21–22, 1915,' by Delos E. Culver, an account of migrants striking the City Hall. This issue of 'Cassinia' contains also a bibliography of Pennsylvania, New Jersey, and Delaware ornithology for 1915, and a list of officers and members of the D. V. O. C.—W. L. M.

Bangs on New American Birds.[3]—A recent study of the Gallinules of America convinces Mr. Bangs that Hartert's view that they are best re-

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[1] The Birds of Australia. By Gregory M. Mathews. Vol. V, Part II. London. February 29, 1916.

[2] Proceedings of the Delaware Valley Ornithological Club, 19, 1915 (March, 1916). 72 pp., 2 pls.

[3] The American Forms of Gallinula chloropus (Linn). By Outram Bangs. Proc. N. E. Zoöl. Club, Vol. V, pp. 93–99. May 17, 1915.

garded as subspecies of the Old World *Gallinula chloropus* is correct. Besides *G. c. galeata* here restricted to southeastern South America, he recognizes four other races *G. c. garmani* Allen, from the Andes; *G. c. cerceris* Bangs, from the Lesser Antilles; and two here described as new *G. c. pauxilla* (p. 96), Rio Cauca, western Colombia; and *G. c. cachinnans* (p. 96) type from De Soto Co., Florida, for the North American bird.

In another paper[1] the smaller Mockingbird of the northern Bahamas is separated as *Mimus polyglottos delenificus*, type locality Andros Island; and in conjunction with Mr. John E. Thayer[2] the Song Sparrow of Nova Scotia is described as *Melospiza melodia acadica* (p. 67), type locality Wolfville.—W. S.

Swarth on the Pacific Coast Races of Bewick's Wren.[3]— From an examination of 597 skins, nine races are recognized.

Two other forms are "pointed out and their characteristics described, but no names affixed," because "it is impossible to indicate more than obscure average distinctions" and because the "extreme variability of even the most strongly marked of the described forms militates against" their recognition. The author fears possible criticism of his action but we think it will meet with very general endorsement.

Mr. Swarth's study is a very painstaking one, abounding in minute data, and will be a great help to those who wish to name their specimens, for to many who do not have a series of 500 skins for comparison this is by no means an easy task. There are some helpful suggestions to the A. O. U. Committee as to defining of the ranges of *spilurus* and *charienturus* in view of their refusal to recognize the poorly defined race *drymœcus*.—W. S.

Murphy and Harper on New Diving Petrels.[4]— In their studies of the family Pelecanoididæ Messrs. Murphy and Harper have found two unnamed forms of the curious little Diving Petrels which so closely parallel in size and appearance the Murrelets of the northern hemisphere. These are named in the present paper, *Pelecanoides urinatrix chathamensis* (p. 65), Chatham Islands; and *P. georgica* (p. 66) South Georgia Island.—W. S.

Chapin on the Pennant-Winged Nightjar.[5]— During his sojourn in the great Equatorial forest of Central Africa, Mr. Chapin secured

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[1] The Smaller Mockingbird of the Northern Bahamas. By Outram Bangs. Proc. N. E. Zoöl. Club, Vol. VI, p. 23. March 29, 1916.

[2] A New Song Sparrow from Nova Scotia. By John E. Thayer and Outram Bangs. Proc. N. E. Zoöl. Club, Vol. V, pp. 67–68. May 29, 1914.

[3] The Pacific Coast Races of the Bewick Wren. By Harry S. Swarth. Proc. Cal. Acad. Sci., Vol. VI, No. 4, pp. 53–85, pl. 2. May 8, 1916.

[4] Two New Diving Petrels. By Robert Cushman Murphy and Francis Harper. Bull. Amer. Mus. Nat. Hist., XXXV, pp. 65–67. April 1, 1916.

[5] The Pennant-winged Nightjar and its Migration. By James P. Chapin. Bull. Amer. Mus. Nat. Hist., Vol. XXXV, pp. 73–81. Scientific Results of the Congo Expedition. Ornithology, No. 3. April 12, 1916.

specimens of this curious Nightjar only during March and July. Suspecting that these records might indicate a migration he has recently made a thorough study of the published records of the species and finds his surmise to be correct.

All the breeding records of *Cosmetornis* (September–January) are in southern Africa below the Equatorial forest, while all records from March to July are from the more or less open country north of the forest. We thus have a regular migration across the equator of a distinctly tropical bird, which is obviously different in origin from the great movement of migratory species in the north temperate and arctic regions.

As a possible incentive, Mr. Chapin suggests the great abundance of flying termites in the grasslands north of the forest from April to August. These " white ants " are eagerly devoured by the Nightjars which gather in large flocks to catch them. Mr. Chapin seems to have worked out his problem convincingly and his paper is one of much interest.— W. S.

Bangs on Birds from the Cayman Islands.[1]— A complete collection of the resident birds of the three Cayman Islands, recently obtained by Mr. W. W. Brown and now the property of the Museum of Comparative Zoölogy, forms the basis of a paper by Mr. Bangs. Thirty-seven forms are listed of which *Amazona leucocephala hesterna* (p. 308), Cayman Brac, is described as new. Many notes on the plumage and relationship of the various species are given and a review of the races of *Tiaris olivacea*. The paper forms a valuable contribution to West Indian Ornithology.— W. S.

Cherrie on New South American Birds.[2]— Of the four hundred odd species of birds secured on the Roosevelt South American Expedition some naturally proved to be new, and these Mr. Cherrie has carefully described in the present paper. They are as follows: *Chætura chapmani viridipennis* (p. 183), Doze Octobre; *Celeus roosevelti* (p. 183), Tapirapoan; *Myrmotherula kermiti* (p. 184), Barão Melgaco; *Rhopoterpe torquata tragicus* (p. 184), Rio Roosevelt; *Synallaxis rufogularis*, (p. 185), Barão Melgaco; *Phacellodomus ruber rubicula* (p. 186), San Lorenzo River; *Philydor erythrocercus lyra* (p. 186), Rio Roosevelt; *Xiphocolaptes major saturatus* (p. 187), and *Myiopagis viridicata rondoni* (p. 188), Urucum near Corumba; *Sporophila hypoleuca clara* (p. 188), San Lorenzo River — all from Matto Grosso, Brazil.

Picolaptes angustirostris prædatus (p. 187), Concepcion del Uruguay; *Myospiza manimbe nigrostriata* (p. 189), Rio Negro, Paraguayan Chaco; and *Thraupis palmarum duvida* (p. 90), Rio Roosevelt, Amazonia.

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[1] A Collection of Birds from the Cayman Islands. By Outram Bangs. Bull. Mus. Comp. Zoöl., Vol. LX, No. 7, pp. 303–320. March, 1916.

[2] Some apparently undescribed Birds from the Collection of the Roosevelt South American Expedition. By George K. Cherrie. Bull. Amer. Mus. Nat. Hist., XXXV, Art. VII, pp. 183–190. May 20, 1916.

The supplementary expedition which will shortly be in the field is expected to gather much additional information on the birds of this region for incorporation in the final report of the Roosevelt Expedition.— W. S.

Todd on New Neotropical Birds.[1]— In two recent papers Mr. W. E. Clyde Todd describes twenty-two new forms of neotropical birds. Eleven of these are from Colombia, seven from Bolivia, two from Argentina and one each from Venezuela and the Isle of Pines. The descriptions are very brief, but where size is used as a differential character measurements of the type specimens are always given.— W. S.

Forbush on The Domestic Cat.[2]— In 'Notes and News' of 'The Auk,' 1914, p. 145, attention was called to the seriousness of the cat problem and in the two years that have elapsed since then the destruction of wild birds, especially nestlings, by stray cats and uncontrolled pets has brought the question squarely before thousands of bird students, who have so carefully watched and protected broods of young in the nest, only to see them fall prey to the neighbor's pet cat. Mr. Forbush's timely 'bulletin' covers all phases of this subject — the history and characteristics of the cat; numbers of cats, food of cats, economic value and means of controlling the cat.

His evidence seems to show pretty conclusively that traps are a far better check on rats and mice than cats are. This reduces the excuses for keeping cats to the desire for a pet or companion, and for such purposes the public should compel the cat owners to have their pets licensed and kept strictly on their own property. This is insisted on in the case of dogs and the sooner it is done with cats the better. The constantly increasing army of bird lovers who will not tolerate roving cats will find a mine of information in Mr. Forbush's report which can be spread broadcast with profit.— W. S.

The Official List of Generic Names.[3]— Systematic Zoölogists will welcome any action that makes for uniformity and stability in nomenclature, and consequently will heartily endorse the attempt of the International Commission to establish an "official" list of genera. The plan is to invite advisory committees in various branches of zoölogy to submit lists of generic names which they agree are valid under the Code and which

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[1] Preliminary Diagnoses of Apparently New South American Birds. By W. E. Clyde Todd. Proc. Biol. Soc. Wash., Vol. XXVIII, pp. 79–82. April 13, 1915.

Preliminary Diagnoses of Seven Apparently New Neotropical Birds. By W. E. Clyde Todd. Proc. Biol. Soc. Wash., Vol. XXVIII, pp. 169–170. November 29, 1915.

[2] The Domestic Cat. Bird Killer, Mouser and Destroyer of Wild Life. Means of Utilizing and Controlling It. By Edward Howe Forbush, State Ornithologist. Economic Biology — Bulletin No. 2. Massachusetts State Board of Agriculture, pp. 1–112. 1916.

[3] Opinions Rendered by the International Commission on Zoölogical Nomenclature. Opinion 67. One Hundred and Two Birds Names Placed in the Official List of Generic Names. Smithson. Inst. Publ. 2409, pp. 177–182. April, 1916.

the Commission can then recommend for adoption in an Official List as authorized by the Gratz International Zoological Congress.

The Ornithological Advisory Committee consisting of Allen, Hartert, Hellmayr, Oberholser, Richmond, Ridgway, Stejneger and Stone, submitted a list of 189 of the more common and more important generic names of birds with references, genotypes, and method of type designation. This list was sent to 350 zoölogists and zoölogical institutions throughout the world as well as to 44 specialists on ornithological nomenclature. As a result objection of some sort or other was raised against 87 names and these were referred back to the Advisory Committee for further opinion as to whether the objections have any weight under the Code.

The remaining 102 names against which no question has been raised are forthwith added to the list.

At first thought it would seem preferable to consider this matter chronologically, publication by publication, but it will, we think, be admitted that the plan adopted, of selecting the more familiar and important genera first, is the better, as it will at once establish uniformity in the names most frequently used. The majority of those who desire to use correct names have neither the time nor the technical experience to work the questions out for themselves by the Code, and an international standard list will fill a long-felt want and do more for stability of nomenclature than anything else. Dr. C. Wardell Stiles, Secretary of the Commission and Dr. Charles W. Richmond, Secretary of the Advisory Committee on Ornithology deserve the thanks of ornithologists for the thorough manner in which they have handled the work and we hope to see the 'Official List' grow apace on the lines they have established.— W. S.

Aves of the Zoological Record 1914.[1]— Only those who have labored upon bibliographies can appreciate the magnitude of the task of compiling the ornithological titles of an entire year; and when we realize the absolute necessity of such compilations to systematic work we appreciate our indebtedness to Mr. Sclater. He lists for 1914 a total of 1088 titles as against 1576 for 1913 and 1665 for 1912 — sad evidence of the effect of the war. The 'International Catalogue of Scientific Literature' having been discontinued until after the war, the Zoological Society has assumed the publication of the 'Zoological Record' thereby conferring a great favor upon all zoölogists.— W. S.

Recent Papers by Hartert.— In 'Novitates Zoologicæ' for April, 1916, Vol. XXIII, Dr. Ernst Hartert has a number of important contributions. Under the title 'Notes on Pigeons' he demonstrates that *Streptopelia decaocto* is the correct name for the Indian Turtle-Dove and that *S. roseogrisea* is probably the ancester of the tame bird. Other groups are

[1] Zoölogical Record, Vol. LI. 1914. Aves. W. L. Sclater. Zool. Soc. London. January, 1916. pp. 1–77. Price, six shillings.

discussed and the following proposed as new *Streptopelia senegalensis phœnicophila* (p. 82) "south of the Atlas in Algeria, Tunisia and Marocco,"— no type mentioned! *S. chinensis vacillans* (p. 83), Mengtsze, Yunnan, *Columba leuconota gradaria* (p. 85), Sungpan, China; *C. junoniæ* (p. 86) for the Canary Pigeon *C. laurivora* auct. Under 'Notes on Glareola' the nomenclature of several forms is considered. He also discusses the 'Occurrence of *Erolia bairdii* in South-west Africa'; 'The Correct Name of the 'Long-toed Stint' — which proves to be *subminuta*; 'On the Forms of *Burhinus œdicnemus*' — *B. o. astutus* (p. 93), Fao, Persian Gulf, n. sp.; 'On the Birds Figured in the Atlas to Krusenstern's Voyage Round the World', and 'Errors in Quotations' — 20 errors among a portion of the Palæarctic waders in the British Museum 'Catalogue of Birds'! — W. S.

White on the Birds of Interior South Australia.[1]— Capt. S. A. White accompanied a government expedition to the Musgrove Ranges of the little known northwestern South Australia, being in the field June 17 to September 3, 1914. In the report of the scientific results of the trip which is before us Capt. White has contributed the narrative and the accounts of the aborigines and the birds. Eight other sections by specialists treat of the other collections obtained. The account of the journey by camels through this desert country is extremely interesting and the constant allusions to birds give one a vivid picture of the habitats and habits of many species. The annotated list of 93 species gives further details of distribution and relationships. Among them the following are described as new.

Barnardius zonarius myrtœ (p. 745), Horshoe Bend, Finke River, Central Australia; *Smicrornis brevirostris mathewsi* (p. 749), Wantapella Swamp; *Lewinornis rufiventris maudeæ* (p. 749), Officer Creek, Everard Range.— W. S.

Life of Tegetmeier.[2]— A biography of the late W. B. Tegetmeier by E. W. Richardson has lately been published by Witherby & Co. Mr. Tegetmeier was best known as the 'Father of Pigeon Fanciers' in England and as an authority on the rearing of poultry and on bee keeping. He was a close associate and collaborator of Darwin and a member of the British Ornithologists' Union, while for fifty years he was a writer on the London 'Field.' His long and active life of ninety-six years brought him in contact with many men of prominence, both in scientific and other circles and his biography is consequently of unusual interest.— W. S.

Recent Publications on Bird and Game Protection.— The most important of the recent publications of this sort is the second set of 'Pro-

[1] Scientific Notes on an Expedition into the Northwestern Regions of South Australia. Trans. Roy. Soc. of South Australia. Vol. XXXIX, 1915, pp. 707–842, plates XLIV–LXX.

[2] A Veteran Naturalist, Being the Life and Work of W. B. Tegetmeier. By E. W. Richardson. Witherby & Co., 326 High Holborn, London. 1916. pp. i–xxiv + 1–232. Numerous illustrations. Price 10s. net.

posed Regulations for the Protection of Migratory Birds.' This follows the plan of its predecessor issued three years ago, but is less complicated, the open seasons having been changed so as to require fewer exceptions, and coincide with requests from sportsmen in various sections. This schedule should be carefully studied by all interested in game bird preservation.

'Bird Notes and News' shows that interest in bird protection in England continues in spite of the war while several articles treat of birds observed in France, in the trenches, and at Gallipoli.

Mr. Forbush's 'Eighth Annual Report' as State Ornithologist of Massachusetts is as usual replete with interesting facts and attractive illustrations.— W. S.

The Dissemination of Virginia Creeper seeds by English Sparrows.— Under a title substantially the foregoing, Bartle T. Harvey, in a recent number of The Plant World[1] describes observations on the point specified which he made in Colorado. Seeds gathered from excrement beneath an English Sparrow roost, gave a higher percentage of germination and produced stronger seedlings than others gathered directly from the plant. On fifty square feet of ground under the roost, 70 Virginia Creeper seedlings were found. The writer concludes, therefore, that under certain circumstances the English Sparrow may be an important agent in the dissemination of Virginia Creeper seeds. For further information on birds that feed on Virginia Creeper see 'The Auk,' Vol. 23, No. 3, July, 1906, pp. 346–347.— W. L. M.

The Ornithological Journals.

Bird-Lore. XVII, No. 2. March–April, 1916.

The World's Record for Density of Bird Population. By Gilbert H. Grosvenor.— Fifty-nine pairs of birds nesting on one acre (12 species), including 26 pairs of Martins and 14 of House Wrens.

The Spring Migration of 1915 at Raleigh, N. C. By S. C. Bruner and C. S. Brimley.— Species arriving up to April 10, were 5 to 14 days late.

First Efforts at Bird Photography. By H. I. Hartshorn.

The Interesting Barn Owl. By J. W. Lippincott.

The Migration of North American Birds.— Bush-Tits, etc. By W. W. Cooke — With plumage notes by F. M. Chapman and colored plate by Fuertes.

Bird Lore. XVIII, No. 3. May–June, 1916.

The Chipping Sparrow. By Newton Miller.

A Domestic Tragedy. By Julia Moesel.— Cowbird in Blue-headed Vireo's Nest.

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[1] Vol. 18, No. 8, August, 1915, pp. 217–219.

Some Experiences in Attracting Birds.— The Nesting of a Red-breasted Nuthatch. By Henry S. Shaw, Jr.

Notes on Plumages of North American Birds. By F. M. Chapman.— Thrasher, Catbird and Mockingbird.

Editorial Obituary of Wells W. Cooke, with portrait.

The Condor. XVIII, No. 2. March–April, 1916.

Sea Gulls at the Panama-Pacific International Exposition. By Joseph Mailliard.— Numerous photographs.

Characteristic Birds of the Dakota Prairies. IV. On the Lakes. By Florence Merriam Bailey.

The Farallon Rails of San Diego County. By L. M. Huey.

The Nutcrackers of Yellowstone Park. By M. P. Skinner.

A Chapter in the Life History of the Wren Tit. By W. C. Newberry.

The New Museum of Comparative Oölogy. By W. L. Dawson.

Notes on Some Land Birds of Tillamook County, Oregon. By S. G. Jewett.

The Oölogist. XXXIII, No. 3. March 15, 1916.

Entire number devoted to instructions for the preparation and care of eggs and nests.

The Oölogist. XXXIII, No. 4. April 15, 1916.

The Northern Pileated Woodpecker. By S. S. Dickey — Nesting habits in Pennsylvania.

Bluebird. VIII, No. 3. February, 1916.

Good illustrated articles on the nesting of the Red-winged Blackbird and Whip-poor-will by Edw. L. Jack.

Bluebird. VIII, No. 4. March, 1916.

A Rare Musician. By Cordelia J. Stanwood — White-throated Sparrow.

The Ibis. X series. IV, No. 2. April, 1916.

A List of Birds collected in Uganda and British East Africa, with Notes on their Nesting and other Habits.— Part I. By V. G. L. van Someren. — Annotated list of 228 species exclusive of the Passeres.

A Note on the Emperor Goose (*Philacte canagica*) and on the Australian Teal (*Nettion castaneum*). By F. E. Blaauw.

Bird-parasites and Bird-phylogeny. By L. Harrison.— A striking paper. The classification of the Tubínares constructed entirely from a study of their parasitic Mallophaga corresponds almost exactly with that of Forbes based upon the structure of the birds. The author finds transference of parasites from one kind of bird to another very rare and that their evolution has been much slower than in the case of their hosts.

On the Coloration of the Mouths of Birds. By C. F. M. Swynnerton.— An interesting discussion of warning and directive coloration.

On Some New Guinea Bird-names. By G. M. Mathews.— In this discussion of the nomenclature of Ogilvie Grant's recent report on the birds collected by the B. O. U. Expedition to New Guinea we note the following new names, *Mimeta granti* (p. 297) for *Oriolus striatus* Q. and G.

In a reply to this criticism Mr. Ogilvie Grant, admits some of the errors

and in most of the others takes refuge behind such time honored arguments as " current usage," " obvious mistake " and others not recognized by the International Code of Nomenclature.

Studies on the Charadriiformes. IV. An Additional Note on the Sheath-bills: V. Some Notes on the Crab-Plover (*Dromas ardeola* Paykull). By P. Lowe.

The Denudation of the Shaft in the Motmot's Tail. By H. D. Astley.— The barbs on a captive bird dropped off naturally to form the terminal racquet and were not picked off by the bird.

Bulletin of the British Ornithologists' Club. No. CCXIII. February 22, 1916.

Dr. Hartert describes *Iole philippensis saturatior* (p. 58), Mindanao; Dr. Hartert and Dr. van Someren propose *Smithornis capensis medianus* (p. 59), Kyambu Forest, Africa; Mr. Mathews describes *Sauropatis sordida colcloughi* (p. 61), Mud Island, near Brisbane, Queensland.

Bulletin of the British Ornithologists' Club. No. CCXIV. March 25, 1916.

New birds described by Dr. Hartert, *Scolopax rusticola mira* (p. 64), Amami Oskima, Riu Kiu Isls. *Coracina novæhollandiæ kuehni* (p. 65), Kei Islands, by Mr. Ogilvie Grant, *Cettia sumatrana* (p. 66), Korinchi Peak, Sumatra.

Capt. Ingram describes the nestling plumage of various terns, showing that the species of *Sterna* fall into two groups.

Bulletin of the British Ornithologists' Club. CCXV. April 27, 1916.

New birds are described by Rothschild and Hartert as follows: *Rhipidura cockerelli septentrionalis* (p. 73), Bongainville, Solomon Isls.; *R. c. interposita* (p. 73), Isabel Isl.; *R. c. lavellæ* (p. 74), Vella Lavella Isl.; By Dr. Hartert: *Tchitrea paradisi borneensis* (p. 75), Borneo. By G. M. Mathews: *Collocalia francica yorki* (p. 77), Cape York, Australia.

British Birds. IX, No. 10. March 1, 1916.

On " Wait and See " Photography. By E. L. Turner.— Studies of Lapwing, Moorhen and Coot. Jacksnipe and Heron in No. 11. Plover, Ducks and Tern in No. 12.

British Birds. IX, No. 11. April 1, 1916.

Manx Ornithological Notes: 1914–15. By P. G. Ralfe.

British Birds. IX, No. 12. May 1, 1916.

The Moults of the British Passeres, with Notes on the Sequence of their Plumages. By H. F. Witherby — Part iv, Larks.

Avicultural Magazine. VII, No. 5. March, 1916.

Notes on Waders seen in the Isles of Scilly. By E. I. Dorrien-Smith.

Birds in Flanders During the War. By Col. W. Tweedie.

Avicultural Magazine. VII, No. 6. April, 1916.

The Motmot. By H. D. Astley.— Discusses origin of racquets on the tail feathers.

Whiskey Jack and Another. By A. Trevor-Battye.— Habits.

Avicultural Magazine. VII, No. 7. May, 1916.

The Owl Parrot. By G. Renshaw — History and threatened extinction.

Observations on the Birds in a Suburban Garden. [In England]. By A. A. Goodall.

Egg Markings and Sunlight. By A. G. Butler.— Sunlight and heat considered to affect intensity of coloration.

The Emu. XV, Part 4. April, 1916.

Avifauna of New South Wales Islands. By A. F. Bassett Hull.

Some Considerations on Sight in Birds. By Dr. J. C. Lewis.— General account of structure of the bird's eye, with citation of old and rather unconvincing experiments to prove exceptional powers of sight.

Eggs of Reptiles and Birds Compared, with Some Unusual Examples of the Latter. By R. W. Shufeldt.

Some Tasmanian Birds' Nests. By H. Stuart Dove.

Observations on Albatrosses at Sea. By E. W. Ferguson.— Discussion of plumage, etc., of a number of species. A series of excellent photographs of Australian birds is published in this number.

The South Australian Ornithologist. II, Part 6. April 1, 1916.

Notes on the Mallee Fowl. *Leipoa ocellata rosinæ.* By T. P. Bellchambers.— Incubation is given as from 58 to 77 days in captive birds.

An Ornithological Trip in St. Vincent and Spencer Gulfs. By A. G. Morgan.— Notes on 60 species.

A Sketch of the Life of Samuel White (continued). By S. A. White.

The Austral Avian Record. III, No. 3. April 7, 1916.

Some 76 new species and subspecies are here described together with the genera: *Rahcinta* (p. 58) for *Atrichia clamosa*; *Leachena* (p. 60) for *Epthianura crocea*. The descriptions are so meagre as to be almost worthless and in many cases size is used as a differential character but no measurements are given. Worse than all there is no indication of where the type specimen may be found, and no range for the new forms is given.

While Mr. Mathews has done wonders in seaching the literature to settle the status of various old names which have caused endless trouble, his good work is offset by the carelessness of such descriptions as these. If a thing is worth describing at all it is worth describing well, and nothing will cause the summary rejection of his proposed new subspecies more quickly than this slovenly method of presenting them. 'The Auk' has taken the same stand impartially in the cases of all who are guilty of similar offences. If systematic ornithology is to be kept from becoming the laughing stock of zoölogists, it is high time that such practices should cease.

Revue Française d'Ornithologie. VIII, No. 83. March 7, 1916. [In French.]

Biological Observations on the Birds of the Kerguelen Islands. By J. Loranchet (continued in April).

Contribution to the Ornithology of Provence. By J. L'Hermitte (continued in April).

Revue Française d'Ornithologie. VIII, No. 84. April 7, 1916.

The Ornithological Park of Vellers-Bretonneux. By J. Delacour (continued in May number).

Ardea. V, No. 1. April, 1916. [In Dutch.]

On the Migration of Birds in Holland in 1915. By Dr. H. Ekama.— Arrival dates for many localities.

On the Breeding of Some Exotic Birds at Gooilust during 1915. By F. E. Blaauw.— *Philacte canagica* and *Cygnus buccinator* among others.

Messager Ornithologique. VII, No. 1. [In Russian.]

Some Observations on the Birds of the Povienetz District, Govt. Olonetz. By P. I. Ispolatoff.

On the Biology of the Marsh Warbler (*Acrocephalus palustris*). By S. G. Shtoeher.

On Some Swallows from Russian Turkestan. By N. A. Zarudny.— *Riparia riparia plumipes* (p. 34) subsp. nov.

Notes on *Perisoreus infaustus* and subspecies. By S. A. Buturlin.— *P. i. yakutensis* (p. 39), Achichey, Kolyma Dist.; *P. i. sakhalinensis* (p. 40), Saghalien; *P. i. ruthenus* (p. 40), Sofrino, Moscow Govt.; are described as new. The first is the bird known as *P. i. sibericus* (Bodd.) which name is regarded as not recognizable. The last is the bird of European Russia. Six forms, in all, are recognized but *P. i. opicus* Bangs is not placed as Mr. Buturlin has never seen or heard of a specimen with a "black" cap.

On the Question of the Status of the White-winged Magpie. By A. N. Karamsin.

Cyanistes pleskei and *Muscicapa atricapilla sibirica* are discussed in other papers.

Birds Collected by A. P. Velezhanin in the Basin of the Upper Irtysh. By G. I. Poliakov (continued and completed in No. 2.)

Messager Ornithologique. VII, No. 2.

Materials for a Bird Fauna of N. W. Mongolia. By A. I. Tugarinow.

Contribution to our Knowledge of the *Remiza* of the Turkestan Region. By N. A. Zarudny.

On the Russian Species of *Coccothraustes*. By Prince A. Koudashev.— *C. c. tatjanæ* (p. 96) subsp. nov. Six forms recognized.

Note on the Distribution of *Regulus r. buturlini*. By S. A. Buturlin.

Muscicapa atricapilla tomensis nom emend (p. 101). By H. Johansen.

On the Spring Migration of the White Stork. By A. A. Browner.

Falco. XI, No. 2. December, 1915. [In German.]

Contains descriptions of the British races of *Passer domesticus* and *Strix alba*, under the new names *Passer hostilis* (p. 18), and *Strix hostilis* (p. 19). The author, O. Kleinschmidt, states that his subspecies will probably have a hostile reception in their native country and explains that he does not name them in the interests of British Ornithology but in accordance with the thoroughness of German science!

Ornithological Articles in Other Journals.[1]

Oldys, Henry. Are Our Birds Decreasing or Increasing. (Amer. Mus. Journal, March, 1916.) — Emphasizes the large element of error in any estimate. Concensus of opinion of those best qualified to judge seems to be that generally speaking our insectivorous birds are more numerous than in the days of the early settlers. Some have undoubtedly increased, others decreased and it is difficult to make any average or general statement.

Weston, F. M., Jr. Notes on Charleston, S. C. birds. (Bull. Charleston Museum, March, 1916.)

Saunders, W. E. Birds of Algonquin Park. (Ottawa Naturalist, February, 1916.)

Saunders, W. E. The Magpie in Western Ontario. (Ottawa Naturalist, April, 1916.)

Terrill, L. McI. Unusual Bird Records at Montreal. During the Fall and Winter. (*Ibid.*)

McWilliam, J. M. Notes on the Birds of Linlithgow Loch. (Zoologist, March 15, 1916.)

Boyd, A. W. Birds Seen During the Dardanelles Campaign. (Zoologist, April 15, 1916.)

Selous, Edmund. A Diary of Ornithological Observations made in Iceland during June and July, 1912 (continued). (*Ibid.*)

Clyne, Robert. Movements of the Gannet as Observed at the Butt of Lewis. (Scottish Naturalist, March, 1916.)

Rintoul, L. J. and **Baxter,** E. V. Continental Racial Forms of Scottish Breeding Birds and their Occurrences in Scotland. (*Ibid.*)

Despott, Guiseppe. The Breeding Birds of Malta. (Zoologist, May 15, 1916.)

McWilliam, J. W. Bartram's Sandpiper in Ireland. (*Ibid.*)

Noble, G. K. A New Dove from St. Croix, Danish West Indies. (Proc. N. E. Zoöl. Club, V, pp. 101–102, Oct. 4, 1915.) — *Zenaida zenaida lucida* (p. 101).

Jacobs, J. W. The Glory of a Man who has Killed over Four Thousand Hawks in his Lifetime. (Separately published by the author.)— A strong exploitation of the value of hawks.

Bangs, O. Three New Subspecies of Birds from Eastern Mexico and Yucatan. (Proc. Biol. Soc. Washington, XXVII, pp. 125–126, May 27, 1915) — *Tityra semifasciata deses* (p. 125), Chichen Itza; *Turdus migratorius phillipsi* (p. 125), Las Viegas, Vera Cruz; *Cyanocompsa parellina beneplacita* (p. 126), Santa Leonor, Tamaulipas.

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[1] Some of these journals are received in exchange, others are examined in the library of the Academy of Natural Sciences of Philadelphia. The Editor is under obligations to Mr. J. A. G. Rehn for a list of ornithological articles contained in the accessions to the library from week to week.

Chandler, Asa C. A Study of the Structure of Feathers with Reference to their Taxonomic Significance. (Univ. of Cal., Publ. Zoöl., XIII, pp. 243–446, 1916.) — This is a bulky thesis describing in great detail the feathers of several types in most of the major groups of birds. The meagreness of conclusions seems out of proportion to the mass of description, and most of the suggestions that are made, of changes in the classification of birds on the basis of feather structure, are so obviously at variance with evidence derived from other sources as to be hardly worthy of serious consideration. The bibliography does not indicate an exhaustive knowledge of the literature of the subject as we fail to find Wm. Palmer's 'Avifauna of the Pribilof Islands' (Fur Seal Report, 1899), nor W. Stone's 'Molting of Birds' (Proc. Acad. Nat. Sci. Phila., 1896).

Ridgway, R. A New Pigeon from Jamaica. (Proc. Biol. Soc. Wash., XXVIII, pp. 177–178, Nov. 29, 1915.) — *Chlorœnas inornata exigua.*

Ridgway, R. A New Pigeon from Chiriqui, Panama. (*Ibid.*, pp. 139–140, June 29, 1915.) — *Œnœnas chiriquensis.*

Miller, L. H. A Review of the Species Pavo californicus. (Univ. Cal. Publ., Bull. Dept. Geol., IX, No. 7, pp. 89–96, 1916.)

Miller, L. H. Two Vulturid Raptors from the Pleistocene of Rancho La Brea. (*Ibid.*, No. 9, pp. 105–109, 1916.) — *Neophrontops americanus* (p. 106) and *Neogyps errans* (p. 108), genera and species new.

Young, R. T. Some Experiments on Protective Coloration. (Jour. Exper. Zoöl. XX, pp. 457–504, 1916.)— Practical experiments on captive birds. Dr. Young concludes that (1) protective resemblance is effective in protecting motionless animals from attack by caged birds and (2) that stillness is probably a more important factor than color in protecting animals from foes.

Mearns, E. A. Description of a New Subspecies of the American Least Tern. (Proc. Biol. Soc. Wash., XXIX, pp. 71–72, April 4, 1916.) — *Sterna antillarum browni* (p. 71), San Diego Co., Cal.

Hellmayr, C. E. Additions to the Avifauna of Timor. (Nov. Zoöl. XXIII, pp. 96–111.) [In German.]

Mottram, J. C. The Distribution of Secondary Sexual Characters amongst Birds with Relation to their Liability to the Attack of Enemies. (Proc. Zool. Soc. London, 1915, pp. 663–678.) — Endeavors to demonstrate a correlation between extra sexual dimorphism and decrease in vulnerability to enemies. Another paper by the same author, which follows this, deals with pattern blending in animals with reference to obliterative shading and concealment of outline.

Moulton, J. C. Birds taken on the Batu Lawi Expedition. (Jour. Straits Branch, Royal Asiat. Soc. No. 63, pp. 74–77, 1912).—Thirty species.

Van Someren, V. G. L. Rearing and Taming Wild Birds. (Jour. East Afr. and Uganda Nat. Hist. Soc. V, pp. 19–23, 1916.)

Roberts, Austin. A New Siskin from South Africa. (Ann. Transv. Mus. V, No. 3. Suppl. 1 page unnumbered, 1915.) — *Spinus symonsi,* Sangabetu Valley, Basutoland.

Vidal, L. M. On a supposed Archæopteryx from Spanish Guinea. (Bol. R. Soc. Españ. Hist. Nat. XVI, No. 2. [In Spanish.]

Rössler, E. Contribution to the Ornithology of South Dalmatia. (Glasnik hrvatskoga Prirodoslovnoga Drustva. XXVII, pp. 129–152, 1915.) [In German.]

Angelini, G. Note on *Lanius senator badius* Hartl. (Bol. Soc. Zool. Ital. ser. III, No. III, 1915.) [In Italian.]

Angelini, G. Anomalies in the Plumage of *Miliaria calandra.* (*Ibid.*) — A case of abrasion of the barbules. [In Italian.]

Lepri, G. The *Paroaria humberti* Angelini. (*Ibid.*) — Colored plate. [In Italian.]

Chigi Francesco. *Passer domesticus* and its Forms. (*Ibid.*) [In Italian.]

Salvadori, T. A New Species of the Genus Dryonastes. (Ann. Mus. Civ. Stor. Nat. Genova, ser. 3, vol. VI, 1914.) — *D. propinquus* (p. 6) Tenasserim. [In Italian.]

Salvadori, T. On a Small Collection of Birds from Benadir. (*Ibid.*) [In Italian.]

Alvarado, R. A New Species of Cardinal. (Bol. Direc. Estud. Biolog. Mexico., I, No. 3, 1916.) — *C. herreræ* (p. 284), Santa Rosa, an abnormal specimen with yellow crest and spots on the breast. [In Spanish.]

Doello-Jurado, M. Notes on Some Birds of Buenos Aires. (Physis II, No. 9, 1915.) — *Dendrocopus mixtus* and *Agelaius thilius.* [In Spanish.]

Dabbene, Roberto. A Supposed New Subspecies of *Neophlœotomus Schulzi* Cab. (Physis II, No. 10, 1916.)— *Neophlœotomus schulzi major* (p. 167), Resistencia, Chaco. Austral. [In Spanish.]

Piguet, E. Birds of Colombia. (Mem. Soc. Sci. Nat. de Neuchatel V, 1914.) — List of 59 species from Antioquia. [In French.]

Stanwood, C. J. Bird Architecture. (Country Life in America, April, 1916), and A Bird Craftsman (*Ibid.* March, 1916.)

Beebe, C. W. Review of the Genus *Gennæus.* (Zoologia, Vol. I, No. 17, Sept., 1914.)

Crandall, L. S. Notes on Costa Rican Birds. (*Ibid.* no. 18, Sept., 1914.)

Cherrie, G. K. Stories of South American Birds. (American Museum Journal, XVI, No. 4, April, 1916.)

Publications Received.— **Bangs,** Outram. (1) A Collection of Birds from the Cayman Islands. (Bull. Mus. Comp. Zoöl., LX, No. 7, March, 1916.) (2) The Smaller Mockingbird of the Northern Bahamas. (Proc. N. E. Zoöl. Club, VI, p. 23, March 29, 1916.) (3) The American Forms of *Gallinula chloropus* (Linn.) (*Ibid.* V, pp. 93–99, May 17, 1915.)

Brooks, W. Sprague. Notes on Birds from East Siberia and Arctic Alaska. (Bull. Mus. Comp. Zoöl., LIX, No. 5. Sept., 1915.)

Chapin, James P. The Pennant-Winged Nightjar of Africa and its Migration. (Bull. Amer. Mus. Nat. Hist., XXXV, Art. X, pp. 73–81. April 12, 1916.)

Cherrie, George K. Some apparently undescribed Birds from the Collection of the Roosevelt South American Expedition. (Bull. Amer. Mus. Nat. Hist., XXXV, Art. XVII, pp. 183–190. May 20, 1916.)

