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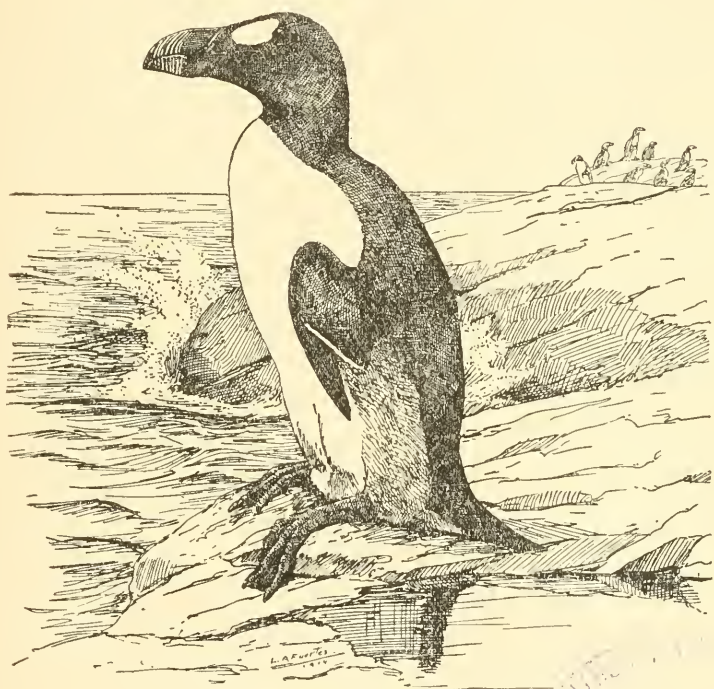
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PALMER, T. S., <i>Secretary</i>	MURPHY, ROBERT C.
DWIGHT, JONATHAN	NICHOLS, JOHN T.
PEARSON, T. GILBERT.	

Committee on Biography and Bibliography.

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ALLEN, GLOVER M.	RICHMOND, CHARLES W.
STONE, WITMER	

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RICHMOND, CHARLES W.

*Committee on Classification and Nomenclature of North American Birds.*STONE, WITMER, *Chairman*

GRINNELL, JOSEPH

RICHMOND, C. W., *Secretary*

MERRIAM, C. HART

ALLEN, J. A.

NELSON, E. W.

BREWSTER, WILLIAM

OBERHOLSER, H. C.

CHAPMAN, F. M.

PALMER, T. S.

DWIGHT, JONATHAN

RIDGWAY, ROBERT

Committee on Publications.

SAGE, JOHN H.

STONE, WITMER

PALMER, T. S., *Secretary*

DWIGHT, JONATHAN

FELLOWS, MEMBERS, AND ASSOCIATES OF THE
 AMERICAN ORNITHOLOGISTS' UNION.
 APRIL, 1919.¹

FELLOWS.

	Date of Election.
ALLEN, Dr. J. A., Amer. Mus. Nat. Hist., New York, N. Y.	Founder
ANTHONY, A. W., Ironside, Ore.	(1885)1895 ²
BANGS, OUTRAM, Museum Comp. Zoölogy, Cambridge, Mass. . .	(1884)1901
BARROWS, Prof. W. B., Box 1047, East Lansing, Mich.	1883
BATCHELDER, CHARLES F., 7 Kirkland St., Cambridge, Mass. . . .	Founder
BEEBE, C. WILLIAM, New York Zoöl. Park, New York, N. Y. . .	(1897)1912
BENT, ARTHUR CLEVELAND, Taunton, Mass.	(1889)1909
*BICKNELL, EUGENE P., 30 Pine St., New York, N. Y.	Founder
BISHOP, Dr. LOUIS B., 356 Orange St., New Haven, Conn.	(1885)1901
*BREWSTER, WILLIAM, 145 Brattle St., Cambridge, Mass.	Founder
BROWN, NATHAN CLIFFORD, 218 Middle St., Portland, Me.	Founder
CHADBOURNE, Dr. ARTHUR P., The Copley-Plaza, Boston, Mass. .	(1883)1889
CHAPMAN, Dr. FRANK M., Amer. Mus. Nat. Hist., New York, N. Y.	(1885)1888
*CORY, CHARLES B., Field Museum Nat. Hist., Chicago, Ill.	Founder
DEANE, RUTHVEN, 112 W. Adams St., Chicago, Ill.	1883
DUTCHER, WILLIAM, 949 Park Ave., Plainfield, N. J.	(1883)1886
DWIGHT, Dr. JONATHAN, 134 W. 71st St., New York, N. Y.	(1883)1886
FISHER, Dr. ALBERT K., Biological Survey, Washington, D. C. . .	Founder
FISHER, Prof. WALTER K., 1525 Waverley St., Palo Alto, Cal. .	(1899)1905
FLEMING, JAMES H., 267 Rusholme Road, Toronto, Ontario. . .	(1893)1916
FORBUSH, EDWARD H., State House, Boston, Mass.	(1887)1912
FUERTES, LOUIS A., Cornell Heights, Ithaca, N. Y.	(1891)1912
GRINNELL, Dr. GEORGE BIRD, 238 E. 15th St., New York, N. Y.	1883
GRINNELL, Dr. JOSEPH, Mus. Vert. Zoöl., Univ. Cal., Berkeley, Cal.	(1894)1901
JONES, LYND, Spear Laboratory, Oberlin, Ohio.	(1888)1905