Clarke, Wm. Eagle. The Wren of St. Kilda: Its Status, Plumages, and Habits. (The Scottish Naturalist, October, 1915.)

Forbush, Edward Howe. (1) The Domestic Cat. Mass. State Board Agr., Economic Biology — Bull. No. 2, pp. 1–112, pl. I–XX. Boston, 1916. (2) Eighth Ann. Report of the State Ornithologist, For the Year 1915 (Mass. State Board of Agr., 63d Ann. Rept. Dec. 8, 1915.)

Hartert, Ernst. (1) Notes on Pigeons. (Nov. Zoöl. XXIII, pp. 77–88. April, 1916.) (2) Notes on Glareola. (*Ibid.*, pp. 89–91.) (3) Concerning the Occurrence of *Erolia bairdii* in South-west Africa. (*Ibid.*, p. 91.) (4) What is the Correct Name of the "Long-toed Stint"? (*Ibid.*, pp. 92–93.) (5) On the Forms of *Burhinus œdicnemus*. (*Ibid.*, p. 93.) (6) On the Birds Figured in the Atlas to Krusenstern's Voyage Round the World. (*Ibid.*, pp. 94–95.) (7) Errors in Quotations. (*Ibid.*, pp. 112–114.)

Hersey, F. Seymour. A List of the Birds Observed in Alaska and Northeastern Siberia During the Summer of 1914. (Smithson. Misc. Collns., 66, No. 2, 1916.)

Jacobs, J. Warren. Observations by the Way. The Glory of a Man who has killed over Four Thousand Hawks in his Lifetime. 4-page folder, privately printed.

Matthews, Gregory M. The Birds of Australia. Vol. V, part II. London. February 29, 1916.

Murphy, Robert C. and Harper, Francis. Two New Diving Petrels. (Bull. Amer. Mus. Nat. Hist., XXXV, Art. VII, pp. 65–67. April 1, 1916.)

Noble, G. K. A New Dove from St. Croix, Danish West Indies. (Proc. N. E. Zoöl. Club, V, pp. 101–102. Oct. 4, 1915.)

Pearl, Raymond. (1) Fecundity in the Domestic Fowl and the Selection Problem. (Amer. Nat. Feb., 1916, pp. 89–105.) (2) Seventeen Years Selection of a Character Showing Sex-Linked Mendelian Inheritance. (*Ibid.*, Oct. 1915, pp. 595–609.) (3) Measurement of the Winter Cycle in the Egg Production of Domestic Fowl. (Jour. Agr. Research., U. S. Dept. Agr., V, No. 10, Dec. 6, 1915.)

Richardson, E. W. A Veteran Naturalist. Being the Life and Work of W. B. Tegetmeier. Witherby & Co., London, 1916. 8vo., pp. i–xxiv +1–232. Price 10s. net.

Ridgway, Robert. The Birds of North and Middle America. Part VII. Bull. U. S. Nat. Mus., No. 50. Washington, 1916. pp. i–xiii + 1–543, pls. i–xxiii.

Sclater, W. L. Zoological Record, Vol. LI, 1914. Aves. Printed for the Zoological Society of London. January, 1916. pp. 1–77. Price, 6s.

Shufeldt, R. W. (1) The National Zoölogical Park at Washington. (Scient. Amer. Suppl., No. 2100, April 1, 1916.) (2) The Zoölogical Gardens of Melbourne. (*Ibid.*, No. 2095. February 26, 1916.) (3) Nature-

Study and the Common Forms of Animal Life.— V. (Nature-Study Review, March, 1916.) (4) Some Cardinal and Owl Notes. (The Guide to Nature, June, 1916.) (5) An Unusual set of Eggs of the Least Tern. (*Ibid.*, April, 1916.) (6) Eggs of Reptiles and Birds Compared, with Some Unusual Examples of the Latter (The Emu, XV, April, 1916. (7) Albinism in Animal Life. (Our Dumb Animals, June, 1916.)

Stanwood, C. J. (1) A Bird Craftsman. (Country Life in America. March, 1916.) (2) Bird Architecture. (*Ibid.* April, 1916.)

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CORRESPONDENCE.

The Significance of the Osteological Characters of the Chionides.

EDITOR OF 'THE AUK,'

Dear Sir:—

My attention has been called to the very excellent and comprehensive article by Dr. Percy R. Lowe on "Studies on the Charadriiformes.— III. Notes in Relation to the Systematic Position of the Sheath-bills (Chionididæ)," which appeared in 'The Ibis' of last January (1916); I have also read 'The Auk's' comments thereon and citation therefrom (April, 1916, p. 220).

Since reading Doctor Lowe's article, I have gone over the osteological material representing the Sheath-bills in the collection of the United States National Museum, and compared the skull and other bones of several of these birds with the corresponding parts of the skeleton in the fowls, pigeons, plovers, oyster-catchers, and their allies near and remote. So far as I am personally concerned, I find little or nothing in the strictures made by Doctor Lowe in his above cited contribution, reproduced in the last

April 'Auk,' upon my careful work on the osteology of all these birds — published nearly a quarter of a century ago — which in any way induces me to change my opinion. He further states (*loc. cit.* 153): "In its osteological features the Sheath-bill presents certain resemblances to the Oystercatcher," — a fact that I stated in 'The Auk' over twenty-three years ago, but which Doctor Lowe seems to have overlooked. That my present belief is that the pigeon and fowl *resemblances*, plainly seen in the skull of a Sheath-bill, are, in a way, resemblances only, is amply substantiated in a much more recent article of mine, which my critic likewise seems to have entirely overlooked in his *Chionis* contribution, and which 'The Auk' ignored when it came to republish his comments. I refer to my article on "An Arrangement of the Families and the Higher Groups of Birds," which appeared in 'The American Naturalist' for November–December, 1904 (pp. 833–856), and in which I place the Suborder Chionides between the Longipennes and the Charadriiformes, where I most emphatically take it they belong.

Doctor Lowe, in the course of his argument, refers to Marsh and his genus *Palæotringa*,— a form that probably had no more *Tringa* in it than it had osteological characters of a good many other very different kinds of Water Birds. But it would be idle to go into that subject here; and I would refer Doctor Lowe to my memoir "Fossil Birds in the Marsh Collection," published by Yale University only last year, for a full discussion of Marsh's types. This paper has over 150 figures on plates, illustrating Marsh's "types" of fossil birds.

In closing I would say that it is extremely likely that, at this writing, Doctor Lowe and I hold opinions on the relationships of the Sheath-bills to other birds that would be practically very much in agreement; and I trust that, in the future, he will do me the justice to cite my most recent opinions in all cases having to do with avian taxonomy. Probably some of my papers on this subject — and there are several hundreds of them — are not readily accessible to him, in which case I will be glad to bring their contents before him.

Faithfully yours,

R. W. Shufeldt.

Washington, D. C., May, 1916.

NOTES AND NEWS.

In the death of Prof. Wells W. Cooke on March 30, 1916, the American Ornithologists' Union has sustained a great loss. He died at his home in Washington, D. C., from pneumonia having been ill for only eight days.

Prof. Cooke was one of the earliest members of the Union, having been elected a Fellow in 1884. He was born January 25, 1858, in Massachusetts, son of Rev. Elisha W. Cooke, but moved with his parents at an early age to Ripon, Wis., where he was educated.

For several years he was connected with the Indian Service in Minnesota and Indian Territory and then in 1886 was chosen professor of Agriculture at the University of Vermont, and director of the university experiment station. From 1893–1900 he was professor of agriculture at the college at Fort Collins, Colo., and on July 1, 1901, was appointed on the staff of the U. S. Biological Survey.

He became interested in birds at an early age and almost from the beginning of his studies he directed his attention primarily to bird migration, eventually becoming our leading authority on this subject.

As early as the winter of 1881–2 Prof. Cooke solicited the coöperation of other observers in a comprehensive study of bird migration in the Mississippi Valley and for two years the results of their work were published in the 'Ornithologist and Oölogist.' When the American Ornithologists' Union was organized in 1883, a committee was appointed to coöperate with Prof. Cooke in extending this investigation throughout North America and he became superintendent of the Mississippi Valley division. His work in this region formed the basis of one of the first extensive publications of the Biological Survey which later took over the migration investigations. Since Prof. Cooke's connection with the Survey he has had personal supervision of this work and his many valuable publications based upon the records of the Survey are familiar to all ornithologists. His activities however, were not limited to this field, and the work that he has accomplished in mapping out the ranges of North American birds and in compiling a voluminous card index to published records of occurrences are of equal importance, while his 'Birds of Colorado' and numerous other papers stand as evidence of his unusual activity and his ability to accomplish results.

Prof. Cooke was a great lover of outdoor life and was a leading spirit in the District of Columbia Audubon Society and in all local field excursions for the study of nature. He had a delightful personality — generous and unassuming and his loss will be felt by bird students in all parts of the

country who turned to him for aid as well as by those who profited from his published papers. At the next meeting of the Union a memorial address upon Prof. Cooke will be delivered by Dr. T. S. Palmer, which will later appear in 'The Auk.' — W. S.

Sven Magnus Gronberger, of the Library staff of the Smithsonian Institution, an Associate of the Union, died at Georgetown University Hospital, Washington, on April 24, 1916, after an illness of about three weeks. Dr. Gronberger was born at Norrköping, Sweden, August 19, 1866, and graduated in 1884 from the gymnasium of Norrköping, an historic city on the Baltic 75 miles south of Stockholm. After having spent some time in France and England, he removed in 1886 to New York City, where he studied law, and in 1907 came to Washington and entered the service of the Smithsonian. At the time of his death he had nearly completed a special course for the degree of Doctor of Philosophy at George Washington University, with topics Zoölogy and Geology, on which subjects he had published several papers in various journals. He was an accomplished linguist, knowing perfectly French and the Scandinavian tongues, including some Icelandic, and was versed also in the English, German and Italian languages and literatures, besides Latin and Greek. For a number of years he had made a special study of zoölogical parks as factors in the popularization of natural science. He was a member of the Biological Society of Washington, the Anthropological Society of Washington, the Audubon Society, the Society for the Advancement of Scandinavian Study, and the Writers' Club of Washington.

Dr. Gronberger was the author of several papers on ornithological subjects which have appeared in 'The Auk' and in 'Forest and Stream' notably a translation of Peter Kalm's account of the Passenger Pigeon. He had also prepared an exhaustive monograph on the "Palæarctic Birds of Greenland," being a review of the occurrence of European and Asiatic species in Greenland from the middle of the 18th century to the present time. Publication of this paper is still pending.

Joseph Parker Norris, an Associate of the American Ornithologists' Union, 1886–1904, and a widely known oölogist, died at his home in Philadelphia on March 17, 1916.

Mr. Norris was born in Philadelphia, November 3, 1847, and was prominent in the business and social circles of the city. From boyhood he had been interested in the study of birds and their eggs and in 1885 he began the formation of a comprehensive collection of North American birds' eggs which, as the Norris collection, is now known to oölogists throughout the country and is one of the largest collections of its kind in America. For many years Mr. Norris took an active interest in developing this collection, assisted by his eldest son, J. Parker Norris Jr., its present

owner. In January, 1886, Mr. Norris became one of the editors of the 'Ornithologist and Oölogist,' and continued in that capacity until the magazine suspended publication in 1893. During this time he contributed a number of articles to its columns while his active interest and support were largely responsible for its success. He contributed a number of articles to 'The Country Gentleman,' (1863–67) and wrote the introduction to Davie's 'Nests and Eggs of North American Birds' (1889). In his writings he pointed out many errors of the early authors, notably in the number of eggs of the Raptores. Besides his other interests Mr. Norris was greatly interested in Shakespeariana and was author of a work on 'The Portraits of Shakespeare' (1885.) — W. S.

Dr. Frank M. Chapman and Mr. Geo. K. Cherrie left New York on May 6, 1916, for Ecuador to procure materials for a 'Paramo group' for the American Museum representing bird life on the upper slopes of Chimborazo. Dr. Chapman expects to meet Mr. Leo E. Miller in Argentina and there secure specimens for a companion 'Pampas group.' On the way he will investigate the bird life of the Urubamba Valley, Peru, and later visit the Museums at Santiago, Buenos Aires, Sao Paulo and Rio de Janeiro for the purpose of establishing closer relations with the American Museum.

Mr. Cherrie after leaving Dr. Chapman will start field work with the Roosevelt Expedition in the marshes of Paraguay.

Mr. Harry S. Swarth, for the past three years Zoölogist at the Los Angeles Museum of History, Science and Art, has rejoined the staff of the California Museum of Vertebrate Zoölogy, with which institution he had already been affiliated from 1908 to 1913. Mr. Swarth resumes the duties of Curator of Birds, which involve not only the care of the extensive collections of birds in the Museum of Vertebrate Zoölogy, but also enquiry into the systematic status of the lesser worked western bird groups.

Mr. Francis Harper, has joined the staff of the Biological Survey of the U. S. Department of Agriculture.

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1. CRESCENT LAKE FROM THE WEST.
2. WESTERN END OF CRESCENT LAKE.

THE AUK:

A QUARTERLY JOURNAL OF

ORNITHOLOGY.

VOL. XXXIII. OCTOBER, 1916. No. 4.

THE LAKE CRESCENT REGION, OLYMPIC MOUNTAINS, WASHINGTON, WITH NOTES REGARDING ITS AVIFAUNA.

BY SAMUEL F. RATHBUN.

Plates XIX–XXI.

As there exists only a general knowledge of the ornithology of the country in which the following observations were made, and as the region is but imperfectly known, it is thought advisable to give in connection with the list of species, a description of the country, the forest conditions that prevail, and also some idea of the flora, since these factors and the avifauna are correlative. Regarding the climatic conditions, however, little can be definitely stated as there are no data of an official character available, although the importance of this factor is its relationship to the bird life is fully recognized.

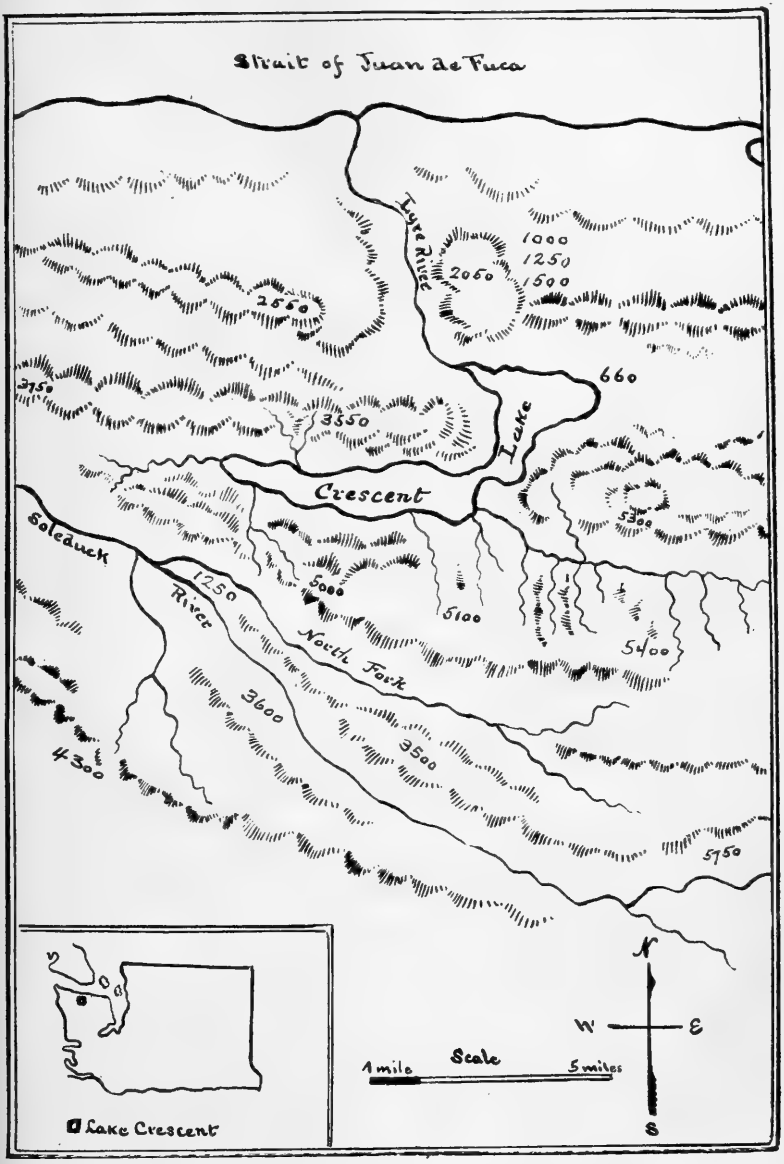
The writer's visit to the region covered the greater part of May and early October, 1915, the latter half of April and June, and early July, 1916; during this period all the territory immediately contiguous to the lake was thoroughly investigated, and numerous trips were made along the few trails adjacent thereto, as well as up the mountain sides. As a result, much knowledge was obtained regarding the species enumerated below but we were impressed with the fact that in a region so diversified, considerable future observation is required before a definite knowledge of its

avifauna is obtained, especially of the detailed distribution of the species.

At an elevation of 550 feet above sea level, Lake Crescent, or Crescent Lake as it is sometimes called, is located in the northwestern part of the State of Washington in the Olympic Peninsula at the very threshold of the Olympic Mountains. Its area is six and eight-tenths square miles, it has an extreme length of about ten miles with a varying width of from one half to one and a quarter miles, excepting at its lower end where it expands to three miles. The shore line is approximately twenty-five miles, but is very irregular with many indentations. As the name implies, the lake is of a somewhat crescent shape, the result of this peculiarity being that while the northern or lower end is less than five miles distant from the Strait of Juan de Fuca, the western or upper end lies within the Olympic range, being surrounded by mountains that constitute a part of this system. Its shores in general are bold and rugged, and in places the mountains rise abruptly from the water, which is clear and transparent as is usually the case in mountain lakes.

The beaches along the lake have been formed in the past by the detritus from the mountains. They are very narrow and invariably covered or overhung with a deciduous growth of shrubs or trees of small size, which extend back only to the base of the mountains. The latter are in turn clothed with a dense coniferous growth extending clear to their summits. In places on the mountain sides are seen the effects of former forest fires as evidenced by the burned and dead timber, but these are quite limited, the general aspect being an unbroken forest. These burned areas are practically impenetrable, for over the confusion of fallen trees has sprung a dense growth of young conifers interspersed in spots with small deciduous trees, all this in turn being penetrated by the still standing dead timber.

At the northwestern extremity of the lake is its outlet, the Lyre River, which following a valley flows in a meandering line some six miles before discharging its waters into the strait. A marked difference exists in the topographical aspect of the section about this lower end as compared with the upper, as here the mountains are of less elevation, being somewhat broken, and represent the water shed between the lake and strait, and this particular section



LOCATION OF CRESCENT LAKE.

is also more open in its appearance, having been somewhat logged off in the past and to some extent swept by fires.

About three miles up the lake from its outlet is the "narrows," so called locally, this being a contraction of the lake to a width not exceeding one half a mile. Here the mountains rise on the western side to an elevation of 2800 feet, on the eastern side to 5300 feet, thus forming a gateway to the upper or larger portion of the lake lying within the Olympic Mountains proper, which attain an extreme altitude of 3550 feet on the north side and 5000 feet on the south side. These two ranges do not coalesce but remain separate, the former continuing in a general westerly direction paralleling the strait, the latter trending more towards the southwest, while between them lies a valley running from the head of the lake and eventually descending to the Soleduck River which flows westerly and southwesterly, discharging its waters into the Pacific.

We have been thus explicit regarding the topography of the region, as in a degree it is reflected in the distribution of some of the species, several of which were found confined entirely to the lower end of the lake, while in others a marked difference existed in the relative abundance of the individuals at its two extremities.

All the altitudes given above are based on the contour map accompanying the paper from which the following data relative to forest conditions are quoted.[1]

"Township 30 North, Range 9 West." "This township, lying in the northern part of the reserve, includes nearly all of Lake Crescent. The surface of the township is rugged and mountainous, the only exception being along the north line and the valley of Lyre River. The soil is clay in the lowlands and gravel upon the mountains. Underbrush is very dense. This township is heavily timbered, mainly with fir and hemlock, with a little cedar and spruce."

"Forest conditions in T. 30 N., R. 9 W.

Timbered area	acres	22,336
Lake area	do	4,352
Burned area	do	1,115

[1] Professional Paper No. 7 — Series H, Forestry, 4. Department of the Interior, United States Geological Survey, Forest Conditions in the Olympic Forest Reserve, Washington, from notes by Arthur Dodwell and Theodore F. Rixon. Government Printing Office, Washington, 1902. pp. 86–87.

Total stand of timber	feet B. M.	876,250,000
Average stand per acre	do	40,000
Depth of humus	inches	3
Litter		Light

Statistics of forest trees.

Species	Stand Million ft. B. M.	Height Feet.	Diameter Inches.	Clear Feet.	Dead Per cent.	Diseased Per cent.	Age Years.
Red fir	549¾	170	36	45	5	7	194
Cedar	48½	115	31	24	9	25	162
Hemlock	203½	122	16	23	6	9	138
Spruce	16½	174	45	54	2	5	192
Lovely fir	58	163	34	47	2	6	166"

Apparently but little change has taken place in the conditions of the region since the date of the report from which the foregoing was taken; as we have been fairly familiar with the region for the past eighteen years, having made hunting trips therein on various occasions.

No better general description of the flora of the region, as we found it, can be given than the following, by Mr. Charles V. Piper. "The vegetation of the uplands throughout the Pacific area in Washington is a plant association in which the red fir predominates. The size of this tree and the luxuriance of the associated plants varies with character of the soil, but otherwise the formation is remarkably uniform. In forests in dry or sterile soils the commonest undershrubs are salal (*Gaultheria shallon*) and Oregon grape (*Berberis nervosa*), while the bracken fern (*Pteridium*) is the most conspicuous herb. Shrubs or trees of Scouler willow (*Salix scouleriana*) are also constantly associated.

In better soils the same shrubs remain, but the salal especially becomes much more luxuriant, often forming almost impenetrable thickets. When, however, the red fir is at its best, forming dense forests into which the sun scarcely penetrates the salal and Oregon grape are usually much less conspicuous. Under such circumstances the ground is covered with a thick layer of mosses and scattered crowns of Chamisso's shield fern (*Polystichum munitum*). Among the few shrubs which thrive in such dense shade is the red huckleberry (*Vaccinium parvifolium*). Following the destruction of a red fir forest by logging and subsequent burning, as has been

too commonly the case, there is a marked sequence in the plants that appear, usually as follows: The first are nearly always the fireweed (*Epilobium spicatum*) and the bracken (*Pteridium*). These are closely followed by the dewberry (*Rubus macropetalus*) which the following year fruits heavily and then gradually disappears. The thimbleberry (*Rubus parviflorus*) is often abundant also, as is red-flowered currant (*Ribes sanguineum*). By this time the Scouler willow is conspicuous, and in wet places the red alder (*Alnus oregana*). The two trees dominate the vegetation until the young red firs which spring up in a very dense growth have become large enough to supercede them. The red fir is so completely the dominant tree in the region that as a rule it quickly reforests itself whenever destroyed."[1]

The climate of the region is mild and equable with no extremes in temperature particularly at and near the lake level. The region has an abundant precipitation occurring chiefly between October and July, and an evidence of these prevailing climatic conditions is reflected in the luxuriant growth of vegetation that everywhere abounds.

Although reference to the list will show some few species that are fairly representative of the Canadian Zone, the region is mainly Transition, especially when the character of its dominant vegetation is taken into consideration. The red fir (*Pseudotsuga mucronata*) which forms so large a proportion of the total forest of the region, is a characteristic Transition Zone plant.

In regard to the list which follows the absence of a larger number of species of the water birds, is due to the fact that, at the season during which our observations were made, very few of these are present in the region, but from late autumn until early spring the lake is more or less a temporary resort for many of the maritime birds, that here find a refuge from the storms prevailing at times along the coast to the northward of the region under consideration.

In conclusion we wish to express our thanks to the Bureau of Biological Survey at Washington, D. C., for the identification of specimens forwarded, a courtesy that is much appreciated.

[1] Smithsonian Institution, United States National Museum, Contributions from the United States National Herbarium, Volume XI. Flora of the State of Washington by Charles V. Piper, Washington, 1906.

1. LOWER LAKE LOOKING WEST TOWARD LYRE RIVER.
2. NORTH SIDE OF UPPER LAKE.

1. **Æchmophorus occidentalis.** WESTERN GREBE.— Noted as a rather common migrant in April and October. One taken October 10.

2. **Podilymbus podiceps.** PIED-BILLED GREBE.— Seen occasionally in April, but was common on the lake in October.

3. **Gavia immer.** LOON.— On a number of occasions during April, May and October, this species was seen and heard about the lake.

4. **Larus glaucescens.** GLAUCOUS-WINGED GULL.— Of rather common occurrence in April and October.

5. **Larus occidentalis.** WESTERN GULL.— On several successive days in the latter part of April, a number of adults of this species were seen on and about the upper part of the lake.

6. **Larus heermanni.** HEERMANN'S GULL.— An adult female was taken on the lake June 20, 1916. It was in somewhat worn plumage and very lean flesh, and its stomach entirely devoid of contents.

7. **Sterna paradisæa.** ARCTIC TERN.— On April 15 a flock of about fifteen were seen in flight about the lake. The next day four were noted and on May 3 following a single individual was observed swimming about on the lake, it allowing an approach to within one hundred feet.

8. **Mergus americanus.** MERGANSER.— Seen at various times during April and May. Breeds along the larger mountain streams.

9. **Anas platyrhynchos.** MALLARD.— Noted on a number of occasions in October.

10. **Clangula clangula americana.** GOLDEN-EYE.— Single individuals were seen about the lake a number of times during April.

11. **Histrionicus histrionicus.** HARLEQUIN DUCK.— On April 24 two males and a female of this beautiful species were seen, and on the following day one of the former was secured.

12. **Oidemia deglandi.** WHITE-WINGED SCOTER.— May 18, 1915, three were observed flying up the lake.

13. **Ardea herodias fannini.** NORTHWESTERN COAST HERON.— A pair of these birds were noted at various times during the entire period of our stay at the lake, and evidently nested in proximity thereto.

14. **Fulica americana.** COMMON COOT.— Several pairs of these birds could always be found in the small marsh near the source of the Lyre River during the breeding season, but the species was not seen in October.

15. **Lobipes lobatus.** NORTHERN PHALAROPE.— Noted but once, when a small flock was seen on the lake early in October.

16. **Lophortyx californica californica.** CALIFORNIA QUAIL.— Northeast of the Lyre River is a limited section that has been logged and subsequently burned over, and here several times in October we came across a few of these Quail.

17. **Dendragapus obscurus fuliginosus.** SOOTY GROUSE.— Fairly common and although in April and May seemingly restricted to and near the semi-barren slopes at a considerable altitude on the mountain sides, from which its peculiar hooting note could be heard almost any day; in October it was found much lower and at times not far above lake level.

18. **Bonasa umbellus sabini.** OREGON RUFFED GROUSE.— Not common and generally found in the territory adjacent to the lake, but owing to the expanse of forest it was seldom seen.

19. **Columba fasciata fasciata.** BAND-TAILED PIGEON.— On May 22, 1915, four were seen in flight above the timber, and June 23, 1916, a juvenile scarcely able to fly, was found near the lake.

20. **Accipiter velox.** SHARP-SHINNED HAWK.— At the eastern extremity of the lake on May 28, we came across a pair of these birds that were watched for some time. The species was also noted in October.

21. **Buteo borealis calurus.** WESTERN RED-TAIL.— Was seen and heard on several occasions in the timber near the lake in May and October.

22. **Haliæetus leucocephalus leucocephalus.** BALD EAGLE.— A pair were often seen about the lake, particularly the upper part where for years has been located a nesting site.

23. **Falco columbarius suckleyi.** BLACK PIGEON HAWK.— One record only, October 12, a single bird which appeared to be in unusually dark plumage.

24. **Falco sparverius phalæna.** DESERT SPARROW HAWK.— On May 28, one was heard and seen at the lower end of the lake, the only time the species was noted.

25. **Strix occidentalis caurina.** NORTHERN SPOTTED OWL.— During the night of October 12, the weird notes of this bird shifting from place to place were heard in the forest along the lake near where we were located, and although the weather was very stormy, its notes continued with but slight intermission until daybreak.

26. **Otus asio kennicotti.** KENNICOTT'S SCREECH OWL.— Near the western end of the lake on various evenings in April and May, we heard the notes of this bird many times repeated, coming from the forest near the water's edge.

27. **Bubo virginianus saturatus.** DUSKY HORNED OWL.— On several occasions in April and May, this Owl was heard at night hooting in the forest.

28. **Glaucidium gnoma californicum.** CALIFORNIA PYGMY OWL.— One seen July 2, in open timber on the mountain side at an elevation of 1700 feet above the lake.

29. **Ceryle alcyon caurina.** WESTERN BELTED KINGFISHER.— Not common, but noted at various times during the period of our stay at the lake.

30. **Dryobates villosus harrisi.** HARRIS'S WOODPECKER.— Quite common and generally found in the more open forest not far from the lake, although occasionally seen in the partly dead timber on the mountain side. A nest found May 24, contained fully fledged young.

31. **Sphyrapicus ruber notkensis.** NORTHERN RED-BREASTED SAPSUCKER.— Although observed but twice, this in May and October, its frequent occurrence was indicated by the numerous perforations in the bark of many of the trees in the region.

32. **Phlœotomus pileatus pileatus.** PILEATED WOODPECKER.— Although not very common, was quite often seen or heard in the forest on the mountain side.

33. **Asyndesmus lewisi.** LEWIS'S WOODPECKER.— On May 2, 1916, one was seen in tall timber near the lake, and on the following day, four at a point about ten miles east of the lake's lower end.

34. **Colaptes cafer saturatior.** NORTHWESTERN FLICKER.— Not very common in April, May and June, but during October was seen frequently and was more generally distributed.

35. **Chætura vauxi.** VAUX'S SWIFT.— Seven of these swifts were seen on June 29, circling about above the high timber in the vicinity of the lake, and the species was also noted in the valley of the Soleduck River, six miles west of the head of the lake.

36. **Selasphorus rufus.** RUFOUS HUMMINGBIRD.— Was common throughout the region during May and June, but particularly so near lake level. On several occasions during the latter part of May, individual birds were seen carrying nesting material.

37. **Nuttallornis borealis.** OLIVE-SIDED FLYCATCHER.— Along the entire length of the lake in May and June, the characteristic note of this species was heard from the mountain side, but apparently each pair of the birds had a more or less defined territory of its own. They could readily be located as they almost invariably perched on or near the top of some lofty evergreen tree, rarely descending even during the frequent rainy spells.

38. **Myiochanes richardsoni richardsoni.** WESTERN WOOD PEWEE. — Noted in May, June and July and not very common. A species of irregular distribution in the region, being oftener found about the lower part of the lake, particularly in the vicinity of the Lyre River. We have three records only for the upper lake section.

39. **Empidonax difficilis difficilis.** WESTERN FLYCATCHER.— Although not common was quite well distributed, being restricted to no particular locality. Noted in May, June and July.

40. **Empidonax trailli trailli.** TRAILL'S FLYCATCHER.— Of uncommon occurrence and only seen or heard in the alder and willow thickets, along or near the shore of the lake.

41. **Empidonax hammondi.** HAMMOND'S FLYCATCHER.— Rather common. Although at times found on the mountain side, it was more often heard or seen in the timber fairly adjacent to the lake. A shy retiring species and not easy to secure.

42. **Empidonax wrighti.** WRIGHT'S FLYCATCHER.— Wright's was the only Flycatcher that we found in the mountains at any considerable elevation, and on a few occasions in May and June it was also noted in the region near lake level.

43. **Cyanocitta stelleri stelleri.** STELLER'S JAY.— Only two of these birds were heard or seen in the region from April to July, but in October it was observed more frequently.

44. **Perisoreus obscurus obscurus.** OREGON JAY.— During April it was common in the vicinity of the lake, at this time being associated in small flocks that were feeding on a winged insect very abundant near the water's edge. But after early May the species was seldom seen, evidently having retired to the more elevated sections as from this date we rarely noted it below an altitude of 1000 feet. A breeding female was taken June 22 at an elevation of about 800 feet. Was quite common about the lake in October.

45. **Corvus corax principalis.** NORTHERN RAVEN.— Two were seen in October in some tall dead timber on the mountain side above the lake. Also noted in the valley of the Soleduck River.

46. **Corvus caurinus.** NORTHWESTERN CROW.— Apparently of irregular occurrence in the region. Our records are, May 26, 1915, a single bird feeding along the lake shore near the source of the Lyre River; April 23 and 27, 1916, a total of three seen about the upper part of the lake.

47. **Agelaius phœniceus caurinus.** NORTHWESTERN RED-WING.— Near the outlet of the lake is a very small marsh restricted to a bit of the shore, and here is located a little colony of this species during the spring and summer months.

48. **Loxia curvirostra minor.** CROSSBILL.— At various times during October, small flocks of Crossbills were seen in the timber along the lake and on the mountain side.

49. **Astragalinus tristis salicamans.** WILLOW GOLDFINCH.— Not common. Noted only in May and June, when a few were heard and seen on different occasions.

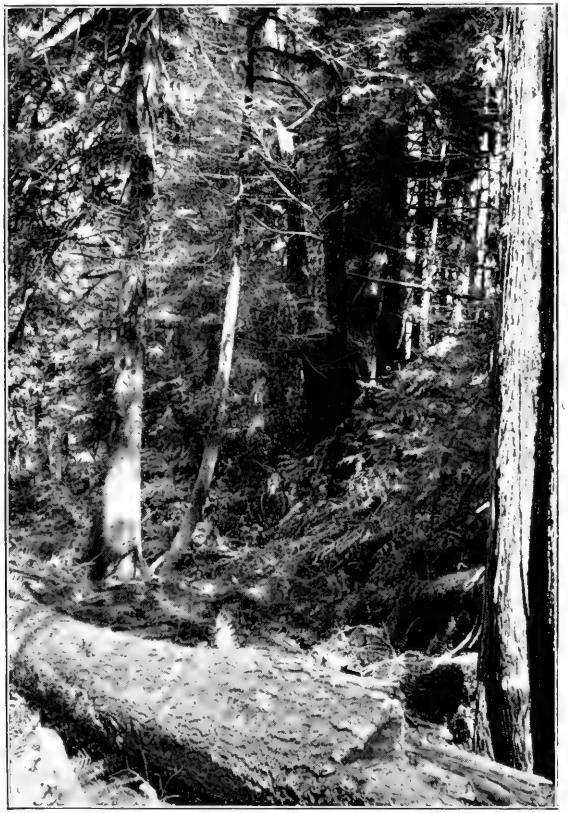
50. **Spinus pinus.** PINE SISKIN.— In the more open section about the lake's lower end, the Pine Siskin was quite common in May, although only occasionally seen around the upper portion of the lake. Was rarely noted in October.

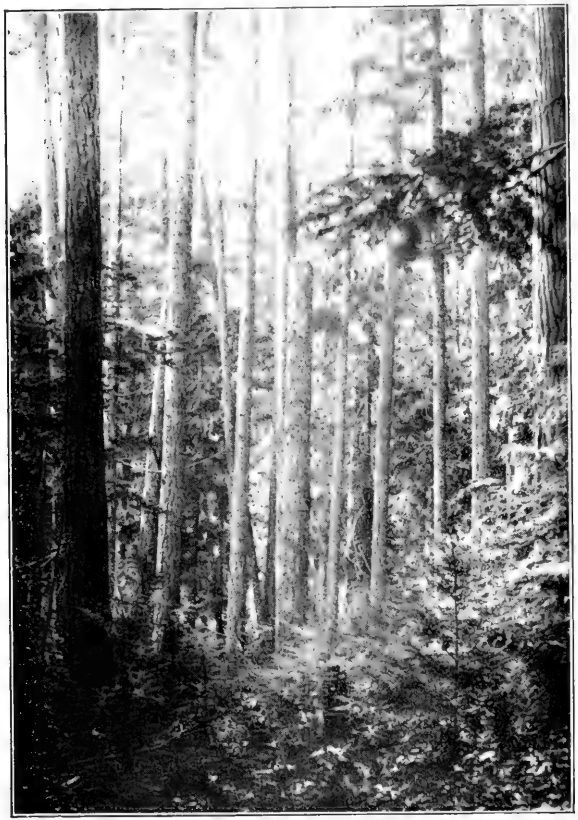
51. **Passerculus sandwichensis sandwichensis.** ALEUTIAN SAVANNAH SPARROW.— In October was found about the lake feeding along the rocky shores, but was not at all common, seldom more than a single bird being seen at a time.

52. **Zonotrichia leucophrys nuttalli.** NUTTALL'S SPARROW.— Uncommon throughout the region and of local distribution during May and June, a few being found in the section near the Lyre River and two along the upper lake. Not noted in October.

53. **Zonotrichia coronata.** GOLDEN-CROWNED SPARROW.— Not uncommon in April, the first arrival being noted the 22d and by the 30th all had departed. In October somewhat more common, being found about the borders of the brushy clearings along the lake, and on these occasions the individuals were associated in small flocks.

54. **Junco hyemalis connectens.** SHUFELDT'S JUNCO.— Common throughout the region although somewhat localized in its distribution, being partial to the vicinity of the more open spaces and was often observed along the lake shore about the edge of the timber. All the Juncos collected





VIEWS IN THE FOREST BORDERING CRESCENT LAKE.

between April and October proved to be of this subspecies identified as *shufeldti* at the Biological Survey.