¹ Members of the Union, and subscribers to 'The Auk' are requested to promptly notify Dr. JONATHAN DWIGHT, Treasurer, 134 W. 71st St., New York City, of any change of address.

² Dates in parentheses indicate dates of joining the Union.

* Life Fellow.

- LOOMIS, LEVERETT M., Cal. Acad. Sci., San Francisco, Cal. . . . (1883)1892
 LUCAS, DR. FREDERIC A., Am. Mus. Nat. Hist., New York, N. Y.
 (1888)1892
 MAILLIARD, JOSEPH, 1815 Vallejo St., San Francisco, Cal. . . . (1895)1914
 MCATEE, WALDO LEE, Biological Survey, Washington, D. C. . . (1903)1914
 *MCGREGOR, RICHARD C., Bureau of Science, Manila, P. I. . . . (1889)1907
 MERRIAM, DR. C. HART, 1919 16th St., N. W., Washington, D. C. Founder
 MILLER, WALDRON DEWITT, Am. Mus. Nat. Hist., New York, N. Y.
 (1896)1914
 NEHRING, H., Gotha, Fla. 1883
 NELSON, E. W., Biological Survey, Washington, D. C. 1883
 OBERHOLSER, DR. HARRY C., Biological Survey, Washington, D. C..
 (1888)1902
 OSGOOD, DR. WILFRED H., Field Museum Nat. Hist., Chicago, Ill.
 (1893)1905
 *PALMER, DR. T. S., 1939 Biltmore St., N. W., Washington, D.C. (1888)1901
 PALMER, WILLIAM, U. S. National Museum, Washington, D.C. (1888)1898
 RICHMOND, DR. CHARLES W., U. S. National Museum, Washington,
 D. C. (1888)1897
 RIDGWAY, DR. ROBERT, U. S. Nat. Mus., Washington, D. C. . . . Founder
 ROBERTS, DR. THOMAS S., Univ. of Minnesota, Minneapolis, Minn. . . 1883
 *SAGE, JOHN H., Portland, Conn. 1883
 SAUNDERS, WILLIAM E., 240 Central Ave., London, Ontario. 1883
 SHUFELDT, DR. ROBERT W., 3356 18th St., N. W., Washington, D.C. Founder
 STONE, DR. WITMER, Acad. Nat. Sciences, Philadelphia, Pa. . . . (1885)1892
 SWARTH, HARRY S., Mus. Vert. Zoölogy, Univ. of California, Berke-
 ley, Cal. (1900)1916
 TAVERNER, PERCY A., Victoria Memorial Museum, Ottawa, Canada
 (1902)1917
 TODD, W. E. CLYDE, Carnegie Museum, Pittsburgh, Pa. (1890)1916
 WIDMANN, OTTO, 5105 Von Versen Ave., St. Louis, Mo. 1884

RETIRED FELLOWS.

- HENSHAW, HENRY W., The Ontario, Washington, D. C. (1883)1918
 LAWRENCE, NEWBOLD T., Lawrence, N. Y. (1883)1913
 STEJNEGER, DR. LEONHARD, U. S. Nat. Mus., Washington, D.C. (1883)1911

HONORARY FELLOWS.