55. **Melospiza melodia rufina.** SOOTY SONG SPARROW.— Although Song Sparrows were noted to an extent all through the region, this was more often the case in the section about the lake's lower end and the vicinity of its shore. All specimens secured proved to be of this form, among them a breeding female taken May 21.

56. **Pipilo maculatus oregonus.** OREGON TOWHEE.— Not common. During May and June seen only in the lower lake region, in and about the old burns and clearings. In October was more generally distributed.

57. **Piranga ludoviciana.** WESTERN TANAGER.— Was first seen May 23 at the lower end of the lake, by the 26th it had become fairly common throughout the region, as from this date its song was often heard and birds frequently seen.

58. **Hirundo erythrogastra.** BARN SWALLOW.— During May and June a very limited number of these swallows were seen, there being approximately six pairs in the immediate vicinity of the lake, a majority of which were restricted to the section near the source of the Lyre River.

59. **Tachycineta thalassina lepida.** NORTHERN VIOLET-GREEN SWALLOW.— Locally, restricted, a number of pairs being seen in the river section where they were nesting, and three pairs around some outbuildings on the southeast side of the narrows.

60. **Vireosylva gilva swainsoni.** WESTERN WARBLING VIREO.— Fairly common during May, June and July and quite well distributed, but showed a partiality for the proximity of the lake here being found near the clearings in which there was a growth of the large leaved maple, each of such localities seeming to be occupied by a pair of the birds as evidenced by their notes and song. The first arrivals were noted May 1.

61. **Lanivireo solitarius cassini.** CASSIN'S VIREO.— Not common. Observed in May and June and only in the lower lake section, here found in the young firs and adjacent deciduous growth.

62. **Vermivora celata lutescens.** LUTESCENT WARBLER.— Not very common, being noted only in and about the deciduous growth along and somewhat near the lake.

63. **Dendroica æstiva brewsteri.** CALIFORNIA YELLOW WARBLER.— Found confined to the lower lake section, where although seen on numerous occasions, at no time was it at all common.

64. **Dendroica auduboni auduboni.** AUDUBON'S WARBLER.— Not uncommon during the latter half of April and in early May at which period it was migrating, for later the species although of regular occurrence, was only occasionally seen or heard. An adult male taken May 30.

65. **Dendroica nigrescens.** BLACK-THROATED GRAY WARBLER.— On May 22, one was seen and heard singing in a clump of young firs on the edge of an old clearing, this being the only time the species was noted.

66. **Dendroica townsendi.** TOWNSEND'S WARBLER.— This species was so abundant as to be almost characteristic of the region. Its song

was heard in the tall timber along the entire lake and up the mountain sides as far as we ascended, although it appeared to be more abundant from lake level up to about 1800 feet elevation. Climatic conditions had no effect on its tendency to song which was heard intermittently during the entire day, but owing to the habit of confining itself to the tops of the tall coniferous trees, it was difficult to locate the birds. On a few occasions early in the morning, individuals of both sexes were found in the low growth around and in the small clearings, and a female collected May 22, on dissection showed that oviposition would soon begin. The first arrival was noted April 26, the next the following day, and on the 30th the species was quite common throughout the region.

67. **Dendroica occidentalis.** HERMIT WARBLER.— The song of this warbler was heard occasionally in May, June and July and by patient watching one might obtain a glimpse of the bird high up in the evergreen forest.

68. **Seiurus noveboracensis notabilis.** GRINNELL'S WATER-THRUSH. — On May 26 in the lower lake section, this bird was heard singing at intervals for the space of nearly a half hour, during which time it restricted itself to a limited area along the rocky and boulder strewn shore, here overgrown with a tangle of deciduous shrubs. The song of the species was also heard at one other subsequent time.

69. **Oporornis tolmiei.** MACGILLIVRAY'S WARBLER.— Not uncommon, particularly in the section about the lower lake. The first arrival was noted May 21 and the species heard each day up to the 24th, on which date it became common as evidenced by its song. In migration it apparently took three days to travel the entire length of the lake.

70. **Wilsonia pusilla chryseola.** GOLDEN PILEOLATED WARBLER.— Was first heard and seen April 28 and by May 1 had become common; particularly so from the narrows to the head of the lake, being found mostly in the deciduous growth along and near the shore, although several times at an elevation of 1000 feet here restricted to the small partially open spots likewise having a similar growth. Next to *D. townsendi* the most abundant of the Mniotiltidæ and as common as we have ever seen the species in any part of its habitat with which we are acquainted.

71. **Cinclus mexicanus unicolor.** DIPPER.— From April to July although seen at times about the lake, at this period it was quite common along the mountain streams. In October however, we found it often in the former locality.

72. **Thryomanes bewicki calophonus.** SEATTLE WREN.— In the more open section about the lower part of the lake, this species was heard singing on two different occasions in May.

73. **Troglodytes aëdon parkmani.** WESTERN HOUSE WREN.— One record only, May 2, 1916, on which date a single bird was seen and heard singing in a small clearing in the upper lake section.

74. **Nannus hiemalis pacificus.** WESTERN WINTER WREN.— Common. This was one of the few species found quite evenly distributed

throughout the forest in the region from lake level to a considerable elevation, in May its song being heard at almost any time during the day. May 21 we noted parent birds accompanied by fully fledged young. It was equally as common in October.

75. **Certhia familiaris occidentalis.** CALIFORNIA CREEPER.— Noted in May and June only, being seen on three occasions in the forest.

76. **Sitta canadensis.** RED-BREASTED NUTHATCH.— Although not common appeared quite generally distributed, but was heard more often in the depths of the forest.

77. **Penthestes atricapillus occidentalis.** OREGON CHICKADEE.— From our observations, of rare occurrence in the region, being seen only on two occasions, both in May.

78. **Penthestes rufescens rufescens.** CHESTNUT-BACKED CHICKADEE.— One of the common birds of the entire region and of general distribution, but more often seen in the deciduous growth along the lake in the proximity of the conifers and the open forest spots. At times observed in the heavy timber associated with *R. s. olivaceus*, when it would be found near the tops of the tall trees.

79. **Regulus satrapa olivaceus.** WESTERN GOLDEN-CROWNED KINGLET.— Rather common being well distributed, although noted more frequently in the forest on the mountain side.

80. **Regulus calendula grinnelli.** SITKA KINGLET.— Quite common as a migrant, the first being seen April 19, the last on May 3. At this time invariably found in company with *P. r. rufescens*, or *D. a. auduboni*, and on occasions all were found associated.

81. **Myadestes townsendi.** TOWNSEND'S SOLITAIRE.— Our only record is that of a pair we noted in the Soleduck River valley, about six miles west of the head of the lake. It is possible however that the species might prove of more common occurrence in the higher altitudes.

82. **Hylocichla ustulata ustulata.** RUSSET-BACKED THRUSH.— Found quite common throughout the entire region but was partial to such localities as the old clearings and burns that were fringed with a growth of deciduous trees and shrubs. Several times heard in the mountains up to an elevation of 1200 feet. First seen May 21, and by the 27th was quite generally distributed.

83. **Hylocichla guttata guttata.** ALASKA HERMIT THRUSH.— Not uncommon in the region, the first being seen on April 24, from which date its beautiful song was quite often heard in the forest, particularly near the lake. In Autumn was first noted October 9, and at this season we found the species fairly common, but it was more often seen along the narrow beaches overhung with deciduous growth.

84. **Planesticus migratorius propinquus.** WESTERN ROBIN.— One of the common species, being well distributed. It showed a partiality however for the more or less open tracts that in past years had been burned over and later covered with a young growth, and was rather more abundant around the few cultivated areas at the lower end of the lake. Quite often

we came across individual birds in the dense forest. In October was not nearly so common.

85. **Ixoreus nævius nævius.** VARIED THRUSH.— Rather common being found distributed in the forest fairly adjacent to the lake, but less so up the mountain side. Its delightful song was heard each day in May, especially at morning and evening and during the rainy and misty weather, being in perfect harmony with its wild environment. Also commonly seen in October.

MIGRATION OF THE YELLOW-BILLED LOON.[1]

BY JOSEPH DIXON.

THE lack of information relative to the migration routes of the Yellow-billed Loon (*Gavia adamsi*) has been shown most forcefully in Professor W. W. Cooke's interesting article in 'The Condor' (vol. XVII, 1915, pp. 213–214).

The tentative theories advanced by Cooke, await, of course, the support or contradiction of further data, and certain field observations of the writer are here set down as a possible contribution toward the ultimate solving of the problem.

The Harvard Alaska-Siberia Expedition, of which I was a member, was obliged, on account of unfavorable ice conditions, to spend considerable time in 1913 and 1914 in what, according to the A. O. U. 'Check-List', is supposed to be the center of the breeding range of this species, the Arctic coast of Alaska between Point Barrow and the mouth of the Mackenzie River. This expedition was financed in part by Mr. John E. Thayer, to whom the writer is indebted for permission to use such of the information obtained, as is needed in this paper.

We naturally observed the arrival of the Yellow-billed Loons with interest, and, during the time we spent there, especial attention was given to the loons in general, in the hope of finding an authentic nest of the Yellow-bill. Not only did we fail to find any

[1] Contribution from the Museum of Vertebrate Zoölogy of the University of California.

nest of this species, but none of the nine males and five females taken between June 3 and July 16 showed, upon dissection, any signs of breeding. (See Brooks, Bull. Mus. Comp. Zool., vol. LIX, 1915, p. 368.)

Doctor R. M. Anderson, leader of the Southern Division of the Canadian Arctic Expedition, in discussing this problem with me in the winter of 1913, assured me that the four seasons he had spent between Point Barrow and the mouth of the Coppermine River had been equally barren as regards definite breeding records of this species. In Stefánsson's 'My Life with the Eskimo' Macmillan Co., New York, 1913, p. 456) Anderson says: "The Yellow-billed Loon is found in most places on the Arctic coast in summer, from northwestern Alaska to Coronation Gulf but does not seem to be very common anywhere. . . . I have never been able to find a nest of this bird or hear of any white man or native in the North who has ever done so. The Common Loon or Great Northern Diver occasionally straggles to the Arctic Coast, both in Alaska and Canada." He mentions the occurrence of the Common Loon at Flaxman Island, in Alaska, and Coronation Gulf on the Canadian side.

R. MacFarlane (Proc. U. S. National Museum, vol. 14, 1891, p. 416) states, regarding the nesting of the Yellow-billed Loon: "During the period of reproduction this loon abounds in considerable numbers in Franklin and Liverpool bays, where several examples were shot. It is also sometimes met with on the larger lakes of the interior. Although most anxious to possess eggs of this species, we all failed to discover even one well-authenticated nest, while it is possible that the two *adamsii* eggs referred to on page 452, of vol. II, of the aforesaid Water Birds of North America, may have belonged to the Great Northern Diver."

Grinnell (Pacific Coast Avifauna, No. 1, 1900, p. 70) failed to find the species at all during two summers spent at Kotzebue Sound, where it had previously been supposed to be of common occurrence. Altogether, careful analysis of the various Alaskan records of the Yellow-billed Loon, do not disclose any definite or authoritative information as to breeding habits or habitat.

The results of our observations of the migrations of the Yellow-billed Loon do not accord in all particulars with the conclusions

of Cooke (loc. cit.), but they do support his theory regarding the probable spring migration route of the species. Although only negative information can be contributed as to the fall route traversed, I think that if we had but enough of such negative information we might be able to solve the problem. In other words we may find out where the species migrates by learning that it does not follow certain other routes.

The first Yellow-billed Loon collected by us in 1914 was a female taken on June 3 at Humphrey Point, Arctic Alaska. This is roughly two-thirds of the way from Point Barrow to the mouth of the Mackenzie River, and near the Alaska-Canada boundary line. Other loons had been seen a few days before this, some of which I believe were Yellow-bills. From this date on until July 16, when we went aboard the ship, Yellow-bills were common. That is, from three to twenty were seen in one day (twenty-four hours) flying along the lagoons or open leads a few rods offshore. A few cut across the tundra, but our hunters out on the sandspits waiting for flights of brant and ducks, who observed and kept a record of the different species that passed, said that most of these loons followed the lagoons. After June 20 several were seen, paired, in large ponds a few miles inland, but they did not breed there, although they hung around up to the time that we left (July 16). Pacific Loons nested in the same ponds where the Yellow-bills were found, so that an inexperienced person, even with the best intentions, could easily confuse the two.

I heard of various sets of Yellow-billed Loon eggs that had been taken in this locality and near Point Hope, but when I came to run the reports down, I found that the eggs were usually collected by Eskimos, or that the collector *had seen* Yellow-billed Loons flying about the nesting ponds. The methods employed by the captains of whaling and other vessels, as well as some collectors, to secure rare Arctic eggs, has too often been to give a native some trinket to bring the eggs in. While natives are fairly accurate and observing, they are more interested in securing the reward than they are in obtaining dependable scientific facts. Hence I am reluctant to accept such evidence at full value. Then, too, many, probably nearly all, of the nesting records of the Yellow-billed Loon are from territory where the Common Loon has been known

to occur, so it seems to me that nothing short of the capture of the parent bird together with the set of eggs, by some responsible party, would constitute a dependable record.

There is another point also in this connection that may, perhaps, be emphasized here, and that is that the occurrence of many individuals in a region during the nesting season does not necessarily prove that the species breeds commonly there. During the spring of 1907, in the Sitkan district of southeastern Alaska, we found Northern Bald Eagles in abundance, as many as twenty birds being in sight at one time. Over two-thirds of these birds were adults, yet I was able to find only one pair of birds breeding, although many old, uninhabited nests were investigated. At St. Lawrence Island in Bering Sea, on June 25, 1913, Emperor Geese were found to be very numerous. Flocks of from seven to twenty were observed flying over the large lagoon on the south side of the island. We saw over one hundred birds, but none of those dissected showed signs of breeding, and no recent nests could be found. Along the whole coast of Alaska non-breeding water birds occur in numbers throughout the summer, in places far outside their breeding ranges.

Under these conditions it seems evident that something more than identification of a species is necessary to establish its status as a breeder in a locality.

The flight of the Yellow-billed Loon in migration was one of the most impressive sights of our Arctic trip. A dim speck low over the frozen tundra or glaring ice fields suddenly develops wings which beat rapidly with the rhythm and energy of a steam engine. The huge bill and neck seem to be extended slightly upwards, and the bird glides swiftly forward in a straight line with none of the undulating movements of the brant and eider ducks. The rapid "swish, swish," of the huge wings dies away in the Arctic silence, and the next moment one is gazing in the distance where a rapidly diminishing dark object seems to be boring a hole in the low clouds in the east. There was no variation in speed or direction, and the birds traveled at least forty miles an hour over a measured distance. Most of those secured were "through travellers" in full flight, and all were exceedingly fat. I weighed the fat that I clipped off of one skin, and found it to be a good two pounds. The bird weighed twelve pounds before skinning.

I believe that the spring route of the Yellow-billed Loon as suggested by Cooke is correct; at least our observations support his conclusions. The first definite data on Yellow-billed Loons were secured at Point Hope and Cape Lisburne, some two hundred miles north of Bering Strait, on the Alaska side. Here the Eskimo had cartridge or tool bags made of the necks of this species. These bags were of recent origin and could not well have been trade goods from farther north. Point Barrow seems to be the next point where the birds have been observed. Swinging wide from this point, they turn south-eastward along the Arctic coast, and head for the mouth of the Mackenzie River. Yellow-billed, or "King" Loons, as they are known locally, are reported to have been found by whalers in great numbers in a lagoon on the south end of Banks Land during the last of August and first of September.

One of the strange features of our experience with the Yellow-bill was our absolute failure to gain information as to the fall migration. The interval between July 24 and September 3, 1913, was spent between Point Barrow and Demarcation Point, Alaska. Numerous collecting excursions were made ashore while the ship was tied up to the ice, but no Yellow-bills were seen during this time. Our ship was "frozen in" about seven miles off Humphrey Point, Alaska, on September 3, 1913, and here again we failed to observe any large loon, although we especially watched for them among the waterfowl that were outward bound for Point Barrow. From our winter camp ashore we kept a continual watch for them, but observed none during the entire fall and winter. No Yellow-bills were seen during the next fall (1914) although observations were carried on until we reached Nome on September 19. Stops were made at Wainwright Inlet and Point Hope on the way down. A week was spent at Kotzebue Sound, but no sign of fall migration of the "King" Loon could be secured. In Siberia we also failed to find any sign of it during our collecting on the Chuckchi Peninsula, between June 1 and 22, 1913. Trips were made from the southern part of the Peninsula north to Cape Serdze during June and July, with collecting stops at John Howland, Providence and Plover bays, Emma Harbor, Indian or Chaplin Point and East Cape, without seeing any evidence of even the remains of the bird among the belongings of the Eskimo.

It seems probable that in southeastern Alaska the Yellow-billed Loon is rather more than a mere straggler, as would be inferred from Cooke's (loc. cit) mention of the Admiralty Island occurrence. While possibly his statement regarding this record may be considered as technically correct in viewing the May 25 observation as the only one strictly a spring record, still the capture of two specimens on Admiralty Island in May and August, 1911, respectively, and the sight of three others in the same general region during June of the same year, together with still others observed during June and November, 1910 (Swarth, Condor, vol. 13, 1911, p. 211) all tend to establish the fact that the coast of southeastern Alaska lies in the Yellow-billed Loon's regular line of travel. From personal experience with an individual apparently of this species, at Admiralty Island in the spring of 1907 (see Grinnell, Univ. Calif. Publ. Zool., vol. 5, 1909, p. 182), the writer believes that the species might occur there more regularly than is supposed, and still be overlooked.

In connection with the general problem of the migration of this species it is, perhaps, desirable to record here a specimen in the collection of the Museum of Vertebrate Zoology (no. 16694), an adult male, taken by F. Kleinschmidt at Teller (Port Clarence), Alaska, July 6, 1907.

The points brought out by our observations on the Yellow-billed Loon may be summarized as follows.

1. Corroboration in general of the spring migration route outlined tentatively by Cooke: From eastern Asia to Bering Strait, to Point Barrow, and to the Mackenzie River delta. The parts of skins seen in possession of natives at Point Hope and Cape Lisburne, Alaska (two hundred miles north of Bering Strait), and the hundreds of birds seen migrating eastward at Humphrey Point, Alaska (between Point Barrow and the Mackenzie River), in June and July, form supporting evidence.

2. Improbability that the species breeds on the Arctic coast of Alaska and Canada, which coast it traverses in migration. Collection and dissection of numerous specimens, and careful observation of living birds, are sufficient basis for this statement. Circumstances, as previously detailed, cast doubt in the writer's mind on most, or all, of the breeding records so far made from this region.

3. Our surprising failure to obtain any information regarding the fall migration. There seems to be little doubt that the Yellow-billed Loon does not leave its supposed breeding ground in the fall through the region we visited, which is evidently the highway only in the spring.

4. There seems reason to believe, from evidence as cited above, that the coast of southeastern Alaska may still be profitably scrutinized to yield information regarding the migratory movements of the yellow-billed Loon.

NOTES ON SOME MAINE BIRDS.

BY ARTHUR H. NORTON.

THE following notes refer to species of more or less unusual occurrence within the boundaries of the state of Maine together with records of two species new to the State list. One of the latter not having been previously recorded in the United States.

Stercorarius pomarinus. POMARINE JAEGER.— While not venturing to criticise the general statement, that the present species is probably the rarest of the three jaegers,[1] from local experience the statement comes as a surprise. On this coast, between Saco Bay and West Quoddy Head, the Pomarine Jaeger has been the only species found at all commonly. Of course jaegers are not common compared with gulls of the common species, yet almost any day in summer, spent at sea three or more miles beyond the bays, will usually show one or more Pomarine Jaegers, while the other species are seldom seen.

It frequently enters the broad bays, and is often to be found in the vicinity of the large tern colonies harrying the terns. The birds are well known to all fishermen and distinguished by an obscene name.

On the Maine coast they occur throughout the summer.

My extreme records are May 29 (1914) and September 22 (1913).

In late August and early September there are usually evidences of a migratory movement, as an increase of birds is noticed for a week or more.

[1] 1915. Cooke, Bull. 292, U. S. Dept. Agric., p. 7.

Larus hyperboreus. GLAUCOUS GULL.— The latest previous spring record of this Gull on the Maine coast appears to have been April 27, 1883,[1] a specimen taken at Peak's Island.

On June 3, 1915, a specimen in nearly adult winter plumage, with moult to summer plumage conspicuous, was taken near Richmond's Island, Me. The bird was with a flock of Herring Gulls.

With the latter, it came for fish dressings and in feeding seemed far more savage or voracious. While the Herring Gulls merely paused in their flight and snatched the floating matter from the surface, and continued on the wing, the Glaucous Gull mentioned pounced heavily down, into the water, seizing the food, and with wings raised in a belligerent manner, facing its companions, gulped the matter on the water, and then rose to seek more.

It was a barren bird and would probably have spent much of the season well south of its breeding range.

Larus leucopterus. ICELAND GULL.— On May 20, 1915, at the same place where the last species was taken, a female of the present species was taken. The bird which was not fully adult was slowly moulting from winter to summer plumage.

My earliest fall record is November 12 (1904) at Portland Harbor.

Larus minutus. LITTLE GULL.—A specimen of the Little Gull was taken about a mile southeast of Mosquito Island, St. George, Me., August 12, 1904. It is an adult male, in nuptial plumage, with slight traces of post nuptial moult showing in the head; primaries much worn.

The chagrin of having overlooked this bird's identity, and forgetting, through the inconvenience of moving, to examine it, is somewhat offset by the satisfaction of having personally taken so rare a specimen in my native town. This furnishes two records for the State.[2]

The bird was alone, hovering over a raft of decomposing seaweed that had lain some weeks on a shore and become filled with maggots (no doubt of the beach fly, *Cælopa frigida*) and then floated away. The bird had maggots in its stomach.

Sterna dougalli. ROSEATE TERN.— To the list of Maine specimens summarized in 1913,[3] may be added one more record. Mr. Everett Smith and I were at Bluff Island May 29, 1914, and saw and watched for some time three Roseate Terns. They were constantly chasing each other, high in the air, most of the time over the island, but occasionally flying out over the water considerably lower than when over the land. It was too early to have had eggs, as but one tern's egg was seen on the island on this day.

Hydrochelidon nigra surinamensis. BLACK TERN.— Though the

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[1] 1883. Brown, Bull. Nutt. Orn. Cl., VIII, 186. This is loosely credited to Knight in the recent Bull. 292, U. S. Dept. Agri., 24.

[2] 1910. Norton, Auk, XXVII: 447–450.

[3] 1913. Norton, Auk, XXX: 574.

Black Tern is probably a nearly regular fall migrant, it is seldom seen in numbers.

A remarkable flight was observed off Casco Bay, Cape Elizabeth and Saco Bay September 5, 1913. The boatman with whom I took passage this day, was a man very familiar with the appearance of sea birds, and he was positive that he had seen them two days earlier.

On the date above mentioned a large number of scattering individuals were seen on the ground known as West Cod Ledge, and from here to Bluff Island, a distance of fifteen miles. Besides these, one group of twelve and more were counted off Richmond's Island. Six and more were hovering over the surf on the north side of Bluff Island, and a flock of eleven were seen flying to sea as we entered Portland harbor on the return home, late in the afternoon.

The birds were usually congregated over the drifting rafts of decaying seaweed, floated from the shores, and at Bluff Island, they hovered feeding, where the surf was washing the edge of a bank of this seaweed stranded on the beach.

Several specimens collected at sea, had maggots in their stomachs, probably *Cœlopa frigida*, which breeds on the beaches in the stranded and rotting seaweed.

A noteworthy feature of this flight was that it was offshore, few or none of the birds being observed at the ponds by the sea where they usually are seen.

Oceanites oceanicus. WILSON'S PETREL.— Wilson's Petrel has usually been cited as rare on this coast.

My experience indicates that it is common at least from May 28 to September 9, five or six miles offshore. During frequent excursions of five to twelve miles offshore the past fifteen years, this is the only species I have seen by day. It is a common occurrence to attract twenty to fifty of these birds about a boat at anchor or slowly drifting, in an hour's time.

If there is any breeze the birds are found flying to windward, and when they find it desirable to work over a small space, after once passing over it, they swing away in a large circle, and again come up from the leeward. Birds showing peculiar conditions of moult, can thus be recognized, and I have watched them for long periods of time, returning again and again in the same manner. Thus a flock is composed of birds, constantly going and coming, and while fifty are in sight, probably nearly as many more are at hand, preparing to return. On these occasions they are rather silent, never noisy, but a low peeping note is often given, very similar to the note of a contented young tame duckling (*Anas platyrhynchos domestica*). Rarely I have heard them chattering, gutturally in a weak voice, audible but a very short distance, in fact, neither note is audible (to me) for more than a hundred feet in calm weather.

One of the birds which I examined alive and unhurt, was unable to stand upon its stilt-like legs, but rested on the tips of its toes and heel, *i. e.* tibiotarsal joint. I have several times seen them dive to the depth of about a foot for sinking food.

Pelecanus occidentalis. BROWN PELICAN.— In 1901 Homer R. Dill reported "*A Brown Pelican*" [1] (italics mine) captured alive at Bar Harbor in the Autumn of 1900.

Dill's photograph which appears as a cover design of the same number of the journal, is all that can be desired in showing the gular pouch extending about half way down the neck, and the lower jaw entirely bare.

This paper was followed by a statement that the bird "Was originally brought from South America on board a ship and escaped from Castine." [2]

The matter rested there until 1908 [3] when Knight said, "The Brown Pelican recorded by Dill in J. M. O. S. proves on investigation not to be a Brown Pelican at all.

It is a South American species of Pelican being one of three kept as pets by a resident of Castine. As such it has no right to be called a bird of Maine."

He further says under the caption *Pelecanus occidentalis* "neither is it entitled to the name there given to it." [4]

The only name used by Dill was "Brown Pelican"!

The bird was mounted, and is in the state museum at Augusta, where the curator, Mr. Thomas A. James, gave me opportunity to examine it, though we had no specimens for comparison. The primaries had been clipped near the tips giving support to the theory of its confinement, though rendering the wing measurement useless. The culmen measures 275 mm. (about 10.84 inches). The coloring is, above obscure brownish, below dirty whitish, the pouch showing no trace of reddish, the neck plain brownish.

The bird is evidently immature. If not of the present species, it must belong to an unknown one, as it is well within the dimensions of *P. occidentalis*, and below those of *P. californicus*, or *P. molinæ*, the only others known from South America, nor does it agree with either of the other eight pelicans characterized by Dubois.[5]

[After the above was written an article has appeared in 'Bird-Lore' [6] by Mr. John B. May, with a photograph of two Brown Pelicans taken at Castine. The birds, he states, were brought from Florida and released. Ed.]

Chaulelasmus streperus. GADWALL.— So far the Gadwall has proved to be one of the rarest Ducks known to visit Maine.

Mr. N. C. Brown, recorded two taken at Scarborough, April 29, 1879.[7] The late Alpheus G. Rogers [8] of Portland wrote in his shooting journal

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[1] 1901. Dill, Journ. Me. Orn. Soc., III: 15.
[2] 1901. [Swain], ibid., p. 18.
[3] 1908. Knight, Birds of Maine, 76, footnote.
[4] 1908. Knight, Birds of Maine, 647–648.
[5] 1907. Dubois, Genera Avium, pt. 7.
[6] Bird-Lore, July–August, 1916, p. 247.
[7] 1882. Brown, Abstr. Proc. Portland Soc. N. H., II., 2.
[8] 1903. Rogers, Third Shooting Journal.

in the fall of 1903, that three were shot at Cape Elizabeth, a few years ago, which he saw. In the fall of 1903 one was shot at Falmouth by James (not John) Whitney.[1]

In the fall of 1904 a remarkable visitation of this species to Maine took place. At Merrymeeting Bay, Frank T. Noble shot a female October 27. He stated, "On the 28th and 29th they came in fairly good-sized flocks, fifteen or more being repeatedly seen together." [2]

Seven were shot in Scarborough, about the same time or early in November. Two of the seven, two adult males, were taken by E. B. Pillsbury, November 4. One of the seven was plucked, but the others were mounted and scattered. November 7, a male was shot in Windham, on the Presumpscot River, and is preserved in the writer's collection.

Marila americana. REDHEAD.— The Redhead, though of frequent occurrence and formerly breeding, has seldom been observed in spring. It is therefore worthy of note that a pair of these birds were shot at Scarborough March 27, 1905.

Marila valisineria. CANVAS-BACK.— The Canvas-back has been considered one of the rarest of Maine ducks; the recent increase of unpublished records would seem to indicate that it has visited the state with greater frequency the past dozen years. Yet the bird is sufficiently rare to make the citation of records desirable, especially so, since the last summary [3] is incomplete and leaves an erroneous impression.

E. A. Samuels wrote, "I once killed one in Lake Umbagog." [4]

Mr. N. C. Brown recorded the fact that two were killed near the mouth of Portland harbor in the fall of 1874,[5] and that he heard of three more.

Of this same occurrence "Roamer" [Everett Smith] reported "one, October, 1874," [6] thus losing sight of one specimen. The latter communication has been taken as the source of the 1874 record by Knight in both of his works.

In his 'Birds of Maine' Mr. Smith reported a pair, male and female, taken at Great Pond, Cape Elizabeth, November, 1880.[7] Curiously, in citing this record Dr. Knight omitted one of these, recording but one.

Four were taken at Nahumkeag Pond, Pittston, "about the eighth of October, 1896." [8] by Charles Thurber, two of which were preserved.

These are the same birds reported in 'Bulletin 3, University of Maine', page 158, as taken in 1895. Since I have a vivid impression that Dr. Knight told me he had been wrongly informed of the date as given in that

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[1] 1908. Knight, Birds of Maine, 85.
[2] 1905. Noble, Journ. Me. Orn. Soc., XII, 12.
[3] 1908. Knight, Birds of Maine, 97.
[4] 1870. Samuels, Bds. N. Eng., 508. Earlier editions?
[5] 1874? Brown, Am. Sportsman. [Mr. Brown's letter was written in December, 1874, I cannot cite exact date of publication.
[6] 1874. Roamer [Everett Smith], Forest & Stream, III: 324.
[7] 1883. Smith, Forest & Stream, XX: 184.
[8] 1913. Thurber, in Epist., April 21 (1913).

work, I have no hesitancy in substituting the date given me by Mr. Thurber.

In 1902 six were shot from a flock of eight at Cape Elizabeth and of these Knight records two.[1] Thus Knight has summarized eight [2] Canvas-backs instead of fifteen.

In 1907 one was shot October 21, one October 25, one October 26, and one October 31 (or four in all) at Cape Elizabeth.

In 1912 one was taken October 30, and two November 2, at Cape Elizabeth. In 1913, seven were shot at the same place October 14.

In 1914 an adult male was taken in Falmouth, October 31, now in the collection of the Portland Society of Natural History, and in 1915 another adult male was shot at the same place November 14, and is in the collection of W. H. Rich.

Chen hyperboreus hyperboreus. SNOW GOOSE.— Of the Snow Geese shot in Maine and identified, all of the fall specimens, eight [3] in number, have been of the present form.

To this number should now be added five specimens, shot at Bowery Beach, Cape Elizabeth, Me., October 2, 1915, by F. H. Darling, who said the birds were very tame.

Five wings, probably representing three individuals, were secured, showing the birds to have been of this form. Mr. Darling said the wings saved were those of the ganders, indicating that they were the larger ones. The wings are preserved in the collection of the Portland Society of Natural History.

Macrorhamphus griseus scolopaceus.[4] LONG-BILLED DOWITCHER.— A specimen was taken in Scarborough, September, 1913, a female in fresh winter plumage.

Charadrius dominicus fulvus. PACIFIC GOLDEN PLOVER.— September 11, 1911, Mr. E. B. Pillsbury shot at Scarborough an adult female Pacific Plover. I am indebted once more to Mr. Pillsbury's keenness in the observations of birds, and detection of unusual characteristics. The bird had about half completed the postnuptial moult. Mr. Pillsbury observed that its note differed from that of the Golden Plover. The specimen has been examined by Dr. Jonathan Dwight, who concurs in my identification.

Catharista uburu. BLACK VULTURE.— On July 11, 1915, my brother, Mr. Ralph Norton, observed in Scarborough, Me., a very large and very dark bird resting motionless on a pole by a roadside: as he passed by it, it thrust up a dark bare head. This description which he gave me leaves little if any doubt of the bird's identity. This, so far as I am aware, is the first Black Vulture to be detected in the vicinity of Portland.

This seems an opportune time to undertake the task of revising the confused Maine records of this bird.

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[1] 1908. Knight, Birds of Maine, 97.
[2] 1908. Knight, l. c.
[3] 1913. Norton, Auk, XXX, 575.
[4] 1913. Norton, Auk, XXX: 576.

It was apparently first recorded by Mr. Geo. A. Boardman in 1869,[1] a specimen taken near Calais. Though mentioned as the first to come to his notice the exact date is not given.

In 1875[2] another was recorded by Mr. Boardman at Calais (original record not seen).

In 1893,[3] Mr. Wm. Dutcher (on the statement of Mr. Boardman) recorded a third from Calais. Mr. Dutcher quoted Boardman as writing that it was the sixth he had known from the vicinity. Since Mr. Boardman included the "St. Croix Valley," Grand Manan, and adjacent islands in his vicinity, there can be little or no doubt that the six included the Campobello, Grand Manan and other New Brunswick records.[4]

September 25, 1897,[5] Wm. L. Powers shot an adult male in Whitefield, On August 26, 1904,[6] an adult male was shot at Lubec, and secured by Clarence H. Clark.

August 20, 1901,[7] a specimen was taken alive near Dover, and one[8] has been recorded as shot at Eliot (date not given).

July 6, 1909,[9] an adult male was taken at Monhegan Island, and passed into the possession of Judge Charles F. Jenney.

Tyrannus melancholicus satrapa. LICHTENSTEIN'S KINGBIRD.—On October 31, 1915, Mr. George Oliver observed this stranger near his house in Scarborough, and secured it for the collection of the Portland Society of Natural History. Mr. Oliver said that it was seen the day before it was taken, and was thought to have been a shrike. Upon reaching the identification given, it was sent to the United States National Museum, where it was confirmed by Mr. H. C. Oberholser, and Mr. Robert Ridgway. The bird was a young male, in very good condition. The digestive organs were sent to Mr. W. L. McAtee, of the U. S. Biological Survey, who gave the following report, with permission to use it in the present connection.

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[1] 1869. Boardman, Am. Nat., III, p. 498.

[2] 1875. Boardman, Forest & Stream, III: 375. See Bailey, 1881, Forest & Stream. Bird Notes, 30.

[3] 1893. Dutcher, Auk, X: 82.

[4] In 1897 (Bull. 3, Univ. Me., p. 58) Ora W. Knight attempted a compilation of the Maine records of the Vultures committing several serious errors. In the work cited, Mr. Smith's report of *Catharles aura septentrionalis* (Forest & Stream, 1883, XX: 285) was transferred to the present species. In Birds of Maine, 1908, p. 213, the report is dropped, with the erroneous statement that Mr. Smith had reported the wrong species. (Cf. Auk, XXVIII, 263–264) and the Campobello, N. B., specimen of the present species, recorded by Boardman, 1879, F. & S., XIII: 605, and Deane, 1880, B. N. O. C., V: 63 and Smith, 1883, F. &. S., XX: 26, was reported as an Eastport specimen. This error also reappears in Birds of Maine, 1908, page 215.

[5] 1897. [Powers], Maine Sportsman, Nov., 1897, 8.

[6] 1905. Clark, Journ. Me. Orn. Soc., VII: 23.

[7] 1908. Knight, Birds of Maine, 215.

[8] 1908. Knight, W. L. Fernald, Birds of Maine, 215.

[9] 1909. Maynard, Records of Walks and Talks, with Nature, II: 116–122, also Journal Me. Orn. Soc., XI: 121.

"Remains of at least 16 *Muscidæ*, part of them *Pallenia rudis*, and part of a metallic kind, probably *Phormia*, 96%; 1 *Scatophaga furcata* and 1 *Syrphus* sp. 4%; bits of unidentified vegetable matter tr. The intestines contained finely ground material of the same character."

This occurrence adds a new form to the North American catalogue, its range being "Western and Southern Mexico from states of Sinaloa and Southern Vera Cruz, southward through Central America, Colombia, Venezuela and Guiana to Trinidad, Tobago, and lower Amazon Valley." [1]

It should be recalled in connection with this waif that two very intense tropical cyclones visited the United States, one in August, the other in September, 1915.[2]

Regulus calendula calendula. RUBY-CROWNED KINGLET.—On January 13, 1916, Mr. W. H. Rich brought me an adult male Ruby-crowned Kinglet which had been found dead in a greenhouse near his residence in Falmouth. As the winter had been very mild and the greenhouse frequently opened for ventilation, it could not have been confined during the winter, nor had it been seen by the owners, on their daily visits. The bird was slightly putrid, the eyes and feet much dried, yet it could not have been dead for more than a week.

This species migrates through this region in October, the latest instance of its occurrence that I have found being Phillips, October 25, 1911.[3]

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[1] 1907. Ridgway, Bull. 50, U. S. N. M., pt. 4, 702.

[2] Cf. Mo. Weather Rev. Aug. 1915 and Sept. 1915: also Brooks, Science, N. S. XLIII: 214, 215, (Feb. 11, 1916).

[3] 1915. Cooke, Bird-Lore, XVII: 124.

NOTES ON SOME SPRING BIRDS OF LA PLATA.

BY ROLAND F. HUSSEY.

FOR about six months beginning July 22, 1914, the writer had his residence in the Observatorio Astronómico at La Plata, Argentina, about thirty miles southeast of Buenos Aires city. During the first few weeks of this period field work was made very difficult by adverse weather conditions: the year 1914 was abnormally rainy throughout Argentina, and the level country about La Plata was nearly impassable through the early spring months. But toward the middle of September conditions improved greatly, and field work soon became comparatively easy.

Observations were made in three general regions about the city of La Plata. The first includes the Bosque park and the observatory grounds — both within the city limits — and a little of the surrounding region. The Bosque is a large artificial woodland set about an artificial lake. The trees here are chiefly the eucalyptus; also there are some willows, poplars, sycamores, etc. Within the Bosque is a zoological garden, to which many small birds are attracted by the abundance of food. Also, the famous La Plata Museum is located in the Bosque.

The observatory grounds are much more open, and several species of ground birds frequent them, notably the Cowbird, the Ovenbird (*Furnarius*), the Chingolo Sparrow, the Ovejera (*Machetornis*), the Guira Cuckoo, and others. There are in all about eighteen buildings on these grounds, several of which have steeply sloping roofs with wide eaves; and here the common swallow breeds quite frequently. The observatory grounds are shut in on three sides by the eucalyptus forest of the Bosque; to the north they are open and a clear view is obtained across the level fields to the river Plate, about five miles distant.

The second of the three general regions mentioned above proved the least profitable. It includes a small pond of open water and an arroyo grown up with rushes, and is surrounded by very wet meadows. It is just off the railroad track about four miles south of the city.

The third region, by far the most important, includes a strip of land along the great municipal sewer to the northeast of La Plata; it is made up of several distinct subregions.

The first subregion is about four miles in length: a vast marsh all grown up with ten-foot grasses, but without other trees or bushes than a few slender willow stalks. The great brick cloaca is entirely above ground through this region, and gives an excellent place of vantage from which an extensive vista over the marsh is secured. Probably there are some areas of open water within the region, as several species of ducks were seen to rise from and settle into the more distant parts.

For the most part the water in this marsh is shallow — not more than eight inches deep in most places, at least under normal conditions. But the river Plate is greatly affected by the winds. A two-days' "pampero" from the south may back up the water until it stands ten feet or more above its usual level, while a wind from the north may produce just the opposite result; and the whole marsh area is more or less affected by the water level in the river, especially during these times of abnormally high or low water. Toward the end of December, as the dry season approached and there were no strong up-stream winds, a large part of this marsh dried up; this produced some change in the bird life, of which the most noticeable feature was the withdrawal of the Snail Hawk (*Rostrhamus sociabilis*).

The second subregion is about two miles long. Here the land is higher, and trees and thorny bushes begin to make their appearance. A large part of this region is given over to small gardens and to pasture. A tramway runs from here to the port of La Plata, where connections are made with a line from the city itself.

The third region extends on about two miles, to the river Plate. This is the most diversified of all those in which work was done. Small gardens, diked about to guard against high water, alternate with bits of open marsh and fragments of the original swampy forest, and with dense groves of poplar and willow and other quick-growing trees, planted for future use as firewood. Wood-cutting is always going on here; and so the region has been given the name Los Talas — apparently with absolute disregard for the rules of Spanish grammar.

The original tree of the swampy forest (*Erythrina crista-galli*) puts forth in December large masses of dark red blossoms, around which numbers of hummingbirds are seen. But this tree has largely been cut off, and is now confined chiefly to a strip along the shore of the river, where the land is cut up into many little islands by narrow canals and ditches. Finally, along the shore of the river itself, is a narrow strip of sandy beach.

Almost no collecting was done by the writer during his stay in La Plata; therefore no species have been included in the following list regarding whose identification there was the slightest doubt: to phrase it differently, none of the forms listed below was regarded as hypothetical. So this list includes but a few of the species whose range includes La Plata.

The nomenclature used here is for the most part that given by Dabbene in the 'Catálogo' to his 'Ornitología Argentina' (1910) [1]; in a few cases other names, given by him in more recent publications, have been employed.

1. **Zenaida auriculata** (Des Murs). "TORCASA."— This dove is very common in comparatively open country where there are scattering clumps of trees or bushes; I never found it in heavily wooded districts or in the Bosque — in fact, I never saw it at all near the city. In the spring and summer it was always seen singly or in pairs, but I was told that later it gathers into large flocks. The song is often heard; the notes have a sweet and sorrowful quality which gives something of the effect of our Mourning Dove's song.

A nest found December 22 contained one bird not yet completely feathered out. The nest was a crude structure of sticks, in a thorny bush about four feet from the ground, and was at the edge of a garden plot near Los Talas.

2. **Columbula picui** (Temm.). "TORCASITA," "PICUI."— This small dove was much more frequently seen than the preceding species — not because it was more plentiful, since the reverse is the case, but because it comes around the edge of the town and was quite common in the Bosque. It was usually seen in pairs, though in the winter and the early spring small parties of about fifteen birds were not uncommon. The song of this bird was quite familiar; it is not so pleasing as the song of the preceding species.

3. **Aramides ypecaha** (Vieill.). "GALLINETE."— The powerful cry of alarm and the shrieking chorus of this rail were familiar to me long before I learned the identity of their author.

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[1] An. Mus. Nac. Buenos Aires, ser. 3, v. xi.

On one occasion I was so fortunate as to witness one of the strange performances characteristic of this bird. I had concealed myself near an open place in the marsh, hoping to see some of its rarer bird-life, when I heard a loud triple call note, which was answered by other birds. In a very short time about half a dozen ypecahas appeared in the open area; and there, with wings raised and trembling and beaks vertical they rushed about madly, screaming at the tops of their voices. This lasted for perhaps a minute, when all at once one bird seemed to discover my presence and gave the loud alarm cry, upon which all the birds fled.

This was the only time that I saw the ypecaha in its own haunts; but on another occasion I saw one perched upon a fence post at the edge of the marsh, and was able to approach quite close before he showed the least sign of fear. This seemed quite remarkable to me, since the ypecaha, like others of his family, is usually very wary and keeps well concealed.

4. **Sterna superciliaris** Vieill.— This little tern was fairly common about the port of La Plata during the winter and early spring. A larger tern (*S. hirundinacea*?) was also seen occasionally.

5. **Larus maculipennis** Licht. "GAVIOTA COMÚN" (COMMON GULL).— The spot-winged gull was seen but seldom; usually in flocks of about twenty individuals. On one day only, December 22, did I see any number of gulls. On that day they began to come in sight about ten o'clock in the morning, flying up-stream in small flocks of about a dozen birds, the flocks following each other at intervals of about three minutes, and the gulls continued to pass me for more than an hour.

It has seemed very strange to me that there were so few gulls about the beaches near La Plata, particularly since so much fishing was done and so much refuse was about; and these gulls are particularly noted as scavengers. But although caracaras were occasionally found there, the gulls were seldom seen.

6. **Larus cirrhocephalus** Vieill.— While in some plumages this gull and the preceding resemble each other closely, during the breeding season they are distinct. I saw this gull several times, always in company with the other, and all my records were made during the early part of October.

7. **Larus dominicanus** Licht.— This large gull was seen only a few times, during the winter months, and always singly or in pairs.

8. **Belonopterus cayennensis** (Gm.). "TÉRU-TÉRU."— No one can live long in the Argentine without knowing the Teru; and should he go abroad into the camp the Teru will soon be aware of his presence. The Terus are usually seen in pairs; and each pair has its own little domain to which they are much attached, and they can usually be found there. Toward all intruders the Teru is very bitter; he flies closely about them, shrieking loudly the two-syllabled cry of which the common name is an imitation. I have known them to fly so close as to brush me with their wings.

Being such a noisy bird and so suspicious of strangers, the Teru is considered by many an excellent guardian and as valuable to a household as a watchdog; I myself know of at least two cases where these lapwings are

kept as guardians. Besides, the Teru is an attractive bird, and is often kept in private gardens on that account.

9. **Gallinago paraguayæ** (Vieill.). PARAGUAY SNIPE.— Frequently flushed from wet meadows and marsh-land where the grass was fairly short. In the small arroyo south of La Plata, mentioned in the introduction, this bird was very common, notwithstanding the nearness of human habitations and the frequent passing of hunters. In their general appearance and their habits this snipe seemed to resemble *G. delicata* of North America.

10. **Aramus scolopaceus** (Gm.). "CARÁU"— The Courlan was very plentiful in the marshes all about La Plata and their voices were among the most familiar sounds of the swamp. They were very suspicious and wary toward a man on foot, and would not allow an approach to within a hundred and fifty yards without flying; yet I frequently noted that they took no notice of passing trams though within fifty yards of the track. I never saw these birds anywhere except in the open marsh; but I was told that they perch occasionally in trees.

11. **Butorides striata** (Linn.).— This little blue heron was tolerably common at La Plata, where it seemed to be solitary in its habits. I never saw it anywhere except in the wooded regions at Los Talas — save when in flight — and it seemed very much attached to its particular haunts, and could be found there day after day.

12. **Ardetta involucris** (Vieill.).— I believe this heron to be tolerably common in the open marsh where the grass grows tall, despite the fact that I have very few records of it. So protective is its coloration that its detection is almost impossible even though the spot where it settles is marked carefully. The bird is about the size of the Least Bittern (*Ixobrychus exilis*), with the coloration of the North American Bittern (*Botaurus lentiginosus*), and like this latter bird, when trying to escape detection it stands motionless among the reeds with bill pointed vertical, and it always keeps its breast toward the invader. Only once was I able to find this little heron after it had dropped into the grass.

I was told that the common name for this bird is "Bruja" (witch), but the name does not seem to be well known. What its significance is I do not know.

13. **Metopiana peposaca** (Vieill.). ROSY-BILLED DUCK.— This was the only member of the family that I saw at all frequently. I always found it in flocks of about half a dozen birds.

14. **Querquedula cyanoptera** (Vieill.). CINNAMON TEAL.— Seen in all but four times, and only during the early spring.

15. **Phalacrocorax vigua** (Vieill.).— I found this cormorant several times; it was always in pairs, whether swimming or flying. I never saw it perched.

16. **Polyborus tharus** (Mol.). "CARANCHO." The Caracara was seldom seen. On two or three occasions I found a pair perched in the trees along the shore of the river while the nets were being hauled in by the fishermen. Except for these, the only ones seen were a pair noted several

times near Conchitas, about midway between La Plata and Buenos Aires.

17. **Circus cinereus** (Vieill.). CINEREUS HARRIER.— Seen only twice, both times by a muddy stream south of the city. They seemed quite sluggish in their movements and quite unlike the next species.

18. **Circus maculosus** (Vieill.).— Larger and darker than the preceding and much more active in its habits. It seemed much more common during the cooler months than later in the year.

19. **Rostrhamus sociabilis** (Vieill.). SNAIL HAWK.— By far the most abundant large bird at La Plata. I first saw them in August flying in great flocks over the marshes; at times their flight was very suggestive of a *Buteo*, and at other times they swept low over the grass like a harrier, or perched upon slender willow stalks which bent nearly double under their weight.

From then until December they were abundant; but above all they were snail hawks, and as the summer weather approached and the marsh dried up, the snails became more and more difficult to find, and the hawks began to disappear. Finally, on January 16 in a whole day's tramp I did not see a single *Rostrhamus*; while beneath nearly every post and willow stalk was a pile of empty snail shells, evidences of the bird's previous residence.

20. **Parabuteo unicinctus unicinctus** (Temm.).— This hawk was seen but twice. Its actions recalled a harrier, but its flight was more sluggish even than that of *Circus cinereus*.

21. **Nyctalops accipitrinus cassini** (Brewer). SHORT-EARED OWL.— Frequently seen flying low over the higher ground at the edge of the marsh, especially where the grass is fairly short. It seems to fly most about twilight, both in the morning and evening, yet I have also seen it near noon in brightest sunlight. It is not at all shy, and did not seem to note my approach with any show of fear. I have never heard other notes from it than a loud hooting at twilight.

22. **Tyto flammea perlata** (Licht.). "LECHUZA."— The Barn Owl is resident about the city of La Plata, and though not very numerous, is well known. Its common note is a hissing scream like the sound of escaping steam; on one occasion I heard the cry which Bendire, speaking of *T. pratincola*, described as "a feeble, querulous note like 'quäek-quäek' or 'äek-äek.'"

23. **Speotyto cunicularia cunicularia** (Mol.).— The Burrowing Owl does not seem to be very common about La Plata. I saw a few in an open field south of the city, but no others except when on a trip to Córdoba.

24. **Ceryle amazona** (Lath.). "MARTÍN PESCADOR."— Once when I was walking along one of the canals in the littoral forest at Los Talas, a rattling call struck my ear, and on tracing it to its author I found this kingfisher. The only other time that I saw it was with several of the next species.

25. **Ceryle americana** (Gm.). "MARTÍN PESCADOR."— This little Kingfisher met with only at the Estancia Pereira, about midway between La Plata and Buenos Aires. A small stream has been dammed to form a

little lake in the midst of an artificial woodland, and here this little kingfisher was quite common in January. A few of its larger cousins, *C. amazona*, were seen at the same time.

26. **Chordeiles virginianus** (Gm.).— The Nighthawk was heard one evening about sunset above the observatory, and I was not long in discovering the two birds. Several days later, January 9, I saw two nighthawks again, possibly the same birds.

27. **Chlorostilbon aureoventris aureoventris** (Lafr. et Orb.). "PICAFLOR."— These Red-billed Hummingbirds were very common both in the Bosque and at Los Talas, first appearing in numbers late in August. They occasionally flew into the buildings at the observatory, but were quick to escape. On one occasion, however, two birds flew into a room through an open door and were unable to find their way out. One flew against the window screens; I let him escape. The other seemed to have lost all sense of direction. He was buzzing about the ceiling, and soon was so thickly covered with cobwebs that he actually could not move his wings, when he fell to the floor. His bill was wrapped around with webs so that he could not open it, his wings and tail were thickly covered, and his feet were all tangled up. I picked him up and proceeded to clean off the webs — a twenty-minute task. When I had finished the bird seemed nearly exhausted, so I dipped my finger in water and held the adhering drop close to his bill. He drank eagerly, running his tongue in and out through the drop, which disappeared very rapidly. A second and a third drop of water followed the first; then I took the bird outside and released him.

The Red-billed Hummer has a rather monotonous song which he delivers while perched: a few quick chirps, followed by five or six squeaky trills in quick succession.

28. **Coccyzus melanocoryphus** Vieill.— The Common Cuckoo was tolerably common in thick groves of trees, and its voice was often heard. It resembles the North American cuckoos more or less, in habits and in notes.

29. **Guira guira** (Gm.). "URRACA" (MAGPIE).— In voice, in appearance, and in habits is this long-tailed Cuckoo unpleasant. And of all the birds about the houses at the edge of town, the Urraca is the most in evidence. Its notes may be heard at all hours of the day: a series of two-syllabled whistles, rather clear and high-pitched at first, but becoming lower and hoarser as the song progresses.

The Urraca seems never to have mastered the art of alighting on a wire or other slender perch. Invariably the bird approaches rapidly and strikes the perch forcibly; he does not drop the tail to check his speed, but carries it straight out behind him. The effect of this is that as the bird strikes his perch the momentum of the tail seems to drive him on, and it is only after a struggle that he is able to maintain his footing.

The Urraca is quite at home on the ground; in fact I never saw him feed elsewhere. At night the birds roost in small companies in the eucalypti.

30. **Dendrocopus mixtus** (Bodd.).— This little woodpecker, the only

one which I saw at La Plata, is rather rare and is confined to the swampy woods along the river.

31. **Furnarius rufus rufus** (Gm.). "HORNERO."— The Ovenbird is one of the most common birds in the region about La Plata wherever there is a support for its nest, and its huge mud oven is a very familiar sight when travelling through the country. The oven is usually placed high and in a commanding position, but not invariably. One of the most unusual nest sites I have ever seen was adopted by a pair of these birds: there is a large copy of the Venus of Melos on a large pedestal in a stream about midway between La Plata and Buenos Aires, and a pair of Horneros built their oven between the feet of the goddess!

32. **Phlœocryptes melanops** (Vieill.).— A tiny bird, yet not hard to find. It is one of the most common birds in the rushes, where its curious woody creaks and tapping notes are most familiar sounds. The bird is possessed of a great deal of curiosity.

33. **Synallaxis albescens albescens** (Temm.).— Several birds either of this species or of *S. spixi*, possibly of both, were rather frequently met with at Los Talas. Each pair seemed much attached to a particular part of the woods, and could usually be found there. They kept well concealed in dense bushes for the most part, where they were difficult to locate despite their loud persistent song. A nest which I saw one of these birds enter was very large, of thorny sticks in a thorny bush, about four feet from the ground, and had a very narrow and crooked passage leading through the thick front wall to the nest proper. It contained no eggs at the time.

34. **Cranioleuca maluroides** (Orb. et Lafr.).— The harsh cackling notes of this bird were not infrequently heard in the marsh, but I was only once able to catch the bird in the act of singing.

35. **Anumbius anumbi** (Vieill.). "LEÑATERO."— The common name of this bird, which may be translated "wood-gatherer," seems particularly appropriate when its nest is seen. These immense stick nests may be found wherever there is suitable support, yet the bird prefers open situations and above all delights in building its home in the top of a slender poplar. Only once did I find a nest in a eucalyptus, and once, on July 25, I found a pair of the Leñateros starting a nest among the lower branches of an ombú.

The nest is not always built in trees. In November I found a nest under construction within and around the lattice-work of a semaphore tower beside a railroad. I watched this construction with great interest. First the nest cavity proper was outlined with rather small sticks, then its wall was somewhat thickened before the construction of the passage-way was begun. The wall of the passage way was extended little by little from the original nucleus of the structure; and when it had reached a length of about ten inches the birds turned their attention to covering the entire outside of the structure with a thick mat of sticks. When the whole had reached about a foot and a half in length and about twelve inches in diameter, it began to interfere with the proper working of the semaphores, and was torn down.

But as far as unusual situations are concerned, the prize goes to a pair of Leñateros that built their nest directly upon a trolley wire where a guy wire gave the necessary support; and they seemed utterly unconcerned at the regular passing of the trams below them. I could not see why the nest did not fall from its position; as far as I could tell it was not secured to the wires in any way, but seemed merely to be laid upon them. I finally came to the conclusion that the mere weight of the nest was probably what gave it its stability.

The Leñatero is very plentiful, especially about the edge of the town, and his unpretentious trilling song is heard all day long, in the cooler months as well as in the summer. I rarely saw it perch upon fences, and scarcely more often in trees. It feeds entirely on the ground, and its flight seems feeble.

36. **Thryolegus curvirostris** (Gould).— Another bird of the marsh, seldom seen in the middle of the day, though its rattling, jarring notes may be heard at any time. Toward evening it comes to the top of the reeds to give its peculiar song.

37. **Phacellodomus striaticollis** (Orb. et Lafr.).— This loud-voiced bird is quite common beside the canals and ditches, particularly where there are scattered bushes. It does not seem very shy.

About the middle of October I had an opportunity to watch a pair of these birds building a nest, in a fork of a young tree about eight feet above the water in a canal. The birds did not work continuously at building; at about ten minute intervals they appeared with sticks and twigs, then worked for about five minutes, after which they rested again. During these brief working spells one bird stayed at the nest and put into place the material which the other brought. At intervals one bird or the other gave its peculiar song, the following description of which is taken from my note-book:

"The Reed-bird's song began with a few chuckling notes, followed abruptly by a series of shrill penetrating shrieks, high-pitched at first, but each a little lower than the one preceding it. The 'song' continued about eight seconds, then stopped abruptly. Sometimes the two birds united in a shrieking duet, as do the Ovenbirds and other familiar species."

While not at work upon the nest the birds kept out of sight in the rushes at the side of the canal. Unfortunately this nest was destroyed before it was completed, and the birds left the place.

38. **Tænioptera dominicana** (Vieill.).— These black-crowned tyrants were not seen often, probably because very little time was spent in working the dry barren regions to which they are partial.

39. **Fluvicola albiventer** (Spix).— The contrasting areas of black and white on this bird make him very conspicuous. He is quite frequently seen in the marshes and along the banks of the canals.

I was surprised to read that Hudson considered this a shy bird, and rather difficult to see. On the contrary, I often saw it perched conspicuously on low branches and on reeds, close to the water, from where it made

sallies for passing insects in true flycatcher fashion, often coming quite close to me. And I have seen them pursuing each other about, when they passed within a few feet of me, heedless of my presence.

40. **Sisopygis icterophrys** (Vieill.).— I first saw this pretty tyrant bird in the observatory grounds, on August 21; for about a month I did not see it again, then it became quite common where the open country was broken by a few trees or bushes. It is a quiet bird, with many of the habits of the true flycatchers.

41. **Lichenops perspicillatus** Gm. "PICO DE PLATA" (SILVER-BILL).— This remarkable tyrant bird is common in marshy regions; it is unique in many ways. The sexes differ not only in color, but structurally and in habits. Both feed on the ground, but the male also gets a part of his food on the wing. All the males seem to possess the habit of shooting up vertically to a considerable height, then dropping back suddenly to their perches; but the performance differs somewhat in different birds. One bird may turn a somersault at the height of his climb, while another may drop back to within a few feet of the perch before executing a lightning-like flip, and I saw one or two birds which did not turn over at all, though I watched them closely for some time. Some birds utter a shrill cry during the performance, others are entirely silent. All seemed to move their wings so rapidly as to produce a humming sound, which varies in intensity from a barely audible whisper to a deep drumming sound easily audible a hundred yards away.

42. **Machetornis rixosa rixosa** (Vieill.).— This tyrant bird is colored in a way which is very suggestive of many species of *Tyrannus*; but its habits are entirely different. It lives on the ground, and is most often seen about the heads of the domestic animals with the cowbirds, and it is due to this fact that they have been given the common name "Ovejera" (shepherd).

43. **Myiosympotes flaviventris** (Orb. et Lafr.).— This little tyrant is one of the most common of the family at La Plata, being found wherever there are scattering bushes or where the weeds grow tall. There is little in its habits to suggest a tyrant bird; rather it suggests a small Vireo, though perhaps it is more energetic in its movements than those birds; and it has a rather formal little song of six or seven notes which it delivers in a jerky manner.

44. **Serpophaga subcristata** (Vieill.).— A small tyrant bird whose appearance and habits suggest a *Polioptila*. It was quite common in the bushes about the observatory, and also at Los Talas. While it was first seen in July, it was most common from September on.

45. **Serpophaga nigricans** (Vieill.).— Much less often seen than the preceding, and only at Los Talas, where it was flitting restlessly along the canals, snatching its food in the air.

46. **Cyanotis rubrigaster** (Vieill.). The "Siete colores" (Seven colors) is one of the most beautiful birds I have ever seen. While he is most at home in the tall marsh grass, he is often found elsewhere during

migration, and on August 11 I found a pair in a flower-bed in the Bosque. As Hudson has said, they are very inquisitive, and if a person approaches their reed-bed they "come out to meet him, uttering their silvery gurgling notes." They are quite plentiful in the great marsh northeast of the city, and I found them there from September 2 until late in January.

47. **Elainea albiceps albiceps** (Orb. et Lafr.).— Fairly common during the spring and summer months, and seen most frequently by the roadsides or on the higher ground.

48. **Pitangus sulphuratus bolivianus** (Lafr.). "BIÉN-TE-VEO" or "BICHO FÉO" (in imitation of its call). The Bienteveo is one of the first birds to attract the attention on coming into such country as that around La Plata. It is exceedingly versatile in its habits, and its notes are quite varied, though all have a rather harsh tone. It is very common in the Bosque, and also around the houses in the country. I found a nest with eggs as late as January 14.

49. **Myiophobus fasciatus fasciatus** (Müll.).— The little brown tyrant is very common at Los Talas late in the spring; it was found singly or in pairs and had the usual habits of the Tyrannidæ.

50. **Pyrocephalus rubinus rubinus** (Bodd.). VERMILION FLYCATCHER. — The vermilion tyrant bird is commonly called the "churrinche" from its note. I first saw it at the observatory, September 25, and from that date until I left La Plata it was very common in the Bosque and in the camp. It is not fond of heavily wooded districts or of swampy regions. Its habits are largely those of the typical flycatchers.

The Churrinche has a very pretty song which it utters when on the wing, much as does our Goldfinch, but the Churrinche moves its wings much more rapidly. The bird also sings at night without leaving his perch; and this night song is one of the most pleasant memories I have of my visit to the Argentine.

51. **Tyrannus melancholicus melancholicus** Vieill.— This Kingbird is common in the littoral forest, and to a lesser degree in the Bosque. It is as pugnacious as the North American Kingbirds, which it resembles in habits even to its hatred toward Hawks and other birds of prey. Though I have seen several Hawks put to flight by these birds, I never saw them attack the most common Hawk of the region, *Rostrhamus sociabilis*.

52. **Muscivora tyrannus** (Linn.).— The "Tijereta" (Scissor-tail) is a bird which cannot be overlooked. I first saw them October 18, when they became fairly common, and remained so until I had left La Plata. Many times in the Bosque at sunset I observed them going through a curious performance, mounting high in the air and whirling about, opening and shutting their tails, and then descending to the trees, all the while uttering percussive notes not unlike those of our Kingbird (*Tyrannus tyrannus*).

53. **Iridoprocne leucorrhoa** (Vieill.).— This, the most common swallow of the region, is abundant throughout the year about the houses in the camp and at the edge of town, though most numerous in summer. It

nested in considerable numbers under the roofs of several of the observatory buildings.

This swallow is the first bird heard in the early morning in La Plata, long before there is a suggestion of light in the east.

54. **Progne chalybea domestica** (Vieill.).— This sweet-voiced Martin is met with occasionally in the city of La Plata as well as on its outskirts, but is not common as a town bird. It has apparently suffered much from the introduction of the European House Sparrow, and seems now rather to avoid localities where those birds are numerous. The following story, told me by a friend, shows that sometimes the Martins turn upon the Sparrows.

During the summer of 1913–14 a pair of these Martins were seen building a nest under the eaves of a building near La Plata. They had made good progress, when a pair of Sparrows were noticed about the nest quite frequently. Finally, when the nest was almost done, the Sparrows began to approach the nest more closely while the owners were absent, and then to clamber over it, and finally to enter it. Once, when the Martins returned to find the Sparrows inside, a battle followed in which the Martins were decidedly worsted; after this the Sparrows boldly took possession. Then the Martins waited until both Sparrows were inside; one bird saw to it that they did not escape, while the other went for mud and plastered up the opening.

55. **Phæoprogne tapera** (Linn.).— This Martin is much more often seen than the preceding, despite the fact that it does not gather in flocks, as do the other swallows of the region. The flight of this bird has a peculiar feature: at times the wings are depressed much as those of a duck taking to water, and are constantly agitated with tremulous flutterings. This bird breeds only, as far as I could learn, in the abandoned nests of the Ovenbird; or, if none are available, it drives out the owners and takes possession of the oven by force.

56. **Petrochelidon pyrrhonota** (Vieill.).— I saw this swallow only on a few dates in October, and judged that it was a migrant; later I was told that this is the case.

57. **Troglodytes** sp.— There are two forms of *Troglodytes musculus* found at La Plata. *T. m. guarixa* and *T. m. hornensis*. The first of these is the more common; but the difference between them is so slight that to most people they are a single bird.

The Wren is very common and one of the best known birds in La Plata, where it is called the "Ratonera." The song is suggestive of that of the North American House Wren (*T. aëdon*), but is shorter and less varied. The nesting habits are about the same; but one remarkable case came to my notice, which I shall describe here.

About the middle of October a pair of Wrens started to build a nest under a hood in the observatory grounds which had been designed as a shelter for an electric light. They soon abandoned this site, built their nest elsewhere, and raised a brood of seven. Meanwhile a pair of "Mistos"

(*Sicalis pelzelni*) took over the old place, completed the nest which the Wren had begun, and seemed undisturbed; often I started the female from the nest as I passed by along the path. But on November 29 it was a Wren that flew from the nest as I approached. I investigated, and found three eggs of the Finch and two of the Wren in the nest. For several days after both birds were seen about the hood, nor did I detect any signs of ill feeling between them, and I was as likely to start one from the nest as I was the other. But unfortunately on December 3 the eggs were stolen by an Italian boy, and the female Misto was killed.

After about a week the Wrens returned to the nest, four more eggs were laid, incubation was started December 13, the eggs were hatched on December 26, and on January 8 the birds left the nest.

Another pair of Wrens built a nest in a little-used room of the machine shop at the observatory; the nest was placed in a box half full of miscellaneous bolts and screws, and seven eggs were laid which averaged 1.78 × 1.28 cm. In shape these eggs varied greatly, from some which were nearly elliptical to one which was actually pear-shaped!

57. **Planesticus rufiventris** (Vieill.). "ZORSAL."— I first saw this thrush on the sandy beach near the mouth of the ship-canal at La Plata, where it was running along just as does the North American Robin, cocking its head sideways from time to time as if it were listening for grubs. I did not see it extract any food from the beach; nor did this surprise me, for I should not suppose that a sandy beach so exposed to wave-action would be a very suitable place for a thrush to seek its food; and I decided that this action of the Zorsal was brought about by mere force of habit.

The Zorsal is much less bold than is our Robin; it never comes about the houses, but is confined to wooded districts. Its song resembles that of the Robin, but is more coherent; and it seemed to me that although inferior in strength, the voice of the southern bird is the sweeter.

58. **Mimus saturninus modulator** (Gould). "CALANDRIA."— The only Mockingbird that I saw at Los Talas, and not very plentiful there. Its song is like that of the typical Mimidæ, but I could not actually detect traces of other bird songs in it. On the whole I found it rather shy, and only occasionally did I see it about the houses or perched conspicuously.

59. **Polioptila dumicola** (Vieill.).— This dainty little Gnatcatcher resembles the North American *P. cærulea* closely, in appearance, in habits, and in notes. In the thickets at Los Talas it was tolerably common during the spring; my only record for the Bosque was a pair seen in an evergreen on December 21.

60. **Anthus correndera** Vieill. "CACHILA."— Four species of Pipits are catalogued as occurring at La Plata; the present species seemed to be the most common. It seemed to prefer marshy ground and wet meadows; at any rate I found very few Pipits on higher ground which showed the white shoulder marks that characterize this species.

The Pipits are very plentiful in the open plains about La Plata. They

are not shy, and unite in small flocks, so that it is quite easy to study their habits.

To sing the Cachila mounts to a considerable height; then with wings turned upward he begins his descent. He drops down a few feet, utters a sweet "Cachila," then swings upward a short distance, and a gentle hissing sound is heard. He repeats this again and again until he reaches the ground. I never saw one rise to repeat the song without alighting on the ground. Thus the descent from a great height is made up of a series of little dips and rises, punctuated with bursts of song.

61. **Geothlypis æquinoctialis cucullata** (Lath.).—This little Masked Warbler is quite common in bushy ground, and it even comes about the houses in the Los Talas region. Its song, as Mr. Barrows says, is very suggestive of a subdued warbling of our Purple Finch (*Carpodacus purpureus*).

62. **Stephanophorus leucocephalus** (Vieill.).— This beautiful Blue Tanager is exceedingly shy, and though he may be heard often during the spring, he is very hard to locate. The song is rather pleasing, although somewhat jerky.

63. **Tanagra bonariensis** (Gm.).— Soon after my arrival at La Plata in July my attention was called to a party of these pretty birds in an oak tree in the observatory grounds. From that date until late in September I found small flocks of them in the Bosque. The only note I heard from them was a reedy call.

64. **Sporophila cærulescens** (Bonn et Vieill.). "CORBATITA."— These pretty little Finches appeared in numbers late in November, and were abundant in the fields wherever the weeds grew tall. They were commonly seen in groups of four or five birds, both at Los Talas and at the observatory, where I first saw them December 3. The song is a loud cheery cry, slightly suggestive of the song of the Indigo Bunting.

65. **Spinus ictericus ictericus** (Licht.).— This Goldfinch was but seldom seen. It goes in small parties, and does not seem to differ greatly from our Goldfinch in its habits.

66. **Sicalis pelzelni** Scl. "MISTO."— One of the most common birds about the town is the Misto Sparrow. His song is very unmelodious; it consists of shrill mouse-like squeaks poured out in a continuous stream. Whether this bird takes the initiative for itself in nest-building I cannot say; I have seen them breeding in the abandoned nests of the Ovenbird and of the Leñatero, and I have spoken above of a case where they completed an abandoned nest of the Wren, and later shared it with that bird. The eggs of this bird found in this last nest were marked with large spots of deep brown on a blue ground, and averaged 1.95 × 1.39 cm.

67. **Sicalis arvensis arvensis** (Kittl.). "MISTO."— This Misto, unlike the last, is a bird of the fields, and very rarely comes even to the edge of town. Through the winter months it gathers in great restless flocks. At this time they are not shy, but as the spring advances and the flocks break up, they become more and more sensitive to intrusion. The male

has a pretty song during the spring months; he flies upward from his perch to a considerable height, beginning his song as he rises; then he descends in a long spiral, the music becoming clearer and sweeter as he nears the ground, and often continuing in a faint whisper after he alights. Occasionally the Misto reascends to repeat his song without alighting.

68. **Brachyspiza capensis capensis** (Müll.). "CHINGOLO."— Throughout a great part of the country the Chingolo is the favorite bird It is one of the first birds to meet the eye of the stranger, and its pretty habits and its pretty song keep it constantly in view. In La Plata the song usually consists of two distinct parts: the first a clear whistle very like that opening the song of the Meadowlark (*Sturnella*) of eastern North America, and the second a trill like that of the Chipping Sparrow. The song varies with different birds; some omit the clear whistle, others the short trill. The Chingolo often sings at night from his perch, and then the trill at the end is given more slowly and is usually long drawn out.

The nest is built on or near the ground; I have found them in both localities in the observatory grounds. The eggs in each case were four, thickly spotted with brown on a pale blue ground, and averaged 2.05 × 1.57 cm. The period of incubation is 13 days; four days later the young birds have their eyes open, and eleven days after breaking the egg the young birds leave the nest.

69. **Poospiza personata** (Swains.). "CHILÓE."— I first found this bird on September 12; soon it became common, and was one of the most numerous birds in regions where bushes and scattered trees were found. It feeds on the ground after the usual manner of the ground finches; and also several times I saw it perched conspicuously to make sallies for passing insects as do many of the Tyrannidæ.

The song is heard at all hours of the day, and soon becomes so familiar as not to be noticed. It can be worded "wetch-wetchy, wetch-wetchy, wetch-wetchy," slowly and deliberately repeated many times. It may be that the common name "chilóe" is a transcription of this song.

A nest which I found November 7 contained one egg, pale blue marked irregularly with dark brown, and measured 1.87 × 1.50 cm. The nest was on the ground under a large thistle, so well concealed that although I marked carefully the exact spot from which the bird flew, I was more than fifteen minutes in finding the nest. Later this nest was abandoned.

70. **Passer domesticus** (Linn.). "GORRIÓN."— The House Sparrow has been introduced into the Argentine with much the same result that followed its introduction into this country.

71. **Embernagra platensis** (Gm.).— This large Finch was found only among the tall reeds in the open marsh, where they are not very shy. Their flight is peculiar — they spring suddenly from the ground and fly laboriously with tail erect and legs dangling. I heard none of their notes except a sudden alarm cry.

72. **Paroaria cucullata** (Lath.). "CARDINAL."— Not at all common. I found them but twice in the woods at Los Talas. They are very con-

spicuous, but not very shy. The song is not noteworthy; it has a cheerful ring, but lacks variety.

73. **Molothrus bonariensis bonariensis** (Gm.).— The common name of this bird is "Tordo," the Spanish form of Turdus; but a more suitable name is one which I once heard applied to it: "El Renegado." It is larger and more attractive than *M. ater* of North America, and has quite an attractive little song which it delivers with much display; and at times the bird is so carried away by his emotion that he takes to the air and flies about, singing all the time. The only note I heard from the female was a sputtering alarm call.

In general habits this bird is similar to *M. ater*.

74. **Molothrus badius** (Vieill.).— This gray Cowbird is not nearly so common as the other; it is usually seen in flocks of about fifteen birds. I found it most often in trees, especially the eucalyptus, where its movements were slow and deliberate. Of its breeding habits I learned nothing.

The notes of this bird are more varied than those of *M. bonariensis*; and before taking flight, as Hudson says, "They invite each other to fly with long clear notes powerful enough to be heard a quarter of a mile away."

75. **Agelaius thilius** (Mol.). "TRILI," "TORDO DEL BAÑADO."— This little blackbird is gregarious, and is found on the edge of the marsh in great numbers, where its rather pretty song may be heard from numbers of the birds.

76. **Leistes militaris superciliaris** (Bp.). "PECHO COLORADO."— The name "red breast" is splendidly adapted to this bird. It is fond of moist meadows where the grass is long, and here it appears in considerable numbers in October. The female keeps hidden most of the time; her flight is weak and very erratic. On the other hand, the male is always conspicuous, especially when singing. He rises to a height of some forty feet to deliver a single rather pleasing note, after which he drops back to his original perch. Between two points his flight is low and direct, though rather laborious.

77. **Pseudoleistes virescens** (Vieill.). "PECHO AMARILLO" (YELLOW BREAST).— This is one of the most familiar marsh birds. Its large size and its bright yellow breast make it conspicuous, and its noisy and gregarious habits bring it forcibly to our attention.

In closing I wish to return my thanks to Dr. Carl Bruch and to Dr. Miguel Fernández of the Museo Nacional at La Plata, and also to Dr. Robert Dabbene, of the Museo Nacional of Buenos Aires, for the very valuable assistance which they gavé me in my work.

RECORDS OF BIRDS NEW TO THE PRIBILOF ISLANDS INCLUDING TWO NEW TO NORTH AMERICA.[1]

BY G. DALLAS HANNA.

To an ornithologist stationed on the Pribilof Islands in Bering Sea, the opportunities for making observations are exceptionally good, and the possibility of obtaining new and rare visitors seems to be almost unlimited. The list of Asiatic stragglers already recorded from the group is comparatively large. But migrants come from other directions as well as from the west and the frequent and large cyclonic storms in that region may be responsible for the occurrence there of so many birds found regularly no nearer than several hundred miles.

Specimens of all of the species recorded herein were obtained by me during my recent residence on the islands (July, 1913 to September, 1915), with the exception of the Least Sandpiper and the Pileolated Warbler which were obtained by W. H. Osgood and A. G. Whitney respectively. All of the specimens collected have been deposited in the United States National Museum by the Bureau of Fisheries.

I am under obligations to Edward A. Preble, H. C. Oberholser and Alexander Wetmore for assistance in determining these birds.

Species New to North America.

Clangula clangula clangula. EUROPEAN GOLDEN-EYE.— A female was shot from a flock of four in the Salt Lagoon of St. Paul Island, Bering Sea, November 27, 1914. It is the same size as specimens from the Commander Islands and China and while these are somewhat larger than birds from the Atlantic coast region of Europe, they are smaller than those from continental North America.

Fringilla montifringilla. BRAMBLING.— A male was captured in the watch house at Northeast Point, St. Paul Island, Bering Sea, October 25, 1914. The specimen is defective in that it lacks the tail feathers.

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[1] Published by permission of the Commissioner of Fisheries.

Other Species New to the Pribilof Islands.

Colymbus auritus. HORNED GREBE.— Two specimens were obtained on St. George Island, a male October 13, 1913, and a female, December 19, 1913. Two others were secured on St. Paul Island, a male, November 30, 1914, and an unsexed specimen, January 6, 1915. Others were observed and it seems probable that the species is of regular occurrence in the fall and early winter. All specimens were found feeding along the beaches in the surf.

Charitonetta albeola. BUFFLE-HEAD.— Two males were secured on St. George Island, one November 19, 1913, and the other May 19, 1914. A dead bird was seen in the possession of a native on St. Paul Island but no specimens have thus far been preserved from there.

Branta nigricans. BLACK BRANT.— A male was obtained on St. George Island, September 28, 1913, and another on St. Paul Island, September 17, 1914. Small flocks and single birds seem to occur regularly each spring and fall and it has been my experience that this species is more common on the islands than any other goose except the Emperor.

Pisobia minutilla. LEAST SANDPIPER.— A female was taken by W. H. Osgood at Kaminista Lake, St. Paul Island, on August 29, 1914.

Pisobia bairdi. BAIRD'S SANDPIPER.— Three males were obtained at Kaminista Lake, St. Paul Island, August 31, 1914. The species was carefully looked for among the Pectoral and Sharp-tailed Sandpipers which resort to these islands in numbers in the fall but these three birds were the only ones seen.

Rhyacophilus glareola. WOOD SANDPIPER.— One specimen was obtained on St. George Island, May 19, 1914. A blue fox destroyed most of the skin, after it was made up, but there remain the essential portions for identification. This seems to be the second record of the species in North America.

Falco peregrinus pealei. PEALE'S FALCON.— A female was obtained on St. George Island, March 12, 1914. Other duck hawks, apparently of the typical form, were observed on that island but thus far none have been secured for specimens.

Acanthis hornemanni exilipes. HOARY REDPOLL.— A female was obtained at the village on St. Paul Island April 21, 1915. A pair was later seen on the same island at Northeast Point. They probably came over with *Acanthis linaria linaria* which occurs frequently on both islands. Young of the year of the latter species were collected on St. George Island in the fall of 1913.

Melospiza melodia sanaka. ALEUTIAN SONG SPARROW.— Two specimens were collected on St. George Island, a male, October 28, 1913, at the village and a female, December 21, 1913, at Garden Cove. Both birds were feeding on the beaches.

Tachycineta thalassina lepida. NORTHERN VIOLET-GREEN SWAL-

LOW.— Two specimens, one a male and the other unsexed, were obtained at the head of the Salt Lagoon, St. Paul Island, August 22, 1914, while Mr. E. A. Preble and I were crossing over to Zapadni Rookery. Three were seen at this time, feeding on flying insects.

Wilsonia pusilla pileolata. PILEOLATED WARBLER.— Two specimens were taken on St. Paul Island, August 25, 1913, by Mr. A. G. Whitney. The species was also observed on St. George Island on August 20, 1913, by the writer, but no specimens were secured there.

Additional Species of Particular Interest.

Cepphus columba. PIGEON GUILLEMOT.— This is a common winter resident, and by April 18, 1915, some had the black summer plumage almost complete though still slightly speckled with white. It is strange that this bird should not breed on the Pribilofs, since it is so abundant on the neighboring Aleutians. The last one seen in 1915 was on May 26. In winter it feeds along the surf line, is very tame and utters a low, shrill whistle when observed. A male and a female were taken on each island. The species has been previously recorded from the Islands but apparently no specimens were secured prior to my work there.

Phalacrocorax pelagicus robustus. VIOLET-GREEN CORMORANT.— This species is common about the Pribilof Islands in winter and is recognised as different from the Red-faced by the natives who term it "sea shag." One adult male was secured on St. Paul Island. The species has been previously recorded.

Nettion carolinense. GREEN-WINGED TEAL.— A pair nested in Antone Lake, St. Paul Island, in 1914, and a female with two young were collected there in August of that year. It has been previously reported from the group but not collected. The identification of this species must remain doubtful for the present because no males have been collected or carefully observed; the females of the American and European forms differ little, if any. Adult males from the Islands are very desirable.

Olor columbianus. WHISTLING SWAN.— A young bird was shot on St. George Island, October 10, 1913, by a native, Mike Shane, and portions of it were saved for identification. Another was killed there the following year. It has been previously recorded from the group but not collected.

Totanus flavipes. LESSER YELLOW-LEGS.— A female was taken at Gavarooski Lake, St. George Island, October 18, 1913. It has been previously reported, but not collected, from the group.

Acanthis linaria linaria. REDPOLL.— Specimens were collected at various times in fall, winter, and spring on both islands. It has been previously recorded from the islands but the specimens, if collected, have apparently been lost.

Passerculus sandwichensis alaudinus. WESTERN SAVANNAH SPAR-

ROW.— A female was obtained on St. George Island, September 1, 1913. It has been previously recorded from the group but not collected.

Nannus alascensis. ALASKA WREN.— This wren, long known and so abundant on St. George Island, was found on St. Paul Island in 1914 for the first time, and again in 1915. Five birds were seen on the latter island and three were collected.

THE BIRDS OF VIEQUES ISLAND, PORTO RICO.

ALEXANDER WETMORE.

VIEQUES, called "Bieque or Crab Island," on the older maps lies fourteen miles off the eastern coast of Porto Rico and is the most western of the Virgin group. Notes on the avifauna of this island occur at random through the literature pertaining to the West Indies but no complete list of the birds of Vieques has been attempted. Mr. B. S. Bowdish (1900) has published a few notes on the winter birds of the island but other published matter pertaining to the subject is widely scattered. Though all unusual records are included in the writer's Birds of Porto Rico (Wetmore, 1916) it is believed that an annotated list of the birds complete so far as present knowledge permits will be of value to workers interested in this region. Much new matter in the form of hitherto unpublished field notes is included in this paper.

Though Vieques Island was settled first in 1524 little attention appears to have been accorded it by early naturalists. Apotheker Riise of St. Thomas sent a collector across to Vieques about the year 1860 (Newton, 1860): he secured a number of birds among which are recorded the Woodpecker, the Lizard Cuckoo, and one *Molothrus atronitens*. Apparently the island was not visited by an ornithological collector again until 1899 when naturalists from the U. S. Fish Commission Steamer "Fish Hawk" landed there on February 6, 7, and 8. The birds secured were collected by Dr. J. D. Milligan and Mr. A. B. Baker.

Following this Mr. B. S. Bowdish came to the island about

November 5, 1899, and remained until February 10, 1900. Apparently this is the most extended visit which has been made by an ornithologist. His notes on "Some winter birds of the Island of Vieques" (Bowdish, 1900) constitute the only separate paper on the avifauna of this island that has come to my notice.

In this same year (1900) Dr. C. W. Richmond and Dr. L. Stejneger during their sojourn in Porto Rico visited Vieques Island, collecting there from March 22 to 28.

On March 16, 1912, the writer crossed to Vieques Island from Fajardo Porto Rico in a small sloop and remained until April 4. Headquarters were made in the town of Isabel II, a pleasant place with wide streets lined with flamboyant trees (*Poinciana regia*), somewhat in contrast to the narrow *calles* and closely crowded houses common in Porto Rican towns. In addition to this visit two days — April 22 and 23 — were spent here on returning from Culebra. During this work Dr. J. S. M. Pressley and Mr. Harold Stiles who was at that time judge of the district, gave friendly assistance. And in Señor José Bartôn, a gentleman well-informed as to the natural history of his native island, I found a pleasant companion on many field excursions.

Physical Features.

In size Vieques Island is approximately 18 miles long by 3 broad comprising nearly 45 square miles of territory. A chain of low rounded hills extends the length of the island rising in Mount Pirata at the western end to an elevation of about five hundred feet. The low hills slope down directly to the sea with no intervening alluvial coastal plain. In general the south coast line is more abrupt, rocky headlands from 30 to 80 feet in height alternating with small bays bordered by sandy beaches. On the north the elevations are in the main lower and cliffs are less common along the shore line. The hills are of limestone with outcrops of coral rock. Inland granite boulders are scattered in the pastures. The western half of the island has large areas planted in sugar cane and extensive pastures dotted with bushes. The eastern end is wild and little frequented. There low valleys grown with bushes

bound together with thorny creepers are difficult of passage and winding cattle trails afford the only pathways. Many hilltops are densely covered with brush and trees, and on the south coast are considerable areas of virgin forest. Several lagoons fringed with mangroves furnish resorts for water birds. There are small streams on the island but at the time of my visit they had only scattered pools of brackish water along their beds. Pools in the largest stream contained numbers of tadpoles and minnows.

Vieques is a dry island with droughts that at times are unbroken for the space of a year. At the time of my visit quick dashing showers were frequent but were barely sufficient to moisten the surface of the ground. The average rainfall since 1903 ranges from 38.59 inches (1912) to 55.25 inches (1905). Though I found the heat of the sun intense the atmosphere was dry with none of the depressing humidity of the north coast of Porto Rico. The steady refreshing stream of the trade winds moderated the heat and in doors the days were comfortable and cool.

General Conditions.

In its vegetation and general appearance Vieques is similar to the southern side of Porto Rico. Along the northern shore line the force of the trade winds distorts many of the trees and shrubs. Growths of *uvas de playa* (*Coccolobis* sp.), common along the sandy beaches, were as even on the side exposed to the wind as though trimmed by hedge shears. Even the springy *lluma* palm (*Aeria attenuata*) grew prostrate in a few localities and it was not uncommon to see a small deciduous shrub with the branches developed entirely on one side so that it was blown out like a flag in the wind.

Sea grapes (*Coccolobis* sp.) fringed the beaches, and mangroves bordered the lagoons. The pastures were dotted with thorny *asoto caballo* (*Randia aculeata*), a spiny introduced acacia, the *rallo* (*Acacia farnesiana*), and scattered trees of the *muñeco* (*Cordia collococca*). The mango (*Mangifera indica*), *moral* (*Cordia nitida*), *palma de lluma* (*Aeria attenuata*) and bay tree or *ausú* (*Amomis caryophyllata*) were not uncommon. The *palo blanco* (*Drypetes*

sp.) wild figs (*Ficus* sp.) and *cabo de hacha* (*Trichilia hirta*) were prominent in the forests. A milkweed (*Asclepias* sp.) six feet tall with a woody stem was common in some localities and prickly pear (*Opuntia* sp.) and another cactus (*Cereus* sp.) were abundant. At the time of my arrival *Cordia collococca* was in blossom but all of its leaves had fallen, while the flamboyant tree (*Poinciana regia*) an introduced species, was also leafless but was maturing its seeds.

Of indigenous mammals bats alone occur; and the only species noted was a *Molossus*. Others were said to be abundant in certain caves whose locations the natives obstinately refused to divulge. The mongoose (*Mungos birmanicus*) is more abundant than in Porto Rico, but does not seem to keep the rats in check. Lizards are very common. The *siguana* (*Ameiva exul*) was found along the beaches and small anolis (*Anolis cristatellus* and *A. stratulus*) were abundant everywhere. A few adult individuals and many tadpoles of the frog-like *Leptodactylus albilabris* were seen and the *coquí* (*Eleutherodactylus antillensis*) was heard calling occasionally in the evening.

Bird Life.

Though separated from Porto Rico by a strait only 14 miles wide the avifauna of Vieques shows certain differences from that of the larger island. Certain Greater Antillean forms are lacking while a few others ranging up through the Lesser Antilles apparently find here their farthest westward extension. Of the sixty-five species of birds which are credited to the island in the following list there are actual records for fifty-five. Ten other forms of undoubted occurrence are included as reported by hunters or from other sources. Eighteen of the species listed are North American migrants present here in migration or through the winter. Two species, *Saurothera vieilloti* and *Molothrus atronitens* may be regarded as stragglers arriving here merely by chance. The following three forms are not known at present to visit Porto Rico:

Microlyssa c. exilis.
Sericotes h. holosericeus.
Elainea m. martinica.

Of the twenty-five species and subspecies of birds that are restricted to Porto Rico (here taken as a political division including Mona, Desecheo, Porto Rico, Vieques and Culebra) the following nine occur on Vieques:

Amazona vittata (?) (reported)
Saurothera vieilloti (one record)
Melanerpes portoricensis
Gymnasio nudipes (?) (reported)
Tolmarchus taylori
Myiarchus antillarum
Dendroica adelaidæ
Holoquiscalus brachypterus
Tiaris o. bryanti

Opposed to these are sixteen forms precinctive in Porto Rico which are not known to cross to Vieques Island. Among them are several genera typical of the Greater Antilles. The list of these missing forms is as follows:

Accipiter striatus venator
Chæmepelia p. exigua (Mona Island)
Todus mexicanus
Asio portoricensis
Chlorostilbon maugæi
Anthracothorax viridis
Blacicus blancoi
Mimocichla a. portoricensis
Corvus l. leucognaphalus
Vireo latimeri
Icterus portoricensis
Agelaius xanthomus
Tanagra sclateri (introduced into Vieques?)
Spindalis portoricensis
Nesospingus speculiferus
Pyrrhulagra portoricensis

The avifauna then resembles that of Porto Rico closely with the addition of three forms that are not at present known to cross the

passage to the larger island. This same strait, though only from 6 to 11 fathoms deep, is a barrier to fifteen of the Greater Antillean forms found on Porto Rico, while of the nine forms that do cross three are of uncertain status as bona fide species for Vieques Island.

MIGRATION.

Two of the breeding birds of the island are migratory, viz., *Progne dominicensis*, and *Vireosylva c. calidris*. A third, *Elainea m. martinica* is believed to be only a summer visitant not a resident. The first two probably arrive in February; the last was not noted until March 25, 1912.

Among the North American migrant Warblers there was almost constant movement during my visit. These birds always seemed restless and a diurnal migration from east to west along the length of the island was noticed. On March 19, March 27, and again on April 2 true waves of migration occurred and these birds were exceptionally common and active. Parula and Prairie Warblers, Ovenbirds, Redstarts and Black and White Warblers were all affected in this movement. In each case the bulk of these birds disappeared at once and they were present in their usual numbers during the following days. Vieques Island forms a stepping stone for the individuals that winter in the Lesser Antilles, in their vernal and autumnal flights and many interesting observations might be made here by a resident ornithologist. Many species may be added to the migrants given in the following list, especially among the shorebirds and warblers and stragglers are to be expected in all groups.

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ANNOTATED LIST.

1. **Podilymbus podiceps antillarum** Bangs. ANTILLEAN PIED-BILLED GREBE.— A grebe known as the zaramagullon was reported from the lagoon at Playa Grande on the western end of the island. As the lagoons on Vieques are dry some seasons the birds may not breed there.

2. **Pelecanus occidentalis** Linnæus. BROWN PELICAN.— During my residence on Vieques Island there were usually a few pelicans in Port Mulas at Isabel II. Others were seen flying elsewhere along the shore. At times they are said to disappear entirely for a week or more and appear again suddenly in small numbers. The islet known as Caballo Blanco off Port Mulas, rising three feet above the sea, with its top scantily covered with vegetation, is reputed to harbor a breeding colony, but in passing near it in a small sloop on April 23 I could see no sign of pelicans.

3. **Sula leucogastra** (Boddaert). BOOBY.— The Booby was reported as an occasional visitant to the shores of the island.

4. **Fregata magnificens** Matthews. MAN-O'-WAR-BIRD.— Frigate birds were seen soaring high over the sea near Manuel Quí and also at Campania. Mr. Bowdish (1900) records them also.

5. **Nyctanassa violacea** (Linnæus). YELLOW-CROWNED NIGHT HERON.— Resident. In a dry swamp near Manuel Quí I found a few pairs of Yaboas roosting in the middle of the day in the dense heavy shel-

ter of the forest growth. When flushed they flew heavily for a short distance and then perched again in the tree tops, seeming rather stupid. They are considered a game bird.

6. **Butorides virescens cubanus** Oberholser. CUBAN GREEN HERON. — Resident. Mr. Bowdish found the Green Heron very abundant at the mouths of small streams. In 1912 though fairly common it did not compare in abundance with the numbers found on Porto Rico. There were few places suited for it, as cover was not common along the small streams. One immature bird rather than fly attempted to escape by clambering rapidly away through the branches of a clump of mangroves. Two adults were secured on March 27 and an immature male on March 30.

7. **Florida cærulea cærulescens** (Latham). LITTLE BLUE HERON.— Resident. This species was the only heron that was common on the island. It was seen often along the coast and many were found inland in the high dry pastures. An adult male was taken on March 29.

8. **Egretta thula thula** (Molina). SNOWY HERON.— A few were seen along the beaches, around the lagoons, and at the mouths of the streams. They were in full breeding plumage at this season. A bird seen near Manuel Quí on March 25 was very tame.

9. **Herodias egretta** (Gmelin). EGRET.— Reported by José Bartôn.

[**Phœnicopterus ruber** Linnæus. FLAMINGO.— Gundlach[1] remarks that the flamingo is said to have been common on the small islands east of Porto Rico. There are unconfirmed rumors of the former occurrence of this bird on Vieques Island.]

10. **Marila affinis** (Eyton). LESSER SCAUP DUCK.— Reported as occasional in winter.

11. **Dendrocygna arborea** (Linnæus). WEST INDIAN TREE DUCK.— Tree ducks (Yaguasas) were said to occur at times on the larger lagoons.[2]

12. **Falco sparverius loquacula** Riley. PORTO RICAN SPARROW HAWK.— Resident. Sparrow Hawks were fairly common in the tree dotted pastures of Vieques. Tops of small trees or dead stubs made convenient perches from which they watched for lizards and large Orthoptera. Their numbers here must be regulated by the small number of available nesting holes. Vieques Island is the type locality of this form (cf. Riley, 1904, p. 284). In a small series collected, one male taken March 27 has the distal end of the rectrices much worn from clinging at a nesting hole or, questionably, from actually assisting in the duties of incubation.

13. **Buteo borealis** (Gmelin). RED-TAILED HAWK.— Resident. A few Red-tailed Hawks were noted in the wilder parts of the island toward the eastern end. A nest in a tree 40 feet from the ground was said to have contained young two-thirds grown on March 10. The shrill scream of these birds was heard almost daily. It is doubtful if there are more than

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[1] Apuntes para la Fauna Puerto Riqueña, An. Soc. Esp. Hist. Nat., Madrid, 1878, p. 398.

[2] This species was listed by me from Porto Rico as *D. autumnalis* through error (Wetmore, 1916, p. 30).

ten or a dozen remaining on the island. The species has been much persecuted.

14. **Pandion haliaëtus carolinensis** (Gmelin). OSPREY.— Bowdish (1900, p. 72) secured a male on December 31, 1899, and says that two pairs were seen. Probably a regular winter visitant.

15. **Gallinula galeata galeata** (Lichtenstein). FLORIDA GALLINULE. — Hunters reported that this bird was found on the lagoons when they were filled with water.

16. **Rallus longirostris caribæus** Ridgway. CARIBBEAN CLAPPER RAIL.— Resident. Tracks of these birds were seen in the mud bordering the lagoons.

17. **Eupoda wilsonia rufinucha** (Ridgway). RUFOUS-NAPED PLOVER — Mr. Bowdish found these birds at times in flocks of a dozen upon the beaches until December 1, 1899. One was taken on November 5. Dr. Richmond noted them on March 23, 1900, and secured three on March 27. None were found during my visit to the island.

18. **Charadrius semipalmatus** (Bonaparte). SEMIPALMATED PLOVER.— Migrant. On March 30, one was seen on the beach on the north side of the island. When flushed it passed out of sight across the water going due north.

19. **Oxyechus vociferus rubidus** Riley. ANTILLEAN KILLDEER.— One was seen near Martinez on March 16. On March 23 two were flushed along a small stream and flew calling loudly over a pasture. These two were collected and were found to be male and female. The latter contained an egg nearly ready for the shell. The Killdeer may be considered as a resident here.

20. **Actitis macularia** (Linnæus). SPOTTED SANDPIPER.— Fairly common as a winter visitant along small streams and beaches. Individuals were seen until the time of my departure for Culebra on April 4.

21. **Totanus flavipes** (Gmelin). LESSER YELLOW-LEGS.— The only record for this bird is that of one seen on March 25, 1900, by Dr. C. W. Richmond. There is no reason to believe that it is not a regular migrant.

22. **Himantopus mexicanus** (Müller). BLACK-NECKED STILT.— These birds were reported to Dr. C. W. Richmond on March 24, 1900, by Lieutenant Chapelle as seen around the lagoon at Playa Grande.

23. **Larus atricilla** (Linnæus). LAUGHING GULL.— On April 22 one was seen in Port Mulas at Isabel II.

24. **Sterna maxima** Boddaert. ROYAL TERN.— A few were noted along the coast during March and April.

25. **Geotrygon montana** (Linnæus). RUDDY QUAIL-DOVE.— The Quail-Dove was said to be fairly common on Vieques Island, but none were seen. As the mongoose is now so abundant these doves may have decreased in numbers during recent years. Mr. Bowdish (1902–3, p. 361) secured a male on December 30, 1899, and Señor José Bartôn told me that he found them in the brushy region of the eastern end of the island.

26. **Chæmepelia passerina trochila** Bonaparte. PORTO RICAN

GROUND DOVE.— Resident. This species was very abundant in the roads that cut the cane fields into great squares and was common along trails and in pastures. Usually the birds were in pairs but small flocks were found even up to the first of April. They seemed to prefer the heat of midday to the cooler morning and evening. A heavy dew usually held them inactive until it had dried. They perch readily in open trees sitting close together. When they feel under observation they become nervous at once, walking along the limbs with nodding heads. Then suddenly taking alarm they fly out with considerable noise.

The breeding season here began about March 20. As I have already noted (Wetmore, 1916, p. 49) the nests found on Vieques Island were larger and bulkier than those from Porto Rico. On March 30 I collected a set of two eggs with incubation just begun, from a nest on the horizontal limb of a *Muñeco* (*Cordia collococca*), about seven feet from the ground. This nest contained more material than any other dove's nest that has come under my observation and in form was deep, cup-shaped and thick-walled. The male was engaged in incubation. On this same date another nest similar to the first one but as yet empty was discovered.

These doves are said at times to pick up kernels of corn shelled out and dropped by the blackbirds (*Holoquiscalus brachypterus*) but I did not observe them doing this.

27. **Zenaida zenaida lucida** Noble. ZENAIDA DOVE.— Resident. Very common in the dense growth of the dry heavily forested hills and found frequently in the brushy pastures. In the forests it was hard to get near them, only the loud clapping of their wings betraying them as they flushed at some distance ahead. March was apparently the height of their breeding season and the males were heard cooing constantly, a song very similar to that of *Zenaidura macroura*. In May and June they are said to come in flocks to feed on the fruit of the *Palo blanco* (*Drypetes* sp.). Many are shot by sportsmen at this time. This bird is recorded by Mr. Bowdish through an error as the Mourning Dove (1900, p. 72).

28. **Patagiœnas leucocephala** (Linnæus). WHITE-CROWNED PIGEON. —Resident. On March 25 this pigeon was fairly common in a strip of heavy swampy timber near Porto Ferro. Their flight was strong and swift and while in the trees they sat motionless, hidden in the leafy branches. One was taken. Near Mameyes on Porto Rico these pigeons were known locally as "Viequera" from the belief that they did not nest on the main island but crossed from Vieques when the *icacos* (*Chrysobalanus icaco*) were ripe in order to feed upon them. Their fondness for this fruit at Mameyes was noticeable but they nested without doubt in the same locality as that in which they were feeding. Ordinarily this pigeon bears the native name of *Paloma cabeziblanco*. In May and June when various wild fruits are ripe they come out of the swamps in large flocks and gather to feed in localities in which they are unknown during the breeding season.

29. **Patagiœnas squamosa** (Bonneterre). SCALED PIGEON.— Formerly these large pigeons were common but now there are only a few re-

maining. One was seen near Porto Ferro on March 25, 1912. Dr. C. W. Richmond secured one on March 28, 1900.

[**Aratinga** sp.— A paroquet was said to occur on the island occasionally during the rainy season in the months of June, July, and August, but I was unable to substantiate these reports. It is barely possible that *Eupsitula pertinax* from St. Thomas might cross with the trade winds as the islands lie within sight of each other. Gundlach [1] heard of a paroquet on Vieques Island.]

30. **Amazona vittata** (Boddaert) (?). PORTO RICAN PARROT.— Parrots are found during the rainy season in the months of June, July and August in the heavy forest of the southern side of the island. It is believed that they cross at that season from Porto Rico. Señor José Bartôn was well acquainted with them and told me that they were considered a game bird, making a highly desirable dish for the table. There were none here during the period of my visit.

31. **Coccyzus minor nesiotes** (Cabanis). MANGROVE CUCKOO.— Resident. In thick brushy growths on the southern side of Vieques Island these cuckoos were common but were difficult to secure. Their notes came frequently from the dense, dry, thorny thickets lying in the intense blazing heat of the sun, but the birds themselves, working slowly and methodically through the bushes usually near the ground, were not often seen. The last week in March marked the beginning of the breeding season here. Specimens were taken on March 25.

32. **Saurothera vieilloti** Bonaparte. VIEILLOT'S GROUND CUCKOO.— The only record of this bird for Vieques Island is that of A. and E. Newton (Ibis 1859, p. 378) who note that a collector in the employ of Apotheker Riise of St. Thomas secured one here. It can be regarded only as a straggler though it is possible that the bird may have been resident here formerly.

33. **Crotophaga ani** Linnæus. ANI.— A fairly common resident of the brushy pastures. The Ani was found in flocks of six or eight feeding near the cattle or sitting in the tops of bushes calling querulously at the appearance of an intruder. A nest found the last week in March was built in a clump of thorny bushes about six feet from the ground. It was made of twigs and was large and bulky, forming a mass two feet across. The interior was still unfinished. Anis were taken on March 20, 23, 25 and 30.

34. **Melanerpes portoricensis** (Daudin). PORTO RICAN WOODPECKER.— A common resident species in the forest regions of the island. On March 25 one was seen feeding well grown young in a hole in a stub about twenty feet from the ground. The woodpeckers were all nesting at this time and were very noisy and vociferous. Specimens were secured on March 18, 19, 25 and 29.

35. **Streptoceryle alcyon alcyon** (Linnæus). BELTED KINGFISHER. — A regular migrant and winter visitant. Mr. Bowdish (1900, p. 72) secured a male on December 10, 1899. I shot one on March 30, 1912, and

[1] Apuntes para la Fauna Puerto Riqueña, An. Soc. Esp. Hist. Nat., Madrid, 1878, p. 229.

the birds were seen until April 4 when I left the island. They were found along the beaches and near the small streams where in shallow pools minnows and tadpoles were abundant. An incident in which a wing tipped kingfisher figured stands out clearly in my remembrances of Vieques. The bird made into a thicket of thorny bushes and to prevent its escape I laid my gun on it only to discover that I had also dropped it across a wasp's nest.

36. **Gymnasio nudipes** (Daudin) (?). BARE-LEGGED OWL.— Señor José Bartôn told of seeing one of these small owls at close range in the hills at the eastern end of Vieques a number of years ago. This bird may have been true *nudipes* or the subspecies *newtoni*, as St. Croix is only a short distance away, or it is possible that a new form may exist here.

37. **Antrostomus carolinensis** (Gmelin). CHUCK-WILL'S-WIDOW.— A migrant species probably of regular occurrence in winter. Mr. B. S. Bowdish (1902–3, p. 365) shot two of these birds in a creek-bottom on December 15 and 28, 1899, and saw others.

38. **Microlyssa exilis exilis** (Gmelin). GILT-CRESTED HUMMINGBIRD. — This bird was fairly common on Vieques Island during my stay and I considered it a resident. It may be however that it is a migrant as Mr. Bowdish does not record it nor had it been found here previous to my visit. The first bird that I collected on the island was this beautiful crested hummer and in suitable localities it was fairly common. The blossoms of the Muñeco (*Cordia collococca*) were attractive to them and others were found about the thorny acacia known as *rallo* (*Vachellia farnesiana*). With other hummingbirds they visited the cultivated *gonduros* (*Cajanus cajan*). They were quick and active and the flight was accompanied by a loud buzzing or humming. Except for this they were silent. Specimens were taken March 18, 19, 23, and 29.

This species has been recorded from Porto Rico (cf. Wetmore, 1916, p. 70) on the strength of specimens sent by Hjalmarson to Sundevall and one of these is at present in the U. S. National Museum collection. Gundlach[1] however considers that these skins may have come from St. Bartholomew and remarks as follows (loc. cit.):

"En mi segundo viaje .... volví a ver .... el ejemplar de la collecion de Hjalmarson en Arecibo, y encontré que tení una tarjeta con la palabra Saint Bartholome, ecrita por otra persona y no por Hjalmarson, quien preguntado por mi de nuevo, me dijo que no se acordaba sí el habia tenido ejemplares muertos en la isla de Puerto Rico, o sí los ejemplares vistos por Sundevall habian provenido de la de Saint Bartholome u otra, y habian dada, como enviados de él, motivo a creerlos puerto-riqueños."

39. **Sericotes holosericeus holosericeus** (Linnæus). GREEN CARIB. — A common resident species though like the Gilt-crested Hummer it may be a migrant as it was not known from Vieques Island previous to my visit.

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[1] Apuntes para la Fauna Puerto-Riqueña, An. Soc. Esp. Hist. Nat., Madrid, 1878, p. 224.

These hummers were found usually in the forested areas, and remained in the shade during the heat of the day. The flowers of the *Gonduro* (*Cajanus cajan*) were their favorite feeding grounds and nearly all of my specimens were taken about these growths. These hummingbirds are large and though they flew with great rapidity, were not so active as the other species. Specimens were secured on March 18 and 23. From observations made on March 23, females were feeding young at that date so that the nesting season here must be rather early. In tropical regions however, dates of nest-building and reproduction seem liable to variation from year to year through influences which to us are not perceptible or have not as yet been noted. So that generalizations based on the observations of a single season are not in my opinion altogether trustworthy but should be checked by notes made during a period of years.

40. **Anthracothorax aurulentus** (Audebert and Vieillot). PORTO RICAN MANGO.— Resident. On Vieques wherever there were flowers I was certain to find hummingbirds and of all the species on the island the present one was the most common. The flowers of the *Molinillo* (*Leonotis* sp.) were more attractive to this bird than to the other forms. These hummingbirds are large and robust and when perched appear as big as honey-creepers. The young were fully grown on my arrival and were caring for themselves. Specimens were shot on March 18 and 19.

41. **Tyrannus dominicensis dominicensis** (Gmelin). GRAY KINGBIRD.— A common resident in the brushy pastures. Birds were taken for specimens on March 19, 20, 22, and 23.

42. **Tolmarchus taylori** (Sclater). PORTO RICAN PETCHARY.— A tolerably common resident. These birds frequented the larger trees of the forest growth and were not found elsewhere on the island. A pair observed on March 28 were evidently mated and I considered this the beginning of the breeding season. Birds were taken on March 18, 21, 25 and 29.

43. **Myiarchus antillarum** (Bryant). ANTILLEAN FLYCATCHER.— A tolerably common resident found in the densest forest growth of the dry hills or in the more open luxuriant growth along the small stream beds. A mated pair was seen on March 23 and following this other indications of the beginning of the breeding season were noticed. This flycatcher resembles a Wood Pewee superficially in both appearance and habits. Specimens were taken on March 18, 23, 25 and 27.

44. **Elainea martinica martinica** (Linnæus). ANTILLEAN ELAINEA. — This species seemed to be a migrant here as it was not found until March 25 after which it was more or less in evidence constantly in the proper localities. It has not been found by previous collectors on the island, a fact that strengthens the belief that it is migratory. The birds secured were ready to nest and were found in almost impenetrable thorny growths covering many of the dry hot slopes. Their strange habits were of great interest. One would sally out into the air after an insect and on returning to its perch remain motionless for a minute or two like a flycatcher. Then

in another instant it would begin to search the smaller limbs in vireo fashion or even climb about as a tufted titmouse might do. Numerically this species was small as not more than a dozen were noted on Vieques Island. Collecting specimens was a matter of considerable labor as, once heard, it was necessary to cut paths into the dense spiny growth in order to catch sight of the bird. And when one was shot a trail had to be cut in through the cactus and creepers to where it lay so that the few secured were hard earned. Birds were taken on March 25 and 27.

45. **Progne dominicensis** (Gmelin). CARIBBEAN MARTIN.— One or two pairs of Martins were seen around the town of Isabel II, but they did not spread into the country. This species does not winter here. Mr. Bowdish (1900, p. 74) says that a few were seen just before his departure from the island (Feb. 10, 1900); and this date may approximate the average date of their arrival, though in some years they may be found earlier.

46. **Margarops fuscatus fuscatus** (Vieillot). PEARLY-EYED THRASHER.— Resident. The *truche*, as it was called locally, was common in the thickets, frequenting the dry creek beds and the ravines especially. Its broken whistled notes were heard often while in the country and the birds, slipping away through the bushes, were a common sight. This species is large and robust in body and is hunted at times for food or game. Nothing was learned of its nidification. One male secured March 21 was a breeding bird but in twelve other males collected the sexual organs showed no signs of approaching physiological activity. No females were secured. Birds were taken March 18, 21, 27 and 29.

47. **Mimus polyglottos orpheus** (Linnæus). JAMAICAN MOCKINGBIRD.— A very common resident species. The dry brushy growth of Vieques Island seemed well suited to the needs of this bird and all through the pastures and fields it was common. The males sang constantly from the tops of the trees lifting their wings or flying from bush to bush with exaggerated movements to accentuate the handsome display of their snowy white alar markings. My visit coincided with the height of the breeding season and frequently a pair scolded harshly from the shelter of some thick bush only to slip slyly away on the opposite side when approached. A nest containing four young nearly a week old was seen on April 3. Many of these birds are kept as cagebirds in inclosures varying from the ordinary wire bird cage to a large calabash (*Crescentia cujete*) with the side cut out and string laced back and forth across the opening to retain the captive. The birds were fed in confinement on bananas, boiled eggs and cornmeal cooked without salt. Specimens were taken March 18, 20, 21, 22 and 30.

48. **Vireosylva calidris calidris** (Linnæus). JAMAICAN VIREO.— A summer visitant having a local distribution on the island probably due to the small number present and to the limited area inhabited by each pair during the breeding season. On the south coast these vireos were found in several localities but on the northern side they were noted only along one small gully. Specimens were collected on March 20, 22 and 25.

49. **Setophaga ruticilla** (Linnæus). REDSTART.— Fairly common as a winter visitant; more abundant during migration. Mr. Bowdish (1902–3, p. 19) noted redstarts on November 30, 1899, and I found them here until the time of my departure (April 4). On March 27 they were abundant.

50. **Seiurus motacilla** (Vieillot). LOUISIANA WATER-THRUSH.— A winter visitant. One or two were seen occasionally up to March 27. Mr. Bowdish (1902–3, p. 19) secured specimens on December 27, 1899, and January 22, 1900. Mr. A. B. Baker of the "Fishhawk" secured a female on February 7, 1899.

51. **Seiurus aurocapillus** (Linnæus). OVENBIRD.— A tolerably common winter visitant more common apparently during migration. Ovenbirds frequented the ground in sheltered areas in the dry thickets and when flushed went up into the bushes but in a few minutes dropped down and began feeding again. On March 19 and again on March 27 they were especially common. They were not observed after the latter date. One specimen secured was very pale in color. Birds were taken on March 19 and 20.

52. **Dendroica discolor** (Vieillot). PRAIRIE WARBLER.— A common winter visitant. Dry brushy areas seemed especially suited to these warblers. They were found feeding on the ground in the thickets or working quickly through the smaller branches. On March 19 and 27 they were especially common and were then in migration. Small flocks or single birds were observed during these days always working steadily to the westward. They were present in numbers to the time of my departure on April 4. Specimens were secured on March 19 and 25.

53. **Dendroica adelaidæ** Baird. ADELAIDE'S WARBLER.— A fairly common resident on Vieques Island. As noted previously (Wetmore, 1916, p. 103) this species was not known until 1912 outside of Porto Rico. The birds were locally common in the brush grown valleys on the northern side of the island and in the hot dry region of the south coast. They worked actively through the dense tangles of vines, the males giving their loud trilling songs frequently, but were difficult to locate. In the bushes they fed near the ground occasionally dropping down to the earth after an insect that had eluded capture in the limbs above. The first pair taken on March 20 were in worn breeding plumage but others taken later were in better condition, though all were breeding or about to do so. Others were taken on March 21 and 25. Specimens from Vieques Island differ in no way from the larger series secured on Porto Rico.

54. **Dendroica coronata** (Linnæus). MYRTLE WARBLER.— A tolerably common winter visitant. Mr. Bowdish (1902–3, p. 18) secured specimens on January 22 and 30, 1900, and I saw one in the town of Isabel II on April 1, 1912.

55. **Dendroica cærulescens cærulescens** (Gmelin). BLACK-THROATED BLUE WARBLER.— A male was observed but not taken on March 27, 1912. There is no other record for this bird. It probably occurs with more or less regularity during migration.

56. **Dendroica tigrina** (Gmelin). CAPE MAY WARBLER.— One was seen on April 4 in a flamboyant tree (*Poinciana regia*) in front of my temporary residence in Isabel II. It was not secured because of a regulation against shooting but was watched at close range for several minutes.

57. **Dendroica petechia bartholemica** (Sundevall). PORTO RICAN YELLOW WARBLER.— A common resident that occurred wherever trees or bushes offered it shelter. The scattered trees, trimmed symmetrically beneath by browsing cattle, growing in the upland pastures were favorite haunts; and many of these warblers came even into the town of Isabel II attracted by the shade trees growing along the streets. In spite of their yellow color and active movements it was difficult to see them in the leaves, constantly agitated by the trade winds. Specimens secured March 19 and 20 showed no enlargement of the sexual organs.

58. **Compsothlypis americana usneæ** Brewster. NORTHERN PARULA WARBLER.— A common winter visitant. During my stay on the island the spring migration was in full force and these birds outnumbered any of the other warblers. The blossoming *Muñeco* trees (*Cordia collococca*) with the many insects about the flowers were great attractions and around these trees the birds were especially common. The plumage at this season was perfect, the feathers showing a gloss or sheen. Specimens were secured on March 18 near Isabel II, on March 20 and 25 near Porto Ferro, on March 27 at Manuel Quí and on the twenty-ninth at Porto Ferro again. All are referred to the subspecies *usneæ* of Brewster. The birds were common until my departure on April 4.

59. **Mniotilta varia** (Linnæus). BLACK AND WHITE WARBLER.— Mr. Bowdish found this species during the winter on Vieques Island and Dr. Richmond (MS) saw a specimen in his collection collected January 30, 1900. I saw one on March 27 near Porto Ferro and another March 29 but secured no specimens.

60. **Cœreba portoricensis** (Bryant). PORTO RICAN HONEY CREEPER. — A common resident species not so abundant as in Porto Rico. Honey Creepers were found in the forest growths and in scattered groves of trees wherever there were suitable conditions but were rarely associated in numbers. A few were encountered along the borders of canefields and hedges of *maya* (*Bromelia pinguin*). The largest numbers gathered at the season of my visit in the *muñeco* trees (*Cordia collococca*) in whose blossoms they found an abundant supply of nectar, small insects and spiders. At the hotel in Isabel II one came in daily to search cut flowers placed in vases. A large mirror puzzled this bird greatly and it frequently perched before it to examine the bird and the room reflected in it, ending invariably in an attempt to enter. Always the bird on the other side came up to meet it and after trying to evade it first on one side and then on the other the bird would drop back and scold its reflection sharply with rapidly flitting wings. Several young birds still having a yellow superciliary were taken and adults, which from evidence gained by examining the sexual organs, were about to breed again. Skins from Vieques are apparently identical with those

from Porto Rico. Birds were taken on March 18, 19, 20, 22, 23, 25, 27, 29, and 30.

61. **Dolichonyx oryzivorus** (Linnæus). BOBOLINK.— Apparently a rare migrant. Gundlach[1] says that the Bobolink has been taken on Vieques Island and Cory (1892, p. 110) also reports it.

[**Icterus portoricensis** (Bryant). PORTO RICAN ORIOLE.— It would seem that the record for this bird given by Mr. Bowdish (1902–3, p. 12) was a *lapsus*. The same author remarks in the 'Oölogist' for 1900, page 73, that the Porto Rican Oriole was not found. Personally I could find no one to whom they were known on Vieques.]

62. **Holoquiscalus brachypterus** (Cassin). PORTO RICAN BLACKBIRD.— Resident. Though during his visit Mr. Bowdish (1900, p. 73) found this blackbird common and frequently associated in large flocks, in 1912 it was only tolerably common and was very local in its distribution. It seemed to prefer the more open regions immediately at the coast but one flock of half a dozen was seen in a dense thicket. Birds were secured on March 19, 21 and 29.

63. **Molothrus atronitens** Cabanis. GLOSSY COWBIRD.— Accidental. One is recorded by Newton (Ibis, 1860, p. 308) as obtained from Vieques Island by Mr. Riise of St. Thomas.

[**Tanagra sclateri** (Sundevall). PORTO RICAN EUPHONIA.— I was told that late in the fall of 1910 Mr. Reed then Presbyterian minister at Isabel II made an attempt to introduce this species into Vieques. Forty birds were purchased in Ponce and of these a dozen were accidentally released on the playa at Port Mulas as they were brought ashore. The others were kept in confinement but during the next few months escaped a few at a time. A few remained around Mr. Reed's house for some time and three months after the departure of the captives a flock of twelve was seen. Since this they have disappeared entirely.]

64. **Tiaris bicolor omissa** (Jardine). CARIB GRASSQUIT.— A common resident. A few of these grassquits were found in sheltered draws feeding on the ground under the bushes but the greater number were associated, fifteen or twenty together, with the other grassquits in grass-grown openings in the brush. When disturbed they flew up into the bushes and worked away ahead of me with soft call-notes or if I remained quiet dropped to the ground again to continue feeding. Though molting slightly birds taken seemed to be about to breed. Specimens were taken on March 18, 21, 22, 23, 25 and 27.

65. **Tiaris olivacea bryanti** (Ridgway). BRYANT'S GRASSQUIT.— A common resident. A few were found along the roads running through the cane but most of these grassquits were in mixed flocks with the preceding species. All of the specimens examined were undergoing a partial molt and there was no indication among them that the breeding season was near. Birds were secured on March 18, 22 and 23.

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[1] Ornithologia Cubana, 1893, p. 118.

THE SAW-WHET OWL OF THE QUEEN CHARLOTTE ISLANDS.

BY J. H. FLEMING.

LYING off the coast of British Columbia to the south of the Alaska boundary, the Queen Charlotte Islands have been investigated by naturalists in recent years, but seemingly without exhausting the possibilities of the interesting fauna. When Mr. Wilfred H. Osgood published in 1901, his account of the fauna of these islands, he described a Saw-whet Owl as *Nyctala acadica scotæa*,[1] basing the name on a single specimen collected in 1896, by the Rev. J. H. Keen, at Masset on Graham Island.[2] The differences noted between this form and true *acadica* were slight, but Mr. Osgood concluded that the birds of the humid Pacific coast region belonged to his new form and called it the North-west Saw-whet Owl, it was admitted to the 'A. O. U. Check-List,' with the range as "Puget Sound region, north to the Queen Charlotte Islands, British Columbia."[3] Thus the matter remained till 1914, when Mr. Ridgway in part six of 'The Birds of Middle and North America,' page 629, refused to recognize *scotæa*, and referred all the Saw-whets of North America to *acadica*, giving his reasons as follows. "The only peculiarities that I am able to observe in the type of *Nyctala acadica scotæa* consist in the deep ochreous buff auricular region and more reddish brown of the pileum; but I am of the opinion that these characters will not prove constant when more specimens from the Queen Charlotte Islands have been examined."

With these facts in mind I was surprised when Mr. J. A. Munro of Okanagan Landing, B. C., sent me word that he had four Saw-whet Owls from Graham Island that differed from any he had previously seen in British Columbia, these birds are now before me together with Osgood's type of *scotæa*, this type, and a Mexican skin have been lent to me by the Biological Survey through Mr. E. W. Nelson; besides these, the U. S. National Museum through Dr. C. W.

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[1] North American Fauna, 21, p. 43.
[2] Type, ♂ ad. Biological Survey, No. 168171.
[3] Auk, 1902, p. 319.

Richmond has allowed me the use of four skins from the Pacific coast; and Mr. P. A. Taverner has sent me two skins from the Victoria Memorial Museum, Ottawa; these with fourteen Ontario skins from my own collection will be used in discussing the relationship between the type of *scotæa* and the other Queen Charlotte Island birds. Three of these are adult females, taken on the following dates in 1915, September 19, October 20, November 5, the fourth a juvenile male taken June 18.

An adult female (September 19) is colored as follows, underneath — between sayal brown[1] and tawny olive, the usual streaks are prouts brown, the whole producing a deep cinnamon effect; the superciliaries cinnamon buff, becoming clove brown on the ear coverts; the tarsi and toes are cinnamon buff; above — clove brown uniform except for the spots on the lower hind neck, which are cinnamon buff, the feathers of the forehead only with a few shaft streaks of the same color; the tail darker than the back, the usual spots are white, small, and often only present on the inner webb and each feather has a narrow white tip; the wings are like the tail but edged with prouts brown, the spots on the outer edges of the primaries are few, small, and are colored from cinnamon buff to lighter; the greater coverts have one spot of white visible, with smaller concealed ones, the spots on the secondaries are nearly white; the under wing coverts and bend of the wing are cinnamon buff. The October female is like the September one, but the November female is darker beneath, the prouts brown streaks are wider.

That the plumage just described is not sexual, is I think, proved by the juvenile male (in the so-called Kirtland's Owl stage) this is much darker everywhere, except for the white superciliaries, than an Ontario juvenile male of May 15. Above including the head uniform clove brown much darker even than the adult (almost sooty black), superciliary region and anterior portion of forehead clear white, the feathers of the latter bordered with clove brown, the ear coverts almost black; beneath — fore neck and breast clove brown, a little lighter in the middle; abdomen clear sayal brown; wings and tail as in the adult; tarsi sayal brown, the

[1] Ridgway, Nomenclature of Colors, 1912, is used throughout.

toes only partially feathered. The Ontario bird is natal brown above and on the breast, the abdomen cinnamon buff, the ear-coverts fuscous, superciliaries white, but not so clear as in the Queen Charlotte Island bird.

The type of *scotæa* is a very different bird from the adult females just described, and differs from comparable mainland specimens sufficiently to suggest that it might belong to a race subject to dioromatism. The reddish brown of the pileum and back is pronounced and forms a band across the interscapulary region, this depth of color is only approached by a bird from Queràtero, Mexico,[1] and is much brighter than a male from Victoria, B. C.,[2] which in turn can be matched by Ontario birds; the auricular region in the type of *scotæa* is much more ochreous buff than either the Victoria or Mexican birds, and is not matched by any other birds before me; the tarsi and toes are cinnamon buff as in the dark females, while in the Mexican bird the toes are white and the tarsi only partially ochreous buff.

That the type of the North-west Saw-whet Owl is a stray, and does not represent the resident Queen Charlotte Island form is possible, though, as I have pointed out, it differs from mainland birds I have been able to compare it with, but against it are four birds that undoubtedly belong to a dark race, and if it should prove that the type of *scotæa* is not the light phase of this race the resident bird on the Queen Charlotte Islands would be without a name in which case I propose that it be called after Captain Allen Brooks, who has done so much for British Columbia ornithology.

Cryptoglaux acadica brooksi.

Type.— ♀ ad., Graham Island, Queen Charlotte Islands, British Columbia. September 19, 1915. No. 24629, collection of J. H. Fleming.

Saw-whet Owls from the Pacific Slope of British Columbia and Washington are ruddy brown in tone and these can be matched in my Ontario series, but Mr. Ridgway refers to a more grayish brown bird from the Rocky Mountain region, which may possibly

[1] ♂ ad. Sept. 10, 1896, Biological Survey, No. 155718.
[2] Feb. 29, 1893, U. S. Nat. Mus. No. 153206.

belong to a recognizable race, one bird from Rocklyn, Lincoln Co., Washington,[1] and one from Alix, Lacombe Co., Alberta,[2] are gray when compared with Ontario birds, and a series of inter-mountain birds might repay examination. Little can be deducted from measurements in the series before me, the Queen Charlotte Island birds are large, the wing averaging 5.53 in. in the three females, while five Ontario females average 5.40 in.

NOTE.— Since the above was written I have examined two more of the dark race, one of them a male.

A NEW FORM OF *CHLOËPHAGA HYBRIDA.*

BY JOHN C. PHILLIPS.

WHILE on an expedition to the Falkland Islands in the interest of the Museum of Comparative Zoölogy in 1915–16 Mr. W. S. Brooks obtained a series of *Chloëphaga hybrida* from West Falkland. This island form is larger in its several measurements than birds from the Straits of Magellan, and seems to be worthy of separation. It may be known as

Chloëphaga hybrida malvinarum subspec. nov.

Type from Port Stephens, West Falkland Isle. No. 70476 M. C. Z., adult ♂ collected 13th December, 1915, by W. Sprague Brooks.

Characters similar to *C. hybrida hybrida* from Patagonia and the Straits of Magellan, but larger, especially in length, depth and breadth of culmen. Pileum in the females, paler and more grayish; drab to light drab (Ridgway, 1912), instead of cinnamon brown. This character holds good for all five of the Falkland Island females and for the M. C. Z. series from the Straits of Magellan region.

[1] Jan. 1910, Vic. Memor. Mus. No. 5842.
[2] ♀ ad. Dec. 1914, Vic. Memor. Mus. No. 8730.

Remarks. Measurements are added. They show a constant, although small difference in the two regions for males as well as females. The great difference of the wing length between the females of *C. h. malvinarum* and *C. h. hybrida* is partly due to the fact that the series from Straits of Magellan are in worn plumage and have the primaries abraded.

It is possible that the lighter and more faded color of the pileum in the island geese may be due to age, and therefore will fail to hold as a constant character.

As so little is known about the seasonal movements of South American *Anatidæ* it is of interest to find these Falkland Island *Chloëphagae* distinct from those of the mainland.

Chloëphaga hybrida.

Falkland Island Series.

		Culmen	Depth Cul. at Base	Width Cul. at Base	Tarsus	Wing
♂	1099	39.	22.	21.	72.	382.
♂	1172	39.	23.	20.	74.	376.
♂	1171	40.	24.	22.	76.	383.
	Average	39.3	23.	21.	74.	380.
♀	1174	38.	22.	19.	67.	360.
♀	1173	36.	24.	19.	65.	361.
♀	1102	38.	21.5	20.	65.	376.
♀	1058	37.	21.	20.	71.	367.
♀	1274	37.	24.	20.	67.	368.
	Average	37.	22.5	20.	67.	366.

M. C. Z. Series, Straits of Magellan.

♂	M. C. Z. 23222	35.	22.	18.	71.	370.
♀	" 33180	36.	21.	19.	61.	360.
♀	" 7970	34.	19.	18.	60.	326.
♀	" 18413	34.	21.	17.	62.	338.
♀	" 18414	36.	20.	16.	61.	334.
♀	" 18415	34.	16.	19.	58.	356.
	Average	35.	19.4	17.4	60.4	343.

CHANGES IN THE A. O. U. CHECK-LIST OF NORTH AMERICAN BIRDS PROPOSED SINCE THE PUBLICATION OF THE SIXTEENTH SUPPLEMENT.

THE changes in the A. O. U. Check-List which have appeared from time to time in the several Supplements have originated in the publications of various ornithologists throughout the world, and have been considered by the Committee on Classification and Nomenclature, and accepted or rejected as the case may be.

The cases that come before the Committee are of two kinds:

(a.) Nomenclatural — cases which are easily settled by correspondence between the members of the Subcommittee on Nomenclature, all of these being governed by a definite Code of rules.

(b.) Ornithological — much more difficult cases involving the study of series of specimens and resting largely upon the personal opinion of the members, which may vary widely.

It was formerly the custom for the Committee to meet in Washington annually in April to dispose of accumulated cases. Of late years however, this has proven unsatisfactory as neither time nor material was available for the proper consideration of many proposed new forms based upon very slight differences. The following plan has therefore been adopted by the Committee in the consideration of ornithological cases.

To publish an annual list of proposed additions and alterations inviting study and criticism of them by ornithologists, whether members of the committee or not. In succeeding lists attention will be called to any publication endorsing or opposing changes or additions previously proposed, and it is hoped that in this way, the Committee may secure valuable assistance to guide them in reaching a decision, when a new edition of the Check-List is to be published, or at such time as it may be considered desirable to issue a Supplement.

In order to put this plan into operation the Acting Chairman

submits the following summary of changes and additions proposed since the publication of the 1910 edition of the Check-List and not considered in the Sixteenth Supplement,[1] exclusive of purely nomenclatural cases which, as explained above, are disposed of by the Subcommittee on Nomenclature. The list is probably incomplete but omissions can be added in subsequent publications.—Witmer Stone, *Acting Chairman Com. Classification and Nomenclature.*

I. Additions to the Check-List.

(a) Forms described as new, or rejected forms reëstablished.

Larus thayeri sp. nov. Ellesmere Land. Brooks, Bull. M. C. Z., LIX, No. 5, p. 373.

Puffinus puffinus bermudæ subsp. nov. Bermuda. Nichols and Mowbray, Auk, 1916, p. 195.

Æstrelata cahow sp. nov. Bermuda. Nichols and Mowbray, Auk, 1916, p. 194.

Histrionicus histrionicus pacificus subsp. nov. Pacific coast. Brooks, Bull. M. C. Z., LIX, No. 5, p. 393.

Oidemia deglandi dixoni subsp. nov. Alaska. Brooks, Bull. M. C. Z., LIX, No. 5, p. 393.

Ardea herodias treganzai Court.
" " **sanctilucæ** Thayer and Bangs.
" " **hyperoncha** subsp. nov. Pacific coast, Cal.
" " **oligista** subsp. nov. Santa Barbara Isl.

These four races recognized by Oberholser. Proc. U. S. Nat. Mus., 43, pp. 531–559.

Colinus virginianus taylori subsp. nov. Yuma Co., Col. Lincoln, Proc. Biol. Soc. Wash., May 27, 1915, p. 103.

Lophortyx gambelli sanus subsp. nov. Olathe, Colo. Mearns, Proc. Biol. Soc. Wash., XXVII, p. 113.

Dendragapus obscurus flemingi subsp. nov. Yukon Terr. Taverner, Auk, 1914, p. 385.

Bonasa umbellus thayeri subsp. nov. Digby, N. S. Bangs, Auk, 1912, p. 378.

Bonasa umbellus yukonensis subsp. nov. Yukon Terr. Grinnell, Condor, 1916, p. 166.

Lagopus leucurus altipetens Osgood, revived by Riley, Canad. Alpine Jour., 1912, p. 60.

Lagopus rupestris sanfordi subsp. nov. Tanaga Isl., Aleutian Chain. Bent, Smithson. Misc. Collns. 56, No. 30, p. 1.

Zenaidura macroura caurina subsp. nov. Oregon. Ridgway, Bds. N. and Mid. Amer., VII, p. 348.

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[1] 'The Auk,' 1912, pp. 380–387.

Buteo lineatus texanus subsp. nov. Corpus Christi, Texas. Bishop, Auk, 1912, p. 232.

Otus asio quercinus subsp. nov. So. California. Grinnell, Auk, 1915, p. 60.

Otus asio hasbroucki subsp. nov. Palo Pinto Co., Tex. Ridgway, Bds. N. and Mid. Amer., VI, p. 694.

Otus asio brewsteri subsp. nov. Salem, Oregon. Ridgway, Bds. N. and Mid. Amer., VI, p. 700.

Bubo virginianus neochanes subsp. nov. Newfoundland. Oberholser, Proc. Biol. Soc. Wash. XXVII, p. 46.

Bubo virginianus occidentalis Stone.
" " **icelus** (Oberholser).
" " **lagophonus** (Oberholser).

These three races revived by Ridgway, Birds of N. and Mid. Amer., VI.

Strix occidentalis lucida Nelson with which **S. o. huachucæ** Swarth is regarded as identical. Oberholser, Proc. U. S. N. M., 49, pp. 251–257.

Cryptoglaux acadica brooksi subsp. nov. Queen Charlotte Islands. Fleming, Auk, 1916, p. 422.

Glaucidium gnoma vigilante subsp. nov. Mountains of S. California and southern Sierra Nevada. Grinnell, Auk, 1913, p. 224.

Glaucidium gnoma swarthi subsp. nov. Vancouver Island. Grinnell, Auk, 1913, p. 224.

Glaucidium gnoma grinnelli subsp. nov. Humboldt Bay, Cal. Ridgway, Birds N. and Mid. Amer., VI, p. 791.

Micropallas whitneyi sanfordi subsp. nov. Lower California. Ridgway, Birds N. and Mid. Amer., VI, p. 809.

Micropallis whitneyi idoneus subsp. nov. Hidalgo, Texas. Ridgway, Birds N. and Mid. Amer., VI, p. 810.

Conuropsis carolinensis interior subsp. nov. Nebraska. Bangs, Proc. N. E. Zoöl. Club, IV, p. 93. [Applicability of *ludovicianus* of Gmelin for this race must also be considered.]

Dryobates pubescens microleucus subsp. nov. Newfoundland. Oberholser, Proc. Biol. Soc. Wash., XXVII, p. 43.

Dryobates pubescens glacialis Grinnell.
" **villosus leucothorectes** Oberholser.
" " **orius** Oberholser.
" " **icastus** Oberholser.
" " **sitkensis** Swarth.
" **scalaris eremicus** Oberholser.
" " **cactophilus** Oberholser.

Colaptes auratus borealis Ridgway.

Xenopicus albolarvatus gravirostris Grinnell.

Phlœotomus pileatus floridanus Ridgway.
" " **picinus** Bangs.

All the above 11, subspecies rejected or held in abeyance by the Committee are recognized by Ridgway, Birds of N. and Mid. Amer., VI.

Chordeiles virginianus howelli, subsp. nov. Texas. Oberholser, Bull. 86, U. S. Nat. Mus., p. 57.

Chordeiles acutipennis inferior subsp. nov. Lower California. Oberholser, Bull. 86, U. S. Nat. Mus., p. 109.

Mr. Ridgway (Birds N. and Mid. Amer., VI) endorses these two new races of Nighthawks.

Setochalcis gen. nov. for the Whip-poor-will as distinct from the Chuck-will's-widow; and,

Chordeilidæ fam. nov. for the Night Hawks. Oberholser, Bull. 86, U. S. Nat. Mus.

Corvus brachyrhynchos paulus, subsp. nov. Alabama. Howell, Proc. Biol. Soc. Wash., XXVI, p. 199.

Perisoreus canadensis sanfordi subsp. nov. Newfoundland. Oberholser, Proc. Biol. Soc. Wash., XXVII, p. 49.

Agelaius phœniceus aciculatus subsp. nov. Kern Co., Cal. Mailliard, Condor, XVII, p. 13.

Agelaius phœniceus nevadensis subsp. nov. Nevada. Grinnell, Proc. Biol. Soc. Wash., XXVI, p. 107.

Pinicola enucleator eschatosus subsp. nov. Newfoundland. Oberholser, Proc. Biol. Soc. Wash., XXVII, p. 5.

Loxia curvirostra percna subsp. nov. Newfoundland. Bent, Smithson. Miscel. Collns., 60, No. 15, p. 1.

Carduelis carduelis bermudiana subsp. nov. Bermuda. Kennedy, Bull. Brit. Orn. Club, CXCI, p. 33.

Melospiza melodia beata, subsp. nov. Enterprise, Fla. Bangs, Proc. N. E. Zoöl. Club, IV, p. 85.

Melospiza melodia acadica subsp. nov. Nova Scotia. Thayer and Bangs, Proc. N. E. Zoöl. Club, V, p. 67.

Pipilo maculata falcifer McGregor.

" " **curtatus** Grinnell.

" " **falcinellus** subsp. nov. Interior California. The first two rejected races reestablished and a new one described. Swarth, Condor, XV, No. 5, p. 168.

Pipilo erythrophthalmus canaster subsp. nov. Alabama. Howell, Proc. Biol. Soc. Wash., XXVI, p. 202.

Dendroica coronata hooveri McGregor.

Geothlypis trichas scirpicola Grinnell.

Hirundo erythrogaster palmeri.

Rejected races revived, Swarth, Univ. Cal. Publ. Zoöl. 10, No. 1, pp. 65–71.

Toxostoma redivivum sonomæ subsp. nov., Sacramento Valley, etc., Grinnell, Distributional List of Birds of Cal.

Nannus hiemalis semidiensis subsp. nov. Semidi Isl., Alaska. Brooks, Bull. Mus. Comp. Zoöl., LIX, No. 5, p. 400.

Salpinctes guadaloupensis proximus subsp. nov. San Martin Isl., Lower California. Swarth, Condor, XVI, No. 5.

Leucosticte tephrocotis dawsoni, subsp. nov. Sierra Nevada. Grinnell, Condor, 1913, p. 77.

(b.) Species which have been found within the limits of the Check-List.

Marila ferina (Linn.).
Marila fuligula (Linn.).
Cryptoglaux funerea funerea (Linn.).
Coccothraustes c. japonicus Temm. & Schl.
All four taken in the Pribilof Islands. Evermann, Auk, 1913, p. 15.
Dendrocygna viduata (Linn.), in New Jersey, G. B. Grinnell, Auk, 1913, p. 110.
Petrochelidon fulva pallida Nelson, in Texas, Bishop, Auk, 1910, p. 459.
Clangula clangula clangula (Linn.).
Fringilla montifringilla, Linn. Pribilof Islands, Hanna, Auk, 1916, p. 402.

II. Changes in Names.

(a) Due to the subdivision of species or subspecies and the restriction of the "typical" race to an extralimital range.

Gelochelidon nilotica becomes **G. n. aranea** Wils. Mathews, Birds of Austral., II, pt. 3, p. 329, confirms Coues (Proc. Acad. Nat. Sci. Phila., 1862, p. 536) that the North American form is distinct from the European.

Sterna caspia becomes **Hydroprogne tschegrava imperator** (Coues). Mathews, *do.*, p. 337. Again confirms Coues that the American bird is distinct. [Changes in generic and specific names are considered among nomenclature cases.]

Sterna anætheta becomes **Melanosterna anæthetus recognita** subsp. nov. Mathews, *do.*, pt. 4, p. 397. The American bird proves "different throughout" when compared with the typical form from the Philippines [changes in generic and specific names considered elsewhere].

Puffinus cuneatus becomes **P. pacificus alleni** subsp. nov. Mathews, *do.*, pt. 1, p. 83. *P. cuneatus* of the Marshall Islands is a subspecies of *P. pacificus* (Kermadec Isls.) but the American bird (from San Benedicto Isl.) is different from either.

Puffinus griseus is divided into **P. g. stricklandi** (Atlantic coast) and **P. g. chilensis** (Pacific). Mathews, *do.*, p. 96. True *griseus* is restricted to New Zealand and Australian seas.

Fregetta grallaria becomes **F. leucogaster** Gould. Mathews, *do.*, pt. 2, p. 39. These two species prove different upon examining the types. The latter is the bird referred to in the Check-List.

Phœbetria palpebrata = **P. p. auduboni** subsp. nov. Nichols and Murphy, Auk, 1914, p. 531.

Dafila acuta becomes **D. a. americana** Reich. Thayer and Bangs, Auk, 1916, p. 45. Confirm Reichenow, Orn. Monatsb. IX, p. 17, 1901, that the American and European birds are distinct. [The applicability of the name *tzitzihoa* Vieill. for this race is also involved].

Ægialitis hiaticula becomes **Æ. h. major** Seebohm. P. R. Lowe, Ibis, 1914, p. 395.

Squatarola squatarola becomes **S. s. cynosuræ** subsp. nov. Thayer and Bangs (Proc. N. E. Zoöl. Club, V, April 4, 1914) claim that the American bird differs from the European. Todd (Ann. Carnegie Mus., X, p. 146) fails to find constant differences.

Gallinula galeata becomes **G. chloropus cachinnans** subsp. nov. Bangs, Proc. N. E. Zoöl. Club, V, pp. 93–99. The North American bird is considered separable from that of South America (true *galeata*) and both regarded as subspecies of *G. chloropus* of Europe.

Callipepla squamata squamata becomes **C. s. pallida** Brewst. Bangs, Proc. N. E. Zoöl. Club, IV, p. 99.

Melanerpes formicivorus formicivorus becomes **Balanosphyra f. aculeata** Mearns. Ridgway, Birds N. and Mid. Amer., VI, p. 105. True *formicivorus* restricted to Mexico. [Generic name considered elsewhere.]

Dryobates scalaris bairdi becomes **D. s. symplectus** Oberholser. Ridgway, Birds N. and Mid. Amer., VI, p. 257. Endorses Oberholser in restricting true *bairdi* to Mexico.

Passer domesticus becomes **P. hostilis** Kleinschmidt, Falco, XI, No. 2, Dec. 1915. The English bird, from which our American birds are probably descended, is separated from the continental *P. domesticus*.

(b.) Species which are changed to subspecies.

Thalassogeron culminatus becomes **T. chrysostoma culminatus** Mathews, Birds Austral., II.

Oceanodroma kaedingi becomes **O. leucorhoa kaedingi** Willett, Auk, 1915, p. 301.

Somateria dresseri becomes **S. mollissima dresseri** Townsend, Auk, 1916, p. 291.

Aluco pratincola becomes **Tyto alba pratincola** Hartert, Vög. pal. Fauna, Heft VIII.

Otus xantusi becomes **O. asio xantusi** Ridgway, Birds N. and Mid. Amer., VI.

Atthis morcomi becomes **A. heloisa morcomi**.

Amizilis cerviniventris chalconota becomes **A. yucatanensis chalconota**, Ridgway, Birds N. and Mid. Amer., V.

Corvus caurinus becomes **C. brachyrhynchos caurinus**. Swarth, Univ. Cal. Publ. Zoöl. 10, No. 1, cf. also Rhoads, Auk.

(c) Subgenera raised to Genera or New Genera proposed.

Melanosterna
Phœbastria
Thalasseus
Hydroprogne
Onychoprion
Sternula

Mathews, Birds Austral., II. The first two are not even recognized as subgenera in the Check-List.

Oreopeleia
Chlorœnas } Ridgway, Birds N. and Mid. Amer., VII.
Patagiœnas

Hierofalco, B. O. U., List of British Birds.

Cerchneis, Chapman, Bull. A. M. N. H., XXXIV, p. 363. Cory, Field Mus. N. H., I, No. 9, p. 303.

Megaceryle } Miller.
Chloroceryle } Ridgway, Birds N. and Mid. Amer., VI.

Balanosphyra
Phrenopicus } Ridgway, Birds N. and Mid. Amer., VI.

Trogonurus
Nephœcetes } Ridgway, Birds N. and Mid. Amer., V.

Corthylio, Miller, Auk, 1915, p. 234.

III. Forms which it is proposed to reject.

Ixobrychus neoxenus, a melanistic phase of *I. exilis*. Bangs, Auk, 1915, p. 483.

Ardea herodias wardi.

Ardea wurdemanni, both of these are phases of *A. h. occidentalis*. Bangs, Auk, 1915, p. 484.

Falco rusticolus rusticolus

Falco r. gyrfalco Hartert considers all the American Gyrfalcons referable to *F. r. candicans* (N. A. and Greenland) and *F. r. obsoletus* (Labrador). Novit. Zool. XXII, pp. 167–185.

Strix occidentalis caurina = *S. o. occidentalis*. Oberholser, Proc. U. S. N. M., 49, p. 251.

Otus flammeolus idahoensis = *O. f. flammeolus*. Ridgway, Birds N. and Mid. Amer., VI.

Cryptoglaux acadicus scotæus = *C. acadicus*. Ridgway, Birds N. and Mid. Amer., VI.

Coccyzus minor minor = *C. m. maynardi*, so far as North American records are concerned. Ridgway, Birds N. and Mid. Amer., VII.

Phalænoptilus nuttalli nitidus = *P. n. nuttalli*. Ridgway, Birds N. and Mid. Amer., VI.

Uranomitra is united with *Amizilis*. Ridgway, Birds N. and Mid. Amer., V.

Melospiza melodia morphna = *M. m. rufina*. Swarth, Univ. Cal. Publ. Zoöl., 10, No. 1, p. 61.

Dendroica cærulescens cairnsi = *D. cærulescens*. Eifrig, Auk, 1915, p. 108.

Geothlypis trichas arizela = *G. t. occidentalis*. Grinnell, Publ. Zoöl. Univ. Cal., 12, No. 4, p. 202.

GENERAL NOTES.

Concerning the Occurrence of the Western and other Gulls in Southeastern Alaska.— In reviewing my recent paper on Alaskan birds in 'The Auk' (July, 1916, p. 335) the editor has found my notes on certain species of gulls to be indefinite. This is unfortunate, and it therefore seems desirable to present the facts in detail that the record may be clearly understood.

When we steamed out of Puget Sound, the ship was followed by a large straggling flock of gulls composed of four species; the Glaucous-winged, Western, Herring, and California Gulls. During the time we were in the Inside Passage and until we reached Ketchikan individuals of all these species were present. The birds were very tame and not only followed us but often flew abreast of the ship at about the height of the deck and within 20 or 25 feet of us, and frequently rested on the yards or davits. During these days much time was spent on deck watching and photographing them and their identification was made certain beyond any reasonable doubt, although no specimens were shot.

After the second day some of the Western Gulls began to drop behind and continued to do so until only four were left. These four remained with us until we anchored at Ketchikan. It is probable that some of the other species also left us, but this is not easy to prove as their places were taken by others, so that the total of our attendants did not vary much. As we neared Ketchikan a number of Ring-billed Gulls appeared and joined the others.

During the trip we occasionally passed other vessels, each of which had its following of gulls. It therefore appears probable that these birds pass up and down this coast more frequently than the limited number of records from the region seems to show.— F. Seymour Hersey, *Taunton, Mass.*

A Note on the Mottled Duck.— I want to correct a statement made by me in 'The Auk' (1912, p. 297) in which I compared a series of *Anas fulvigula maculosa*, from Brownsville, Tex., with a large series of Florida Ducks (*A. f. fulvigula*) and remarked that I could find no distinct difference between the two forms. In January, 1914, while paying a visit to Mr. E. A. McIlhenny, at Avery Island, Louisiana, I was able to collect a series of seven of the Mottled Ducks from the Vermilion Bay region. There are six adult males and one female. Taken as a whole this Louisiana series is even darker than the Texas series; the breasts of the males are very dark, glossy chestnut, and the ground color of the cheeks and chin is distinctly more rufous than in the Texas series or in the Florida series. The cheeks are also quite heavily streaked, and this streaking extends in all cases far below the superciliary stripe; in the Florida ducks the streaking of the cheeks is finer and does not extend so far ventrally on to the chin,

while the lores are plain buff and the chin itself is paler in all cases. The pilium of the Mottled Ducks from Louisiana is more solid black and less streaked black than is the case with the Florida birds; if anything it is darker than in the Texas birds. On the upper surface of the Louisiana series and the Texas series the light edges of all the feathers (back, scapulars, rump and tail) are darker and richer brown, but especially is this so in the Louisiana birds. The speculum character noticed by Sennett does not seem to me to hold good. It was said to be more green and less purple in *fulvigula* than in *maculosa*.

To sum up, I should say that the only character which seems important in distinguishing *A. f. maculosa* and *A. f. fulvigula*, aside from the generally darker tone of the former, is the coarser and more consistently striped head and neck of *A. maculosa*. In all cases the feathers bordering the sides of the culmen, the lores, are dotted with black in *maculosa* and plain buff in *fulvigula*. I believe the richer and more ruddy ground color of the head and neck of *A. f. maculosa* from Louisiana is partly due to the color of the water and mud in the Vermilion Bay region. These Vermilion Bay ducks are certainly more highly colored than ducks from the Brownsville region of Texas. The form *A. fulvigula maculosa*, therefore, will probably remain as a valid race.— J. C. Phillips, *Wenham, Mass.*

An Overlooked Specimen of the Trumpeter Swan.— When Mr. H. K. Coale was compiling the data on the Trumpeter Swan (*Olor buccinator*) for his paper in 'The Auk,' 1915, p. 82, I informed him that there were no specimens in the collection of the Philadelphia Academy. I recalled an old mounted specimen which was on exhibition when I first became connected with the museum but as no trace of it could be found I presumed that it had been wrongly identified. Recently, however, it has come to light having been boxed up with some other unmounted specimens. It is a typical adult specimen but unfortunately without data. The chances are, however, that it came from Delaware or Chesapeake Bays, as it bears evidence of having been mounted at the Academy.— Witmer Stone, *Acad. Nat. Sci., Philadelphia.*

Egrets (*Herodias egretta*) in Van Cortland Park, New York City. — Three individuals arrived on July 16 and have taken up their constant abode in the pond at Broadway and 242nd Street for the past week. They are attracting attention and admiration.

Great numbers of Kingfishers and Little Green Herons are also sharing the good fishing.— S. H. Chubb, *American Museum Nat. Hist., N. Y. City.*

The Black Rail (*Creciscus jamaicensis*) at Chicago, Ill.— A fine male of this species was shot May 30, 1916, while collecting at Hyde Lake, South Chicago, Ill. The skin is in the Harris Extension collection. The specimen was first flushed in a small cattail growth, and flew rather strongly

and at a good height for five or six rods before dropping back into the scant vegetation, which here stood in a foot or so of water. On going to the spot the bird flushed again, nearly underfoot, and was secured. The flight of this individual was fully as strong as that of Sora and Virginia Rails seen a short time previously. Mr. Charles Brandler, of the Field Museum, tells me that he saw a specimen of this rail in a hunter's string of birds, early in September, 1898, that was taken in this same locality. The owner, however, refused to part with it on learning it was different from the others.

The only previous Illinois records of which I am aware are those of Mr. E. W. Nelson (Birds of Northeastern Illinois, Bulletin of the Essex Institute, Vol. VIII, 1876, p. 134) who says, "During the spring of 1875 I saw three specimens in the Calumet Marshes. The first was observed early in May," and proceeds to give a good description of a nest and ten eggs found the same season near the Calumet River.— H. L. Stoddard, *N. W. Harris Public School Extension of Field Museum, Chicago, Illinois.*

Early Flight of Wilson's Snipe in Massachusetts.— On the afternoon of August 27, 1916, I saw at least 25 Wilson's Snipe, *Gallinago delicata,* along the Ipswich River in Topsfield, Mass. Mr. F. W. Killam reported about "three dozen" there the next day. These snipe were very wild and restless, continually flighting about the meadows in small flocks. A flight of snipe was reported at other points in Mass. the same week. So far as I can find out this is the earliest autumn record for any considerable number of this species in Mass.— J. C. Phillips, *Wenham, Mass.*

Eskimo Curlew in Massachusetts.— I am informed by Mr. E. H. Ives of Boston that a flock of about fifty Eskimo Curlew (*Numenius borealis*) was seen last spring (May 17, 1916) at Chub-Head Sands, near the mouth of the Rowley River between the towns of Ipswich and Rowley, Mass.

A letter to Mr. Ives from J. E. Short (not dated) says, "I should say there were fifty of them — they stayed around two days. Charles Bartlett saw them (also) and he said he had n't seen any for 15 years."

Both Short and Bartlett are "clammers" and have been experienced shore-bird gunners in the past. Mr. Ives has talked with both these men and others at Rowley and feels certain that there was no mistake in identification.— John C. Phillips, *Wenham, Mass.*

Note on the Nesting of the Valley Quail.— Mr. Fred M. Steele, of Los Angeles, Cal., sends me the following:— "Last spring a pair of California Valley Quail came down from the hills and were fed on our place for several days. They finally selected a flower box on my sleeping porch for a nesting site, and raised thirteen young, which are now (Aug. 23, 1916) full grown. Every morning about five o'clock they come to be fed on wheat which we put out for them, and we take great pleasure in feeding and watching them." — Henry K. Coale, *Highland Park, Ill.*

Incubation Period of the Horned Lark.— In connection with her school work, and with the help of the children under her instruction, the undersigned has studied the incubation period of the Horned Lark (*Otocoris alpestris leucolæma*) during the Spring just passed. The nest was within a few feet of the school house: it was discovered on May 4, and contained three eggs, and on May 5, it contained four eggs, after which date no more were laid.

On the morning of May 16, two eggs were completely hatched, and two were pipped, and by evening of the same day, all the eggs were fully hatched.

During the period of incubation the weather was most inclement, with frosts, snow, hail, and rain. If it be held that the first egg was laid on May 2 (a highly probable assumption), and that there was more or less incubation effect during the time of laying, the period of incubation may be estimated as being between 11 and 14 days: it was certainly not more than 11 (plus) days for the last egg.— Hazel MacDonald, *Dacono, Colo.*

Crows Destroying Quail.— According to my observation during the last twenty years, crows destroy tremendous numbers of the eggs and nestlings of our useful song birds. In fact, in my opinion, this destruction more than offsets what good they do in destroying injurious insects or vermin. I had never, however, until this past winter heard of Crows destroying Quail (*Colinus virginianus virginianus*), except when young, but a neighbor living near my place at Flowerfield, Suffolk County, Long Island, has reported that late last winter when there was a considerable fall of snow which covered the ground for ten days or two weeks, a flock of thirteen quail which wintered on his premises were all killed by crows. He frequently saw a considerable number of Crows following the bevy of quail, harassing them and tiring them out, and finally killing and eating them.— John Lewis Childs, *Floral Park, N. Y.*

Cassin's Sparrow in Colorado.— This species (*Peucæa cassini*) is rather uncommon in Colorado, and so far as the writer knows, the previous records are all from the plains eastward and southward of Denver. The only specimens heretofore secured by the writer, were taken at Sable, Colo., Aug. 16, 1913, and at Henderson, Colo., Aug. 24, 1913, the first named place being about twenty miles in an air line from the foot-hills of the Rockies, and this record is perhaps the nearest for this species to the mountains of this State. The writer recently secured (on June 4, 1916) a male in breeding condition, in Garver Canyon, about eight miles west of Sedalia, Colo., at an altitude of 7000 feet. If this species has not passed undetected heretofore in the foot-hills west of Denver, the present record would make it appear as if the species were latterly making its way westward into the mountains.— W. H. Bergtold, *Denver, Colo.*

Junco breeding at West Quincy, Mass.— On July 16, I noticed a male *Junco hyemalis hyemalis* at Fuller's Quarry, West Quincy, Mass. Mr. Winthrop S. Brooks of the Boston Museum of Natural History and Dr. Stanley Cobb were with me at the time and we followed him up, finding to our surprise that he had young in the vicinity, one of which we saw him feed.

It seems worth while reporting this instance of a Junco's breeding at this latitude, at an elevation not much over 200 feet, as we found the past records were very scanty.— N. C. Foot, M. D., *Milton, Mass.*

Multiple Nest of the Yellow Warbler.— On June 1, 1916, on the bank of the Red River of the North near Wahpeton Indian School I found a finished nest of the Yellow Warbler in a rather uncommon position. The nest was situated about twelve feet high on the trunk of a large willow tree; where the nest was found the tree was twelve inches in diameter. June 6 I again went to the place and found a new nest finished on top of the first one. There were still no eggs. June 13 I again visited the nest and found nest No. 3 added on top of the other two, but still no eggs. June 25 I again visited the nest and found nest No. 4 added and containing one egg of the Yellow Warbler. Dimensions of the nest were then: inside diameter two inches; depth of nest one inch; outside dimensions, diameter three inches; height of the four nests combined ten and one-half inches.

June 28 a very heavy storm came up and did a lot of damage. Of twelve nests I had located not one survived. On the 29th I went to collect nests and eggs of the Yellow Warbler. I saw that nests No. 3 and No. 4 were blown down and probably had fallen into the river, for I could not locate them anywhere. By examining the two remaining nests I found that No. 2 fitted very snugly in the cup of No. 1 but was not connected with it, so that I could lift it out very easily. Nest No. 1 contained two Cowbird's eggs. They were very different in coloring and size so I believe that two Cowbirds must have visited and imposed on the Yellow Warbler. Imbedded in the bottom of Nest No. 2 I found one egg of the Yellow Warbler. Nest No. 2 contained one Cowbird's egg, and on the ground under the nest I found one more Cowbird's egg. All of the Cowbird's eggs were distinctly different in coloring, so at least four different birds must have visited the nest.

I am only sorry that I lost the opportunity to examine nests No. 3 and No. 4 and collect the whole structure intact.— Jens K. Jensen, *United States Indian School, Wahpeton, N. D.*

Warbler Notes from Rhinebeck, N. Y.— One of the most remarkable features of the past spring migration has been the abundance of the rarer warblers. My notes are based on daily observations made over an area of about two hundred and fifty acres of mixed woodland, lawns and marshy ground. The species of warblers to which I wish to make especial refer-

ence are the Blackburnian, Cape May, Tennessee, Bay-breasted and Wilson's Warblers.

Contrary to the usual dates, the Blackburnian Warbler has arrived in the past three years on April 29, May 5 and May 1, respectively. This year the height of its migration was reached on May 19, when eight were observed. It was last seen on the 29th. The Cape May Warbler also has been coming ahead of schedule time, on May 4, 8 and 2. In 1916 it was pretty steadily present until the 27th and five were observed on three occasions.

But the most remarkable increase has been shown by the Tennessee Warbler. Up to 1915 I had only one spring and one autumn record of the species. In 1915 it was observed several times from May 6 to 20, three being recorded on the 19th. In 1916 it did not arrive until the 10th, but immediately became the most conspicuous and constant songster of the entire family, as many as half a dozen answering each other from adjacent tree-tops. The climax of its migration was reached on May 22, when sixteen were recorded and it remained common until the 29th. One straggler was observed on June 2.

I usually see not more than five or six Bay-breasted Warblers in a season, but this year they were constantly present from May 11 until the 29th, twelve being recorded on the 19th. Wilson's Warbler also arrived on the 11th and stayed till the 29th, singing freely and as many as four being seen on two different days.

One other unusual occurrence was a visit from a Blue-winged Warbler in full song on May 19, as Dutchess County is beyond the normal range of this species. The 19th of May marked the turning point of the warbler migration and twenty-three species were noted on that day.— Maunsell S. Crosby, *Rhinebeck, N. Y.*

Mockingbird (*Mimus polyglottos polyglottos*) in Wayne County, Michigan.— Authentic records of the Mockingbird in southern Michigan are extremely rare. The first known Wayne County record is that of Mr. J. Claire Wood who found a pair breeding on Aug. 13, 1910, in Ecorse Township, the nest containing three young ('Auk,' 1911, 269). This locality is but a few miles from Grosse Ile where the second record was established. Mr. George Thrall had a Mockingbird that remained practically throughout the summer of 1913 on his grounds on the eastern side of Grosse Ile. The bird was first noticed early in May, and had the habit of singing vigorously from the peak of the barn, especially during the early mornings. He was not aware as to whether it nested or not. From a long residence at New Orleans Mr. Thrall is perfectly familiar with the species.

Major A. H. Boies wrote Prof. W. B. Barrows Aug. 6, 1906, from Amherstburg, Ont. "that a man there took a nest of the Mockingbird (presumably during that year)." Amherstburg is directly across the Detroit River from the lower portion of Grosse Ile. It has been detected several

times at Pt. Pelee, Essex Co., Ontario, and apparently nested there.— Bradshaw H. Swales, *Ann Arbor, Mich.*

The Carolina Wren in the Maine Wilderness.— Late in June I visited the Fish and Game Preserve of the Megantic Club which is located in northwestern Maine, and extends from Beaver Pond, about twenty-five miles north of the Rangeley Lake, to Lake Megantic in Quebec. A large part of this is primeval forest, a clearing having been made only for the accommodation of camps, and little or no lumbering has ever been done on the preserve.

I reached Beaver Pond about noon of June 21st, and almost the first bird song I heard was that of the Carolina Wren. I did not succeed in seeing the bird, but one who is familiar with the song in the South, and has heard it in New Jersey, and two or three times on Long Island, cannot mistake it, even in the Maine woods.— John Lewis Childs, *Floral Park, N. Y.*

Notes from Wisconsin.— Bonasa umbellus umbellus. Ruffed Grouse.— The crops of ten Ruffed Grouse taken in Chippewa County Nov. 25–28, 1915, were examined and seven found to contain largely the pods of the vine *Amphicarpœa* — "Hog Peanut." This vine was very plentiful in the region trailing over the bushy growth in the burned areas. The "crop statistics" of one of the birds, which contained all the kinds of food noted in the others, is as follows:

37 pods of *Amphicarpœa*	3 leaflets of strawberry (green)
130 seeds " "	1 leaf of wintergreen
105 small reddish leaf buds	1 berry of wintergreen
17 seeds of *Desmodium*	The remains of an insect and one small pebble
36 leaflets of clover (green)	

Spizella pallida. Clay-colored Sparrow.— Clay-colored Sparrows were found to be quite abundant in the vicinity of Friendship, Adams County, July 4, 1915, and one nest with four eggs was located. The land is flat and the soil sandy with a very patchy growth of jack-pines occasionally mixed with black oaks. The open patches are partly bush grown and partly grassy. Farms were not plentiful in the region visited. The combination of open places and woods made bird-life very plentiful and it was interesting to find the Chipping, the Field and the Clay-colored Sparrows all numerous in one locality.

Thryothorus ludovicianus ludovicianus. Carolina Wren.—One bird was seen near Madison July 18, 1915.

Planesticus migratorius migratorius. Robin.— An albino robin that was reported to have spent the summer near the campus of the University of Wisconsin was seen Oct. 12, 1915, about two weeks before the last large flock of migrating robins was noted (flock of 35 on Oct. 30). In the spring of 1916, an albino robin was noted in the same vicinity on

March 29 about two weeks after the first spring migrants were seen. Large flocks of migrating robins were still about by April 16. This note is recorded in the belief that it furnishes some evidence that the first arrivals among the spring migrants are the summer residents and the late migrants those bound for more northern localities. NORMAN DEW. BETTS, *Madison, Wis.*

Birds with Accessory Wings.— The recent interesting article on "A Four-winged Wild Duck" (Auk, October, 1915) caused the undersigned to search for some references on this deformity, references he remembered having read many years ago, and he recently found them in J. Bland-Sutton's 'Evolution and Disease' (1890), in which work is given an illustration of a Dove with an accessory wing, together with several other examples of dicotomy in other animals. This note is published in order that future workers in avian pathology may not overlook this valuable article of Sutton's.— W. H. BERGTOLD, *Denver, Colo.*

Pseudo-masculinity in Birds.— The undersigned recently secured a Spurred Towhee (*Pipilo maculatus montanus*) which is of more than ordinary interest. The skin is in the plumage of a male, though the black of the head and throat has a faint brownish cast by reflected light. The bird proved, however, on dissection, to be a female, with a normal ovary, containing ova in various stages of development. It has been held by various writers (vide, Sutton, 'Evolution and Disease') that, with dimorphic species (dimorphism between the sexes) the assumption of the male dress by the female bird, is always accompanied by an atrophic or, otherwise, diseased condition of the ovary. If this be true the case now reported is an exception, unless this rule does not apply to all birds, but only to the domestic hen, and to pheasants, in which species, Sutton clearly detected this relation between the diseased ovary, and pseudo-masculinity. The undersigned does not know how much is to be found on this question in general ornithologic literature. Sutton cites the following species as exhibiting pseudo-masculinity; — "Pheasants (Common, Golden, and Silver), Domestic Hen, Pea-fowl, Partridge, Bustard, American Pelican, Wild and Domestic Ducks, Cuckoo, Cotinga or Bellbird, Bunting, and Chaffinch," but does not state whether or not diseased ovaries were found in all these cases.— W. H. BERGTOLD, *Denver, Colo.*

RECENT LITERATURE.

Chubb's 'The Birds of British Guiana.' [1]—One of the most notable ornithological publications of the year is the first volume of Chubb's 'Birds of British Guiana.' This work is gotten out by Mrs. F. V. McConnell as a memorial to her late husband, and is based mainly upon the collections made by him during numerous visits to the Colony, where he had extensive interests. On two occasions, in 1894 and 1898 Mr. McConnell made extended trips to Mt. Roraima in the interior, so that his collection contained nearly all the species known from British Guiana. At the time of his death in 1914 he was engaged with Mr. Chubb in making a catalogue of the specimens which he proposed to publish as a contribution to our knowledge of the geographic distribution of the birds of this portion of South America. In following out his plan, Mrs. McConnell wisely decided to extend the scope of the work, to include all species known from the Colony and to draw when necessary upon other collections and previous publications, in order to make the work as complete an account as possible of the birds of British Guiana.

In asking Mr. Chubb to prepare the work she could not have made a better choice, while the publication of her husband's journal of the 1894 Roraima trip as an introduction adds much to the general interest of the volume. This first volume covers all the groups with the exception of the Passeres and treats of 349 species. Under each species are given a reference to the original place of publication of the name, and a synonymy of British Guiana references. Then come descriptions of the adults and young, and paragraphs on the 'Breeding Season,' 'Nest,' 'Eggs,' 'Range in British Guiana,' 'Extralimital Range' and 'Habits.' In many cases little or nothing is known concerning various of these subjects and this fact is stated, thereby indicating clearly what information is still a desideratum. While Mr. Chubb modestly states that the work is not intended to be a monograph of the birds of British Guiana, he seems to be thoroughly familiar with the literature of the subject and to have searched it exhaustively and with good judgment, in compiling the data that he presents.

In stating the range in British Guiana, all the localities represented in the McConnell collection are listed, as well as additional ones published by others, which is the only thoroughly accurate way of working out geographical distribution. The colored plates by H. Grönwold present

[1] The Birds of British Guiana. Based on the collections of Frederic Vavasour McConnell Camfield Place, Hatfield, Herts. By Charles Chubb, F. Z. S., M. B. O. U., Zoological Department, British Museum. With a Preface by Mrs. F. V. McConnell. Vol. I. London: Bernard Quaretch, 11 Grafton Street, W. 1916. Royal 8vo. pp. i–liii + 1–528, colored pll. I–X, map, numerous text figures, frontispiece portrait and 16 half-tone plates of scenery, natives, etc. Edition limited to 250 copies. Price of Vol. I, £2. 2s. net.

attractive portraits of some of the more interesting birds of the Colony, while the 95 text figures illustrate structural characters of many of the genera.

The classification is the same as that followed by Brabourne and Chubb in their 'List of the Birds of South America,' but the nomenclature has been revised where further research rendered it necessary. Three forms are described as new, from specimens in the McConnell collection, viz.: *Ortygops notata duncani* (p. 74), Abary River, *Creciscus melanophœus macconnelli* (p. 75), Bonasika River, and *Ciccaba superciliaris macconnelli* (p. 290) Ituribisi River.

Judging by the first volume Mr. Chubb's book is most welcome, and will be of the greatest value to students of neotropical birds, as well as to the general reader who wishes to ascertain what is known of the habits of the birds of this part of South America.

The recent activity in the study of the birds of this great southern continent has resulted in such a flood of descriptions of supposed new subspecies that to those not in the closest touch with the work, the whole subject seems a maze. A work, therefore, of the kind before us which brings together all the data bearing upon a particular area, and presents it in a systematic manner, seems especially timely.

The typography of the volume is good and we congratulate both Mr. Chubb and Mrs. McConnell upon the excellence of the work that they have brought out.— W. S.

Chapman's 'The Travels of Birds.' [1] — Dr. Chapman's latest contribution to popular ornithology is a little text book on bird migration entitled 'The Travels of Birds,' illustrated by text cuts by E. J. Sawyer. The twelve chapters bear the following headings which indicate pretty clearly the subjects which are considered: 'Birds as Travellers'; 'Preparing for the Journey'; 'First Flights'; 'The Bird's Air Line'; 'The Bird's Time-table'; 'The Day Flyers'; 'The Night Flyers'; 'The Travels of the Bobolink'; 'Some Famous Bird Travellers'; 'The Dangers on the Way'; 'The Bird's Compass'; 'Why Birds Travel.' The style is clear and devoid of all technicalities while the information presented is based upon the author's wide experience and upon the writings of other ornithologists, notably those of the late Wells W. Cooke, to whose memory the little volume is appropriately dedicated. Each chapter concludes with a series of questions bearing upon the subject just considered, entitled 'Suggestions for Study.' The book will form an admirable one for nature study classes in schools or elsewhere, and will give the general reader a clear, 'up to date' knowledge of one of the most interesting phenomena of bird life.— W. S.

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[1] **The Travels of Birds. Our Birds and their Journeys to Strange Lands. Frank M. Chapman. The Bird's Historian. New York and London. D. Appleton and Company. [1916]. 12mo. pp. 1–160. Cloth. 40 cents net.**

Sawyer's 'Land Birds of Northern New York.'[1] — This neat little booklet is another attempt to make easy the task of identifying birds on the part of the beginner. Every author has his own ideas as to how this may best be accomplished, and all meet with a measure of success, although probably none fulfill their expectations. Mr. Sawyer's ability as an artist has enabled him to supplement his brief descriptions by figures of a large number of the species, which aid materially in their identification, although the text paper used by no means does justice to the half-tones. The species are arranged in a number of artificial groups, which unfortunately are not mutually exclusive: *i. e.* 'Brightly Colored Birds'; 'Birds Distinctly Marked'; 'Birds of Robin Size or Larger (not in foregoing groups).' While the Rose-breasted Grosbeak is placed in the first, and the Bobolink in the second, we should regard one as distinctly marked as the other, and we surely should hardly expect to find the Wood Thrush in the 'Distinctly Marked' group, when the Thrasher falls in the 'Robin Size or Larger' section. The main fault in these artificial schemes is that females and immature birds, where they differ from the adult males, are left entirely out of consideration in the grouping. Shortcomings of this sort are however, common to all books of this kind, and are difficult to overcome in a 'pocket guide.' Mr. Sawyer's little book contains much information in a very compact form and will doubtless aid many beginners to name the birds about them.— W. S.

Summer Birds of the Douglas Lake Region, Mich.[2] — Mr. N. A. Wood has compiled an annotated list of 128 species of birds observed in the Douglas Lake region of Michigan which has been published by the University of Michigan. It is based upon his own observations in 1915, those of Prof. Smith and Dr. Gates in 1911, and a published list by J. S. Compton. An introduction discusses the physical features of the locality and the ecological distribution of the birds. We note *Helodromas solitarius cinnamomeus* and *Colaptes auratus auratus* listed without comment, but as Michigan is far out of their range we presume that *H. s. solitarius* and *C. a. luteus* are intended, as suggested by the English names. *Dryobates pubescens* should also probably be *D. p. medianus*, while the occurrence of two races of Ruffed Grouse together, apparently at the same season, seems open to question.— W. S.

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[1] Land Birds of Northern New York. A Pocket Guide to Common Land Birds of the St. Lawrence Valley and the Lowlands in General of Northern New York. By Edmund J. Sawyer. Illustrated by the Author. Published under the Auspices of the Watertown Bird Club. May, 1916. 12mo., pp. 1–90. 1 colored plate and numerous half-tone text figures. A. C. Rogers, 325 Jay St., Watertown, N. Y., paper, 35 cts., cloth 50 cts., postpaid.

[2] The Summer Birds of the Douglas Lake Region, Cheboygan County, Michigan. By Norman A. Wood, Frank Smith and Frank C. Gates. Occas. Papers Mus. Zoöl. Univ. Mich., No. 27. May 15, 1916.

An Index to 'Bird-Lore.'[1] — To those who have had occasion to compile information upon any species of bird or upon the birds of any State the need of an index to 'Bird-Lore' has at once been apparent. Only by going over the index or contents of each volume separately could the vast store of data contained in this journal be made available. We were therefore prepared to welcome any general index that might appear and the one that has been compiled by Mr. Ernest Ingersoll and published by the National Association of Audubon Societies, will doubtless meet the requirements of the majority of those who will use it. Unfortunately, however, when compared with the two indexes to 'The Auk' compiled respectively under the direction of Drs. Jonathan Dwight, and Theodore S. Palmer, it falls far below their standard of excellence.

A perusal of a few pages shows an evident lack of system in the compilation. Of two titles 'Photographing a Ruffed Grouse' and 'Photographing a Virginia Rail' for example, one is indexed under 'photographing' the other under 'Virginia,' though we find references also under 'Grouse' and 'Rail.' Two others, 'A Crow Study' and 'A Hermit Thrush in Winter' appear respectively under 'a' and 'Hermit,' and we fail to find the latter under 'Thrush' where the other references to the species occur. While it is the evident intention to index each article under the author and the bird of which it treats, we find that in many cases one reference or the other has been omitted. However indexes are thankless jobs and the present one will answer the purposes of the majority of those who use it, and be a great help to all. But it seems unfortunate that where so much effort has been expended, a little more care was not exercised. A series of page references to papers relating to the birds of each State and country would also have been a welcome addition.— W. S.

A Bibliography of British Ornithology.[2] — For thirty-six years the only work dealing solely with the bibliography of British Ornithology has been the fourth installment of Dr. Coues' famous 'Ornithological Bibliography.' The present work by W. H. Mullens and H. Kirke Swann is much more pretentious than that of Dr. Coues and is arranged on a different plan. It contains biographical sketches of most of the authors, which

[1] An Index to Bird-Lore. Volumes I to XV, inclusive, containing a Reference to Every Contributor, Article and Topic; an Analytic Index to the Colored Plates and other Illustrations; and an Index to Books and Periodicals Reviewed. Compiled by Ernest Ingersoll. For sale by the National Association of Audubon Societies, 1974 Broadway, New York City. 1916. Price 50 cents.

[2] A Bibliography of British Ornithology from the Earliest Times to the End of 1912. Including Biographical Accounts of the Principal Writers and Bibliographies of their Published Works. By W. H. Mullens, M. A., LL.M., F. L. S., M. B. O. U. and H. Kirke Swann. "Let no man who writes a book presume to say when he will have finished. When he imagines that he is drawing near to his journey's end, Alps rise on Alps, and he continually finds something to add and something to correct." MacMillan and Co., Limited, St. Martin's Street, London. 1916. 8vo. Pt. 1. pp. 1–112, 6/net. To be completed in about six bi-monthly Parts.

are arranged alphabetically, the papers of each author following the sketch in chronological order. The amount of data that the authors have gathered together is enormous, and historians and biographers in general will find this work a veritable mine of information. Ornithologists are seldom narrow, and we find that most of the authors here enumerated were noted in other fields as well. William Bullock whose name is ever associated with the early collections of Mexican birds, is listed as a 'naturalist, collector, traveller, antiquary, auctioneer and showman' while he describes himself on the cover of his 'Museum Companion' as 'Silver-Smith, Jeweller, Toyman and Statue Figure Manufacturer.'!

In addition to the account of Bullock, American ornithologists will find facts of interest in the sketch of Capt. Thomas Brown, publisher of the 'Illustrations of American Ornithology,' and 'Game Birds of North America,' two of the rarest of American ornithological works, while the biographers of Thomas Bewick and Daines Barrington will attract many. We shall look with interest for the succeeding parts of this important work,— a work that should be in all reference libraries.— W. S.

Todd on Dysithamnus mentalis.[1] — In this paper Mr. Todd has presented a painstaking monograph of a difficult genus of Formicariidæ including detailed descriptions, full synonymy, maps showing the distribution of the species, lists of specimens, and extracts from literature relating to habits, etc. In all respects this is a model piece of work and one which could well be followed by other writers. Five species of the genus are recognized: *D. mentalis* (divided into five races), *semicinereus*, *extremus*, *affinis* (three races) and *andrei*. The new forms are *D. m. æquatorialis* (p. 539), Zaruma, Ecuador, *D. m. lateralis* (p. 540), Guarico, Venezuela; and *D. extremus* (p. 549), Cauca, Colombia.— W. S.

Cherrie on New Neotropical Birds.[2] — Mr. Cherrie describes ten new South American birds from the collections of the American Museum of Natural History. Two of these were secured by S. M. Klages in Venezuela: *Hemithraupes flavicollis aurigularis* (p. 389), Suapure; and *Argicus macrodactylus caurensis* (p. 389), La Union. One was obtained in the Orinoco Delta by Dr. Rusby: *Piaya rutila orinocensis* (p. 393); while the rest were all collected by Mr. Cherrie himself on the Collins-Day Expedition, viz.: *Xiphorhynchus guttata rimarum* (p. 391), Rio Espirito Santo, Bolivia, *Taraba major virgultorum* (p. 391), *Capito auratus insperatus* (p. 391), *Piaya rutila chaparensis* (p. 392), and *Hypocnemis collinsi* (p. 395), all from Todos Santos, Bolivia; *Drymophila phantatis* (p. 396), Cocha-

[1] On Dysithamnus mentalis and its Allies. By W. E. Clyde Todd. Bull. Amer. Mus. Nat. Hist. XXXV, pp. 533–560. August 10, 1916.

[2] Two New Birds from Venezuela. New Birds from the Collection of the Collins-Day Expedition to South America. By George K. Cherrie. Bull. Amer. Mus. Nat. Hist., XXXV, pp. 389 and 391–398.

bamba, Bolivia; *Capito dayi* (p. 394), Rio Madeira; *Crocomorphus flavus inornata* (p. 395), Santarem, Brazil, and *Formicivora rufa chapmani* (p. 396), Altar do Chao, Brazil.— W. S.

Cory on New South American Birds.[1]— Further study of the collections of the several South American expeditions of the Field Museum has brought to light 26 apparently new forms which are described and named by Mr. Cory in the pamphlet before us. They were obtained mainly in Brazil and Peru by Messrs. Osgood, Anderson and Becker but *Pachyrhamphus niger tobagensis* (p. 343) is described from Tobago, *Cistothorus platensis tamæ* (p. 344) from Paramo de Tama, Ven., and *Coryphospingus pileatus brevicaudus* (p. 345) from Margarita Island.— W. S.

Riley on New Ralliformes.[2] — Mr. Riley describes as new two birds from the collection of the U. S. National Museum; one a Coot from Grenada, *Fulica americana grenadensis* (p. 103), the other a small Rail, *Creciscus murivagus* (p. 104), from Lima, Peru.— W. S.

Mathews' 'Birds of Australia.'[3] — The present parts of Mr. Mathews' work conclude the Hawks and the Owls. Much controversial discussion on nomenclature and the recognition of races is presented, and the following new forms are proposed, viz.: (Part III) *Ieracidea berigora tasmanica* (p. 276); *I. b. kempi* and *centralia* (p. 277) and *Spiloglaux novæseelandiæ everardi* (p. 332); as well as a new genus *Berneyornis* (p. 305) for *H. athene strenua* Gould. Part IV contains an elaborate discussion of the Australian and other Barn Owls and *Megastrix tenebricosa perconfusa* (p. 408), British New Guinea, is described as new.— W. S.

Buturlin's Review of the Nuthatches.[4]— In his studies of this family extending over ten years Mr. Buturlin comes to the conclusion that it is not so homogeneous as generally supposed and proceeds to separate it into three subfamilies, *Daphœnosittinæ*, comprising *Daphœnositta* and *Neositta; Cyanosittinæ* comprising *Pœcilositta* gen. nov. (p. 149) for *Dendrophila* Sw. preoccupied and *Cyanositta* gen. nov. (p. 149) type *Dendrophila corallipes* Sharpe; and *Sittinæ*, comprising *Callisitta, Arctositta* gen. nov. (p. 151), type *Sitta arctica* But., *Sitta, Mesositta* gen. nov. (p. 152), type *S. himalayensis* Jard. & Selby, and *Rupisitta*.

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[1] Descriptions of Apparently New South American Birds, with Notes on Some Little Known Species. Field Museum of Natural History, Publication 190, Ornith. Series. Vol. I, No. 10. August 30, 1916. pp. 337–346.

[2] Two new Ralliformes from Tropical America. By J. H. Riley. Proc. Biol. Soc. Wash. XXIX, pp. 103–104, June 6, 1916.

[3] The Birds of Australia. By Gregory M. Mathews. Vol. V, Part III, pp. 249–352. May 27, 1916, Part IV, pp. 353–439, August 30, 1916.

[4] A Short Review of Nuthatches (Fam. Sittidæ). By S. A. Buturlin, Travaux de la Soc. Imp. Nat. Petrograd, XLIV, livr. 2, pp. 145–173. 1916.

The genus *Sitta* is separated into four subgenera. *Homositta* subgen. nov. (p. 152) type *S. castaneoventris* Frankl.; *Micrositta* subgen. nov. (p. 153) type *S. villosa* Verr.; *Leptositta* subgen. nov. (p. 153) type *S. leucopsis* Gould, and *Sitta* type *S. europæa* L.

Our *Sitta carolinensis* is arranged in subgenus *Leptositta*, while all our other North American species fall in *Micrositta*. No less than 22 races of *Sitta europæa* are recognized! This paper is evidently the result of much study and deserves careful consideration.

The following new forms are described: *S. europæa sakhalinensis* (p. 158), Saghalien Isl.; *S. e. hondoensis* (p. 160), Hondo Isl.; and *Rupicitta tephronota iranica* (p. 165), N. E. Persia.— W. S.

Dabbene on Argentine Coots and Grebes.[1]— In this interesting paper Mr. Dabbene describes the life histories of *Fulica armellata, F. rufifrons, Podiceps americanus* and *Podilymbus podiceps*. The nests and eggs are described and figured as well as the plumages of the young nestlings. A series of skins of *Fulica armillata* shows a gradual transition from a blackish downy nestling to a white-breasted juvenal plumage and finally to the slaty adult dress.— W. S.

Birds in Relation to the Dissemination of Mistletoes in the United States.— It is a relief to learn from two recent publications[2] on western mistletoes that birds are held to play only a minor rôle in the distribution of these destructive plants. The mistletoes considered are those of the genus *Razoumofskya*. The seeds are expelled from the capsules with such force that they have been observed to travel 66 feet with a fall of only 8 feet; aided by strong winds seeds from high trees are known to have carried a quarter of a mile. It is evident that the plants have no real necessity for animal carriers and it is stated by the author that the part played by birds is a minor one.

English sparrows and grouse have been observed to feed upon the seeds and they undoubtedly aid in dissemination of the plants. Both birds and rodents build nests among the mistletoes thus adding to the possibilities of seed distribution. The efficiency of these agents is limited, however, and Dr. D. T. MacDougal states that "the only localities which offer suitable conditions for the germination and growth of the seeds .... are the tips of branches or the shoots of young trees beneath. It is to be seen that no animals are to be found in the habitat of the parasite which would in ordinary usage carry the seeds to these locations."[3]

So much for the dissemination of Razoumofskya; with our other genus

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[1] Notas Biologicas sobre Gallaretas y Macas. Par Roberto Dabbene. Ann. Mus. Nac. Hist. Nat. Buenos Aires, XXVIII, pp. 183–192. July 19, 1916.

[2] Weir, James R. Bull. 317, U. S. Dept. Agr., Jan. 20, 1916, p. 24, and Bull. 360, June 17, 1916, p. 34.

[3] Minnesota Botanical Studies 2, p. 172, 1899.

(*Phoradendron*) of mistletoes things are quite different as the seeds are seldom distributed from tree to tree (except by gravity) by any agencies besides birds and other animals. These mistletoes are the most injurious also as they are known to kill many trees. The birds that are important disseminators of Phoradendron in Texas are, according to Professor H. H. York,[1] Mockingbirds, Sparrows, and Cardinals, and according to Dr. W. L. Bray,[2] Mockingbirds, Cedarbird and Robins.

Dr. Bray says: "It is the conclusion of most observers that the Mockingbird is the chief distributor of mistletoe seed, but perhaps the cedar birds actually distribute more, for in March and April these birds appear in flocks of hundreds in search of berry mast — especially hackberries — and during the brief visits of a few days or a week or two all the berry-laden trees are visited repeatedly until the berries are gone. During these flights, mistletoe berries are also eaten, though probably not much noticed until the hackberry crop is exhausted. Robins also are reported to be common distributors of mistletoe seed. In the vicinity of Austin large flocks of robins spend the winter, or part of it, in the cedar brakes, where they feed largely on cedar mast; but at times they appear in numbers about farmyards and in towns, feeding upon hackberries, and during these visits also upon mistletoe berries."

The birds which the Biological Survey has found to feed upon Phoradendron berries and which therefore distribute the seeds are the California Jay, Cedarbird, Phainopepla, California Thrasher, Hermit Thrush, Robin, Bluebird, and Western Bluebird.

While the problem of controlling mistletoes is a serious one in some localities, it is not likely that aggressive action against birds will ever be undertaken as a partial solution. The destruction of birds locally would be like dipping water from the ocean; others would come in to take their places and nothing would be gained. On any other scale combating mistletoe by killing birds is unthinkable. Like most pests mistletoe is best controlled by direct attack. Anyone interested in the European experience relating to birds as distributors of mistletoe will find it summarized by C. von Tubeuf in the article indicated by the appended reference.[3]— W. L. M.

Further Data on the Spread of the Chestnut-blight Fungus.— In previous communications to 'The Auk,'[4] the writer has called attention to a publication on birds as carriers of the chestnut-blight fungus and to another which showed the great importance of the wind in distributing

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[1] Bull. 120, Univ. Texas, March 15, 1909, p. 7.

[2] Bull. 166, U. S. Bureau of Plant Industry, Feb. 2, 1910, pp. 11–12.

[3] Naturwiss. Zeitschr. f. Forst. u. Land wirtschaft. 6. H 1, 1908, pp. 47–68.

[4] 32, No. 1, Jan. 1915, p. 119 and No. 3, July, 1915, p. 378.

[5] Studhalter, R. A. and Ruggles, A. G., Insects as Carriers of the Chestnut-blight fungus, Bull., 12, Pennsylvania, Dept. of Forestry, April, 1915, 33 pp., 24 figs.

spores of this serious tree pest. A third paper [5] on this general subject has also been published, and it establishes the fact that insects are important carriers of the blight. "In proportion to size" say the authors, "insects may carry a greater number of spores of the blight fungus than birds. We are led to the conclusion that some insects .... are important agents in the local dissemination of this disease."

These findings make it certain that no large part of the responsibility for spreading chestnut blight can be placed upon birds, for it is evident that bird vectors are far from indispensable to a pest that has at its service, innumerable insects, and the ubiquitous wind.— W. L. M.

Economic Ornithology in Recent Entomological Publications.— The army worm (*Cirphis unipuncta*) is one of those pests of agriculture which appear in large numbers, now here, now there, but which in spite of the sporadic nature of their outbreaks wreak the most serious damage. Never has an infestation of army worms been studied without yielding evidence of the importance of bird enemies of the pest. Mr. H. H. Knight, of Cornell University, who investigated the army worm during the 1914 outbreak in New York, gives the following commendation [1] of the birds: "Certain species of birds were very numerous in fields infested with army-worms. One large hay field, situated on low ground and in the proximity of timber, was frequented daily by a large flock of crows. The crows destroyed the worms so fast that the field never became brown as was the case in all other infested meadows. Flocks of cowbirds and grackles were doing good work in some fields. The meadow lark and the robin were also observed eating the larvae."

In a Farmers' Bulletin [2] giving a general discussion of the army worm, Mr. W. R. Walton, remarks that: "Most fortunately for the farmer, the army worm has many natural enemies among the native insects, reptiles, birds, and mammals ..... According to the records of the United States Biological Survey, more than 40 species of native wild birds are known to eat the army worm in its various stages. Among the most important of these are the following: Crow Blackbird or Grackle, Yellow-headed Blackbird, Chipping Sparrow, Bluebird, Prairie Hen, and European Starling. Domestic Fowls of all kinds will greedily devour the caterpillars and pupæ if allowed to roam over infested fields. Skunks and toads also undoubtedly eat thousands of the army worms, both caterpillars and pupæ. These birds and other animals should therefore be encouraged and protected by the farmer by all possible means."

Damage by the clover leaf-hopper, due to the small size of the pest which is overlooked, is usually attributed to soil or climatic deficiencies. It is really considerable, however, and it is fortunate that natural enemies

[1] The army-worm in New York in 1914, Bull. 376, Cornell Univ. Agr. Exp. Sta., May, 1916, p. 763.

[2] No. 731, U. S. Dept. Agr., May 23, 1916, pp. 9–10.

of the pest make up to some extent for the almost complete omission of measures of control. It is said [1] that:

"The insect enemies of the clover leafhopper seem to be few. Birds appear to be the most important enemies, and among the common species known to eat various species of leafhoppers in numbers are the Nuthatches, Yellow Warbler, Blue-headed Vireo, Long-billed Marsh Wren, Nighthawk, Phœbe, Tree Swallow, Bank Swallow, and Chickadee. In addition to these, over a hundred species of wild birds are known to feed upon leafhoppers. These birds should receive protection at the hands of the farmer."

The author of the foregoing extract has also recently published [2] on the corn and cotton wireworm (*Horistonotus uhleri*), a seriously destructive pest in the eastern half of the United States. It appears that in this case also "comparatively few natural enemies of this wireworm have been noted. No internal parasites have been reared from any stage of the species. Birds feed upon all kinds of wireworms, including those of the genus Horistonotus."

From a Florida publication [3] we learn that birds are appreciated aids in controlling the only serious insect enemy of velvet beans. "The caterpillars have many natural enemies. One of the most important is the 'Rice bird,' also called 'blackbird,' or 'red-and-buff-shouldered-marsh-blackbird.' These collect in great flocks in infested fields. Other birds, especially Mocking-birds, eat many of the caterpillars. It is probably on account of birds alone that small patches of velvet beans planted near woods usually escape with little injury."

Since birds are more or less indiscriminate in their attacks upon insects, beneficial species, as well as injurious, suffer from their predations. Brief comment upon a case of this kind is included by V. L. Wildermuth in his recent account [4] of the California green lacewing fly (*Chrysopa californica*). This neuropterous insect preys upon scale insects, plant lice, leaf-hoppers, and other injurious species and is held to be of real economic value. With regard to its bird enemies, the writer says:

"According to the records of the Biological Survey, United States Department of Agriculture, the Western wood pewee (*Contopus richardsonii*) feeds upon the species at Pasadena, Cal.; and at East Bernard, Texas, the nighthawk (*Chordeiles virginianus*) was found feeding upon the species, the stomachs of two birds containing three and six adults, respectively."

In judging birds in relation to useful insects, it must be borne in mind that a bird may take at a single meal as many insect pests as the insect

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[1] Gibson, E. H., Farmers' Bull. 737, U. S. Dept. Agr., June 26, 1916, p. 5.

[2] Farmers' Bull. 733, U. S. Dept. Agr., June 9, 1916, p. 5.

[3] Watson, J. R., Control of the velvet bean caterpillar, Bull. 130, Fla. Agr. Exp. Sta., June, 1916, pp. 56–57.

[4] Journ. Agr. Research 6, No. 14, July 3, 1916, p. 524.

predator consumes during its whole life. Where the food species are essentially the same from an economic point of view, it would seem that the value of a greater predator is not impaired by its feeding upon a lesser.— W. L. M.

Publications on Bird and Game Preservation.— The constantly increasing number of educational publications dealing with the study and protection of our wild life is a most welcome sign of the general awakening of the public to the importance of this work. Among the journals before us ' The Blue Bird ' continues to stand as a model for local Audubon or bird lovers organizations. Recent numbers contain among other articles a sketch of the Meadow Lark by Edwin L. Jack (April), ' The Genii of the Garden ' [Robin and Chipping Sparrow], by Cordelia J. Stanwood (May), and ' The Hermit Thrush on its Nesting Ground ' by Edwin L. Jack — all well illustrated. ' California Fish and Game ' for July includes Teachers' Bulletin No. 7 on the control of the English Sparrow, a problem which is attracting widespread interest, ' Fin, Feathers and Fur ' continues to keep Minnesota sportsmen and bird lovers posted on matters of interest. Louisiana contributes an excellent report of State Ornithologist Stanley C. Arthur in the ' Annual Report of the Conservation Commission of Louisiana ' on bird protection in the State, while Mr. E. A. McIlhenny reports on game breeding on the State game farm. Mr. Earle A. Brooks, has prepared a notable report on ' The Food of West Virginia Birds ' published by Hon. H. E. Williams, Commissioner of Agriculture. The whole question of the economic value of birds is treated in an attractive way backed by data from recognized authorities, and well illustrated.

Abroad, ' Bird Notes and News,' summer number 1916, tells of a revival of the attempt in England to pass the plumage importation bill while the ' Ornithologische Monatsschrift ' for May and June, 1915, which has just reached us, contains an extended article on bird song by Messrs. Stadler and Schmitt as well as the usual local notes. — W. S.

The Ornithological Journals.

Bird-Lore. XVIII, No. 4. July–August, 1916.

Birds of Monument Valley Park, Colorado Springs, Colorado. By E. R. Warren.

A Home in the Forest. By Florence M. Bailey.— A Study of Nesting Sierra Creepers.

A Merganser Family. By May D. Lewis.— In the Adirondacks.

A Successful Bird Exhibit. By Frederick Greenwood.

Notes on the Plumage of North American Birds. By F. M. Chapman, with colored plate by Fuertes. Covers the Pipits and Dipper.

The Educational Leaflet treats of the Veery.

The Condor. XVIII, No. 3. May–June, 1916.

The Shadow-Boxing of Pipilo. By Donald R. Dicky.

A Populous Shore. By Florence M. Bailey.— Venice, Cal.

Nesting of the Band-tailed Pigeon in Southern Arizona. By T. C. Willard.

The Speed of Flight in Certain Birds. By Alex. Wetmore.— Compared with that of an automobile the speed of which was known.

A Visit to Hat and Egg Islands, Great Salt Lake. By R. H. Palmer.

Nesting of the Tolmie Warbler in the Yosemite Valley. By Margaret W. Wythe.

Some Distributional Notes on California Birds. By H. E. Wilder.

The Condor. XVIII, No. 4. July–August, 1916.

Breeding of *Tiaris canora*, and Other Notes from the U. S. Naval Station, Guantanamo Bay, Cuba. By Dr. T. W. Richards.

Meeting Spring Half-way. By Florence M. Bailey. At Texarkana.

On Bicycle and Afoot in the Santa Catalina Mountains. By F. C. Willard.

Birds Seen in the Valley of the South Fork of the Flathead River, Montana. By Norman deW. Betts.

The Sahuaro Screech Owl as a Recognizable Race. By H. S. Swarth.— Opposes Ridgway's opinion that *Otus a. gilmani* = *cineraceus*.

A New Ruffed Grouse, from the Yukon Valley. By Joseph Grinnell.— *Bonasa umbellus yukonensis* (p. 166).

Migration and Field Notes from Fresno County, California. By J. G. Tyler.

The Oölogist. No. 5. May 15, 1916.

Eggs of Birds and Reptiles. By R. W. Shufeldt.

Some Western Birds. By D. I Shepardson.— Hummingbirds of Los Angeles. Also California Bush-tit in June issue.

Becoming acquainted with the Marsh Hawk. By S. H. Burnham.

The Oölogist. No. 6. June 15, 1916.

Nesting of the Wilson Warbler in New Jersey. By Louis S Kohler.— This must be a case of mistaken identity as Wilson's Warbler has only been found nesting from northern Maine and Minnesota northward. The nest was destroyed and the bird not taken.

The Oölogist. No. 7. July 15, 1916.

Red-breasted Nuthatch. [Nesting in Mass.] By R. I. Giles.

The Ibis. X series, IV, No. 3. July, 1916.

A List of Birds collected in Uganda and British East Africa, with notes on their Nesting and other Habits. Part II. By V. G. L. Someren.— This includes the Passerine birds, 317 in number.

Note on the Distribution and Nesting Habits of *Falco peregrinus pealei* Ridgway. By C. deB. Green.

The assumption of Summer Plumage in *Pyromelana oryx*. By A. G. Butler.— Another assertion that repigmentation of feathers takes place, although on the basis of the very same specimens, the Editor and others refute the author's views in a supplementary note. Like many others Dr.

Butler seems to have overlooked Dr. R. M. Strong's paper on the structure of feathers in which he shows that the alleged process of repigmentation is impossible.

Field-notes on Some of the Waterfowl of the Argentine Republic, Chile, and Tierra del Fuego. By F. E. Blaauw.

On the Bird-life of Hartman's Abrolhos Islands, Western Australia. By C. P. Conigrave.— Illustrated by beautiful half-tones.

Bulletin of the British Ornithologists' Club. CCXVI. May 25, 1916.

New Forms described—by E. C. Stuart Baker, *Rhipidura albicollis stanleyi* (p. 81), Meshmi Hills; by Dr. E. Hartert. *Pomatorhinus schisticeps fastidiosus* (p. 81), Ko-Khan, Malay Peninsula; and by Mr. G. M. Mathews nine races of Australian birds.

Bulletin of the British Ornithologists' Club. CCXVII. July 7, 1916.

New Forms described—by Dr. Hartert, *Brachypteryx poliogyna mindorensis* (p. 87), Mindoro, and by Mr. G. M. Mathews fourteen races of Australian Birds.

British Birds. X, Nos. 1–4. June 1 to September 1, 1916.

Some Breeding Habits of the Sparrow Hawk: (1) The Effect of Rain. By J. H. Owen.— With remarkable photographs of parents and nestlings. (2) The Hen at the Nest (in No. 2). (3) The Cock (in No. 3). (4) The Nestling (in No. 4).

The Moults of the British Passeres. By H. F. Witherby.— Covers, the Motacillidæ.

Avicultural Magazine. VII, No. 8. June, 1916.

Breeding of Buffon's Touracos. By Jean Delacourt.— Development of young described.

Avicultural Magazine. VII, No. 9. July, 1916.

About Birds Along the River near Oudtshoorn [Cape Colony]. By F. E. Blaauw.

Birds in Macedonia. By Capt. B. E. Potter.

Avicultural Magazine. VII, No. 10. August, 1916.

On the Breeding of the Emperor Goose. By F. E. Blaauw.

The Emu. XVI, Part I, July, 1916.

An Ornithological Cruise Among the Islands of St. Vincent and Spencer Gulfs, S. A. By S. A. White.— Annotated list of sixty-four species, *Sericornis maculatus rymilli* subsp. nov. (p. 14), Wedge Island.

Bird Life on Yauko Creek, N. S. W. By Charles Barrett.

Observations at Bremer Bay, W. A. By W. B. Alexander.— Notes on 81 species.

Field Notes on Three Species of the Pachycephalinæ. By A. H. Chresholm.

Notes from Western Australia. By W. B. Alexander.

The Haunt of the Lyre-Bird. By A. C. Stone.

Further Notes on the Spotless Crake (*Porzana immaculata*). By Miss J. A. Fletcher.

Birds in Melbourne Zoological Gardens. By D. Le Souëf.

A number of excellent half-tones from photographs are to be found in this number.

The South Australian Ornithologist. II, Part 7. July, 1916.

A New Scrub Wren. By S. A. White.— *Sericornis longirostris wyldei* (p. 169), Coorong.

Birds of the North and North-west of Australia. No. 6. By G. M. Mathews.

Further Observation on the Cormorants and Bird Temperatures. By A. M. Morgan.— Penguins showed average temperature of 101.3 F.; Mutton-birds, 100.2 F., and laying Leghorn hens 107.7.

Biography of S. White, continued.

Revue Francaise d'Ornithologie. VIII, No. 86. June 7, 1916. [In French.]

Birds in the Ornithological Park of Villers-Bretonneux near Amiens. By J. Delacour.

Voracity of Gulls, Wild and Captive. By E. Seguin-Jard.

Revue Francaise d'Ornithologie. VIII, No. 87, July 7, 1916.

Biological Observations on the Birds of Kerguelen. By J. Loranchet.— Continued in No. 88–89.

Revue Francaise d'Ornithologie. VIII, No. 88–89. Sept. 7, 1916.

The War and Birds at the Front. By R. Reboussin.

Ornithologisches Jahrbuch. XXVII, 1–2. January–April, 1916. [In German.]

Probable Origin and History of the Bird Associations of Middle Switzerland. By W. Knopfli.

Ornithological Articles in Other Journals.

Pearson, T. Gilbert. Bird Protective Laws and their Enforcement. (Amer. Mus. Journal, May, 1916.)

Burr, Malcolm. A Dilettante in the Caucasus — Deals mainly with birds. (Zoologist, June 15, 1916.)

Selous, E. A Diary of Ornithological Observations Made in Iceland during June and July. (*Ibid.*, July 15, 1916.)

Baxter, E. V., and **Rintoul,** L. J. Report on Scottish Ornithology in 1915, including migration. (Scottish Naturalist, July–August, 1916.)

Saunders, W. E. The Barn Owl Nesting in Southeastern Ontario. (Ottawa Naturalist, June–July, 1916.)

Shannon, Howard J. Insect Migrations as related to those of Birds. (Scientific Monthly, September, 1916.)

Taverner, P. A. List of Specimens Collected by Capt. Jos. Bernard, on

the Arctic Coast, N. W. T., Canada. (Summary Rept., Geol. Survey Canada for 1915.)

Parsons, W. C. A Little Nature Study of the Wood Duck and his Family. (Forest and Stream, September, 1916.)

West, C. S. Family Life of the Ruffed Grouse. (*Ibid.*).

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CORRESPONDENCE.

Present Work of Gerhard Heilmann.

EDITOR OF 'THE AUK,'

It requires over a month to get a letter through from Denmark in these days of the senseless and destructive war in Europe. My last one from the distinguished Danish ornithologist, Gerhard Heilmann, was posted at the Sanatorium on the Nakkebölle Fjord, on the north coast of Denmark, on the 12th of last July, and it did not come into my hands until the 15th of August; it had been opened by an English censor and resealed (No. 4108).

This letter contains some very interesting notes that go to show that ornithology is not entirely extinct in Europe in these turbulent times. Among other matters, Mr. Heilmann writes me that he has built for himself, on the shore of the fjord, a small, one-room house of wood (3 × 5 meters), with a glass skylight. In this he paints his magnificent bird pictures during all kinds of weather. As he was penning his letter to me in this room, gulls and terns were constantly passing over his glass roof, and from his small window he could see yellow-hammers, black-birds, goldfinches, two species of wagtails (white and yellow), linnets, "and also a single nightingale seeking food for its young in its nest in the meadow near by." He says further that during June (1916), the woods immediately to the rear of his hut was filled with many kinds of birds, and their "morning concert was marvelous."

In addition to this hut he has built himself a very large wire aviary for gulls and ducks. This structure extends out over the waters of the fjord for a distance of fifteen meters, so that, when he is sitting in this cage, he can study many species of land and water birds at very close range. He is taking extensive notes on the variations they exhibit, as they fly, swim, or walk close to him. To study the big birds of prey, he has built a still larger cage, and he contemplates the building of one as big as both the others combined, in the near future, in which he will keep for study a number of species of the herons of Europe.

Mr. Heilmann will soon publish an article in Copenhagen on *Podiceps griseigena*, which he has painted life size, swimming under the surface of the water, "a very difficult task." This article will be beautifully illustrated by half-tones (colored) of the living bird, with other illustrations.

I believe it will be of interest to American ornithologists to learn that Mr. Heilmann has given to Mrs. Shufeldt and myself the sole right of translating into English his superb work on 'The Origin of Birds,' which, when published, will be the only English translation of the volume. Arrangements have been made with its original publishers at Copenhagen to send on the blocks for the 215 figures illustrating the work; so that now

is only required a reliable publishing house in this country, willing to undertake the enterprise, when the labor of translating from Danish into English will be entered upon, and the work pushed to a finish as rapidly as possible. When issued this work will be of the greatest value to all English speaking ornithologists, and to avian palæontologists as well.

Faithfully yours,

R. W. Shufeldt.

3356–18th Street,
Washington, D. C.
August 18, 1916.

NOTES AND NEWS.

John Alexander Harvie-Brown, D. D., an Honorary Fellow of the American Ornithologists' Union, died at his residence, Dunipace House, Stirlingshire, Scotland, July 26, 1916. He was born at Dunipace August 27, 1844, and spent his life there being a landed proprietor and an excellent example of a gentleman of leisure who devoted himself to natural history.

He was best known for his work in connection with the splendid 'Vertebrate Fauna of Scotland,' of which he was chief editor and author of many of the volumes. He was also the founder, owner and joint editor of the 'Annals of Scottish Natural History,' as well as a staunch supporter of its successor 'The Scottish Naturalist.' While his chief interest lay in the study of his home country, and the outlying Hebrides, Orkneys and Shetland Islands, he in early life explored the Petchora and Dwina valleys with Seebolm and Alston, and parts of Transylvania with Danford. The ornithological results of these trips appeared later in 'The Ibis.' He was much interested in bird migration and was a member of the committee of the British Association appointed for investigation in this field.

The collection of skins and eggs which he had formed in conjunction with Col. Feilden was destroyed by fire in 1897 and the loss was a severe blow to him.

In later life, in fact for many years, Dr. Harvie-Brown was unable to travel about and was known to the present generation of ornithologists mainly through his publications and through correspondence.

Dr. Harvie-Brown became a member of the British Ornithologists' Union in 1873 and was elected one of the original Correspondents of the A. O. U. in 1883, being advanced to Honorary Fellowship in 1902. In 1912 the University of Aberdeen conferred upon him the degree of LL.D. in recognition of his services in the cause of Natural History.

Lindsey Louin Jewel, an Associate of the American Ornithologists' Union, died of tuberculosis at Saranac Lake, N. Y., on September 5, 1915.

Mr. Jewel was born at Christiansburg, Va., on November 24, 1877, and was graduated in 1900 with the degree of B. S. from the Virginia Polytechnic Institute. Two years later he received the degree of Civil Engineer from the same institution. While a student he had enlisted in 1898 in the 2nd Virginia Volunteers for service in the Spanish-American War, and at its close was mustered out with the rank of Corporal.

From 1903 Mr. Jewel was connected with the McClintic-Marshall Construction Company of Pittsburgh, Pa., and in 1910 was sent by them to the Canal Zone in charge of the lock gate erection, and was thus engaged when, in the autumn of 1912, he organized the Central American Construction Company, and was chosen its President and Chief Engineer. Before his return to the United States in October, 1913, in search of health, his company had completed some important constructions in the Zone. In recognition of his interest in development work in the Zone, President Wilson, in 1913, had appointed him United States Vice-Consul at Colon.

The end, hastened by the death of his wife, his companion since childhood, came only after a wonderfully brave fight. No children survive.

Mr. Jewel was a Member of the National Association of Audubon Societies and was elected, in 1910, a Member of the American Society of Civil Engineers, of which he had been an Associate Member since 1906. His chief ornithological work consists of a collection of some 400 beautifully prepared skins of Panamanian birds (with some nests and eggs) now preserved in the Museum of the Academy of Natural Sciences of Philadelphia. In the preparation of many of these, particularly hummingbirds, his wife skillfully assisted him. Readers of 'The Auk' will remember his article on 'Some North American Birds in Panama' (Auk, 1913, pp. 422–429).

Mr. Jewel's most kindly and friendly hospitality to another Associate of the Union, and the writer on the occasion of their visit to the Zone in 1912 contributed very greatly to the enjoyment and success of that visit. The President Emeritus of his Alma Mater writes that Mr. Jewel had, 'before reaching middle life, won for himself in the short period of time allowed him on earth, a position of wide and commanding influence and placed to his credit a surprising amount of engineering work of the highest grade and value.'— C. H. R.

John Claire Wood, well known in Michigan as an oölogist and ornithologist, died June 16, 1916, at his home in Detroit, aged 45 years. Mr. Wood was born on July 27, 1871, at Saline, Washtenaw Co., Mich., and came to Detroit in 1878 where he spent the remainder of his life. He was educated in the Detroit public schools, and early took up the profession of surveying. He was for many years a member of the firm of Mason L. Brown and Co., and attained considerable prominence as an efficient civil engineer.

From his early boyhood he was intensely interested and devoted to ornithology, and especially to oölogy. His collection of some 8000 eggs

in sets was well representative of the United States. His own collecting was done carefully, and his specimens prepared with exceptional neatness. As a field worker Wood was keen, persistent, and tireless; his climbing abilities and fearlessness were remarkable. His knowledge of southern Michigan birds in the field was excelled by no one, and many of the local records are due to his acuteness and familiarity with the notes and habits of all of our birds. I know of no one that prepared a finer bird skin.

Mr. Wood was not of a bookish or literary nature, and his writings consisted mainly of short notes of a faunal or oölogical nature. Personally he was of a somewhat retiring disposition, and mingled but little with others of kindred interests. He was a trained athlete and a splendid shot.

He was a prominent member of the now defunct Michigan Ornithological Club, the Wilson Ornithological Club, Cooper Ornithological Club, and an Associate of the American Ornithologists' Union. Mr. Wood's death so early in life is a decided loss to ornithology and to Michigan in particular.

He is survived by his widow and five children. — B. H. S.

Col. Herbert Hastings Harrington, the British ornithologist, noted for his work on the 'Birds of Burma' (1909) and for numerous papers on Indian birds, was killed in the campaign in Mesopotamia on March 8, 1916. He was born on January 16, 1868, at Lucknow. His publications appeared mainly in 'The Ibis' and the 'Journal of the Bombay Natural History Society' and many of the new species that he discovered have been named in his honor.

Lt. Col. Boyd Robert Horsbrugh, well known as the author of 'The Game Birds and Water-Fowl of South Africa' and of numerous articles in 'The Avicultural Magazine' died at his home in Surrey, England, on July 11, 1916, having been invalided home from France in 1915. Col. Horsbrugh was born at Poona, July 27, 1871.

A treaty between the United States and Great Britain for the protection of migratory birds in the United States and the Dominion of Canada was signed on August 16 and ratified by the Senate on August 29, 1916. This treaty, the first ever entered into between the United States and a foreign country for the protection of birds, marks the beginning of a new era in bird protection in America and affects a greater area than any similar treaty ever in force in Europe. Provision is made for the protection of all migratory birds in North America north of the southern border of the United States except in Newfoundland, Labrador and Greenland.

The treaty includes nine articles. Article I divides migratory birds into game birds, insectivorous birds, and other nongame birds, and adopts the A. O. U. definition of game birds including the five groups, *Anatidæ Gruidæ*, *Rallidæ*, *Limicolæ*, and *Columbidæ*. In Article II, provision is made for open seasons on game birds not to exceed three months and a half

in length between September 1 and March 10, except that the seasons on *Limicolæ* in the Maritime Provinces of Canada and in the States on the Atlantic seaboard north of Chesapeake Bay may be fixed between August 15 and February 1. There is no open season for insectivorous birds. Indians and Eskimos are permitted to take auks, guillemots, murres, puffins and their eggs for food or their skins for clothing. Article III provides a ten-year close season for band-tailed pigeons, cranes, swans, curlew and all the smaller shorebirds, and Article IV, special protection for the wood-duck and eider duck either by a five-year close season, by establishment of refuges, or otherwise. Article V permits the taking of nests and eggs for scientific and propagating purposes under such regulations as the respective governments may deem appropriate and the issue of these permits by the proper authorities is provided in Article VII. Article VI prohibits international traffic in migratory birds or their eggs during the continuance of the close season and requires all packages containing birds or eggs to be properly marked with the name of the shipper and a statement of the contents. Articles VIII and IX provide that the respective governments shall take the necessary measures to insure the execution of the treaty, which shall continue in force for fifteen years and then from year to year unless either party gives notice of its intention of terminating its operation.

The treaty will become effective as soon as ratifications are exchanged and a bill to carry out its provisions will be introduced at the next session of Congress.— T. S. P.

From the Annual Report of the director of the Carnegie Museum of Pittsburgh we learn that the collection of birds now numbers 51,989 specimens, representing approximately 5000 species. A restoration of the Dodo and Great Auk have recently been acquired from Rowland Ward, the former of which is figured in the 'Founders Day Report' of the Carnegie Institution.

As previously announced the thirty-fourth stated meeting of the American Ornithologists' Union will be held at the Academy of Natural Sciences, in Philadelphia, November 14–16, with a business meeting of Fellows and Members on the 13th.

While the leading ornithologists of the country and a constantly increasing number of Associates are regular attendants at these meetings, there are a large number who read the annual notices in a purely perfunctory manner without considering seriously the possibility of attending. It is this class — those who have never attended a meeting — that we would earnestly urge to make their plans at once for being present at Philadelphia on November 14.

The program is always interesting and instructive; but it is the informal social intercourse with ornithologists from all parts of the country that counts for more in broadening our views, suggesting fields of work and

arousing anew our enthusiasm for our favorite study. The daily midday luncheons, the informal dinner on the evening of the 14th and the smoker in the ornithological rooms of the Academy which has been arranged for the evening of the 15th, offer abundant opportunities for informal discussion.

Then the many historical points of interest which are to be seen about Philadelphia — Audubon's home on the Perkiomen, Bartram's house on the Schuylkill, which is so closely identified with Alexander Wilson — are objective points for delightful outdoor trips.

A large registration benefits not only those who are fortunate enough to be present at a meeting, but strengthens the whole A. O. U. as an organization. Therefore let us make this thirty-fourth meeting the best in the history of the society and plan at once to be present.

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ERRATA.

Page 69, line 3, for **leucomelas** read **villosus**.
" " 3, for NORTHERN HAIRY read HAIRY.
" " 12, for NORTHERN DOWNY read DOWNY.
" 73, " 15, for Common resident read Resident.
" " 31, for March 10 read March 1.
" 78, " 1, for *philadelphia* read *philadelphica*.
" 146, " 1, for Toucans read Hornbills.

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Meeting	Date	Place	Fellows Present	Total Membership
1	1883, Sept. 26–28	1st New York	21	23
2	1884, Sept. 30–Oct. 2	2d New York	16	143
3	1885, Nov. 17–18	3d New York	16	201
4	1886, Nov. 16–18	1st Washington	20	251
5	1887, Oct. 11–13	1st Boston	17	284
6	1888, Nov. 13–15	2d Washington	20	298
7	1889, Nov. 12–15	4th New York	20	400
8	1890, Nov. 18–20	3d Washington	20	465
9	1891, Nov. 17–19	5th New York	14	493
10	1892, Nov. 15–17	4th Washington	20	557
11	1893, Nov. 20–23	2d Cambridge	17	582
12	1894, Nov. 12–15	6th New York	15	616
13	1895, Nov. 11–14	5th Washington	19	667
14	1896, Nov. 9–12	3d Cambridge	14	673
15	1897, Nov. 8–11	7th New York	18	679
16	1898, Nov. 14–17	6th Washington	21	695
17	1899, Nov. 13–16	1st Philadelphia	16	744
18	1900, Nov. 12–15	4th Cambridge	19	748
19	1901, Nov. 11–14	8th New York	18	738
20	1902, Nov. 17–20	7th Washington	25	753
20a	1903, May 15–16	1st San Francisco	7	—
21	1903, Nov. 16–19	2d Philadelphia	19	775
22	1904, Nov. 28–Dec. 1	5th Cambridge	17	808
23	1905, Nov. 13–16	9th New York	17	860
24	1906, Nov. 12–15	8th Washington	24	750
25	1907, Dec. 9–12	3d Philadelphia	20	850
26	1908, Nov. 16–19	6th Cambridge	17	888
27	1909, Dec. 6–9	10th New York	19	866
28	1910, Nov. 14–17	9th Washington	23	897
29	1911, Nov. 13–16	4th Philadelphia	18	887
30	1912, Nov. 11–14	7th Cambridge	18	929
31	1913, Nov. 10–13	11th New York	28	992
32	1914, Apr. 6–9	10th Washington	27	1101
33	1915, May 17–20	2d San Francisco	11	1156

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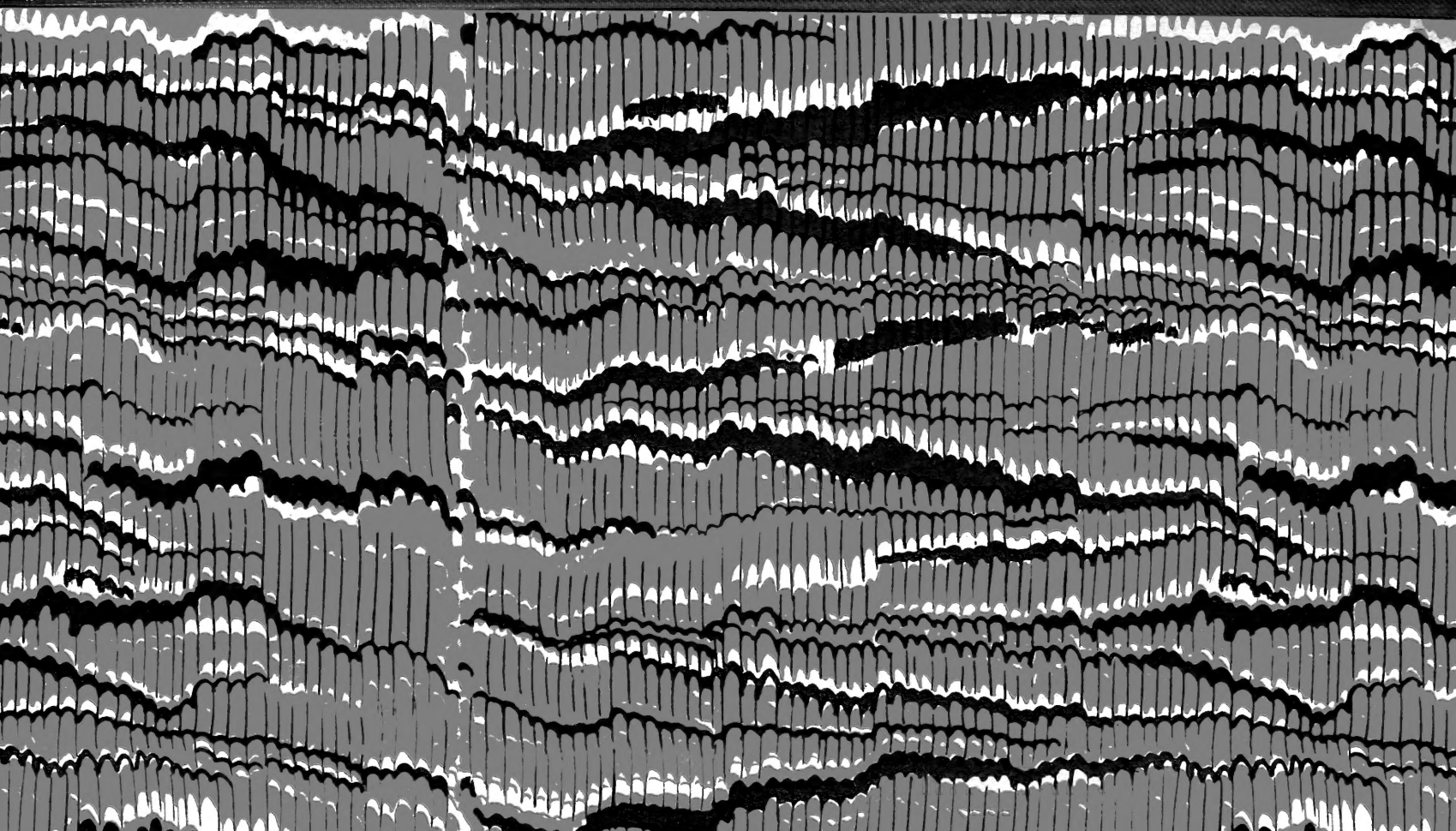

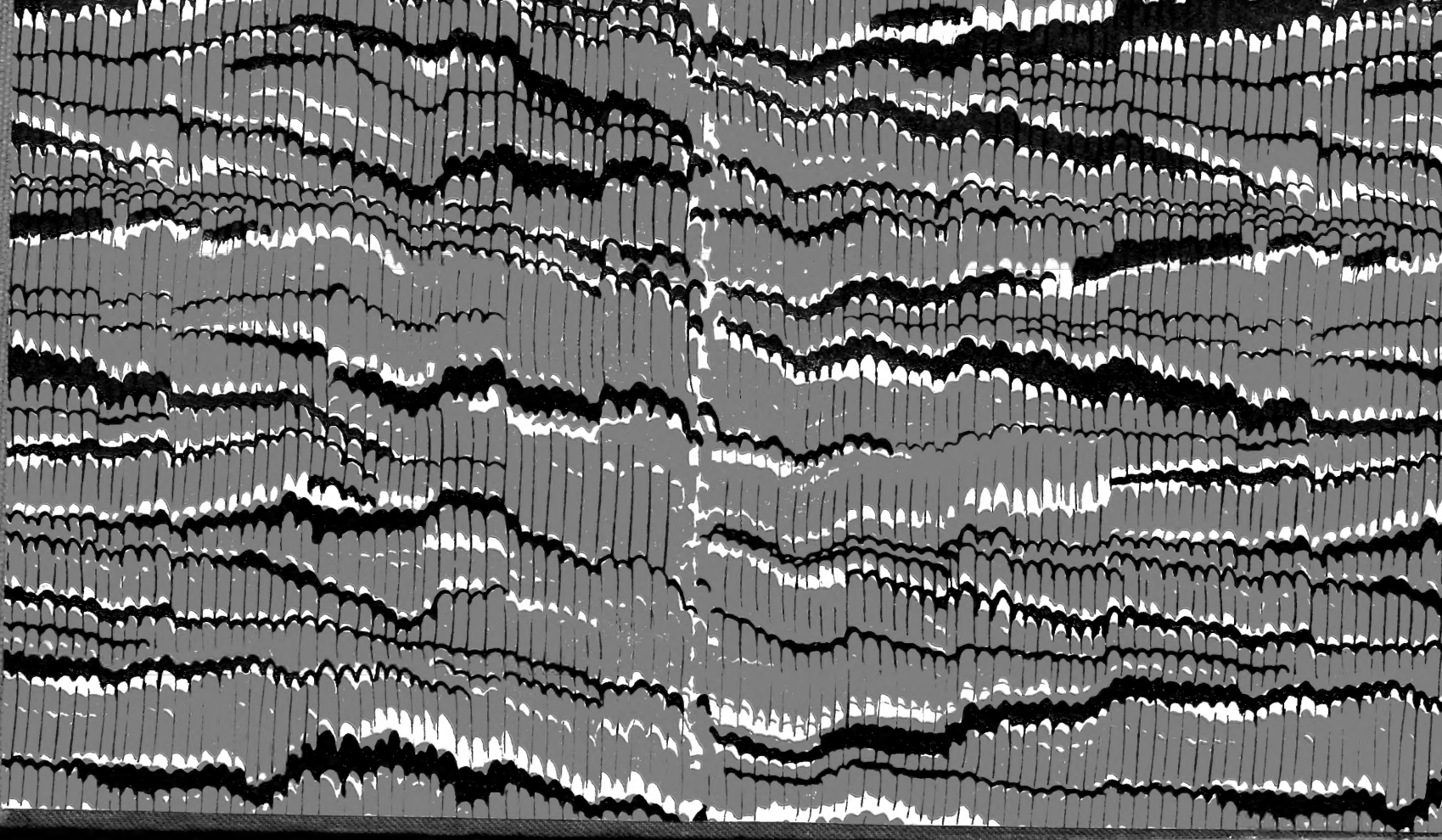

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