- BUTURLIN, SERGIUS ALEXANDROVICH, Wessenberg, Esthonia, Russia
 (1907)1916
 DABBENE, DR. ROBERTO, Museo Nacional, Buenos Aires, Argentina
 (1916)1918

DUBOIS, DR. ALPHONSE, Villa Rayon de Soleil, Coxyde sur Mer, Belgium.....	(1884)1911
EVANS, ARTHUR HUMBLE, 9 Harvey Road, Cambridge, England	(1899)1917
FÜRBRINGER, Prof. Dr. MAX, University of Heidelberg, Heidelberg, Germany.....	(1891)1916
GADOW, DR. HANS FRIEDRICH, Cleramendi, Great Shelford, near Cambridge, England.....	(1884)1916
HAAGNER, ALWYN KARL, Zoölogical Gardens, Box 754, Pretoria, Transvaal, South Africa.....	(1916)1918
HARTERT, DR. ERNST J. O., Zoölogical Museum, Tring, Herts, England	(1891)1902
HELLMAYR, DR. CARL E., Neuhauserstrasse 51.II, Munich, Germany	(1903)1911
IHERING, DR. HERMANN VON, Hansa de Joinville, Estado de Sta. Catarina, Brazil.....	(1902)1911
LÖNNBERG, DR. A. J. EINAR, Naturhistoriska Riksmuseum, Vetenskapsakademien, Stockholm, Sweden.....	(1916)1918
MÉNÉGAUX, DR. AUGUSTE, Muséum d'Histoire Naturelle, Paris, France.....	(1916)1918
PYCRAFT, WILLIAM PLANE, British Museum (Nat. Hist.) Cromwell Road, London, S. W, 7.....	(1902)1911
REICHENOW, DR. ANTON, Königl. Mus. für Naturkunde, Invalidenstrasse, 43, Berlin.....	(1884)1891
ROTHSCHILD, Lord LIONEL WALTER, Zoölogical Museum, Tring, Herts, England.....	(1898)1913
SALVADORI, Count TOMMASO, Royal Zoöl. Museum, Turin, Italy.....	1883
SCHALOW, Prof. HERMAN, Hohenzollerndamm 50, Berlin-Grünewald, Germany.....	(1884)1911
SCLATER, WM. LUTLEY, 10 Sloane Court, Chelsea, London, S. W, 1.	(1906)1917
SUSCHKIN, DR. PETER, University, Kharkov, Russia.....	(1903)1918

CORRESPONDING FELLOWS.

ABBOTT, DR. WILLIAM L., Aldine Hotel, Philadelphia, Pa.....	1916
ALFARO, Don ANASTASIO, San José, Costa Rica.....	1888
ALPHÉRAKY, SERGIUS N., Imperial Acad. Sci., Petrograd, Russia....	1913
ARRIBALZAGA, ENRIQUE LYNCH, Resistencia, Chaco, Argentina.....	1918
ARRIGONI DEGLI ODDI, Count ETTORE, Univ. of Padua, Padua, Italy.	1900
ASHBY, EDWIN, Wittunga, Blackwood, Adelaide, South Australia....	1918
BAKER, E. C. STUART, Chief Police Office, West India Docks, London, E. 14, England.....	1918

BANNERMAN, DAVID ARMITAGE, 6 Palace Gardens Terrace, Kensington, London, W. 8, England	1916
BEDDARD, FRANK EVERS, Zoöl. Society of London, London, Eng.	1917
BIANCHI, DR. VALENTINE, Imperial Zoöl. Museum, Petrograd, Russia	1916
BONHOTE, JOHN LEWIS, Gade Spring Lodge, Hemel Hempstead, Herts, England	1911
BUREAU, DR. LOUIS, École de Médecine, Nantes, France	1884
BÜTTIKOFER, DR. JOHANNES, Zoölogical Garden, Rotterdam, Holland	1886
CAMPBELL, ARCHIBALD JAMES, Custom House, Melbourne, Australia	1902
CARRIKER, M. A., Jr., Apartado 51, Santa Marta, Colombia	(1907)1912
CHAMBERLAIN, MONTAGUE, Cambridge, Mass.	(Founder)1901
CHUBB, CHARLES, British Museum (Nat. Hist.) Cromwell Road, London, S. W. 7.	1911
CLARKE, WILLIAM EAGLE, Royal Scottish Museum, Edinburgh	1889
COLLINGE, DR. WALTER E., 3 Queen's Terrace, St. Andrews, Scotland	1918
DALGLEISH, JOHN J., Brankston Grange, Bogside Station, Alloa, Scotland	1883
DOLE, SANFORD B., Honolulu, Hawaii	1883
ECHT, ADOLPH BACHOFEN VON, Nussdorf, near Vienna, Austria	1883
FEILDEN, COL. HENRY WEMYSS, Burwash, Sussex, England	1884
FERRARI-PEREZ, Prof. FERNANDO, Tacubaya, D. F., Mexico	1885
FREKE, PERCY EVANS, South Point, Lines Road, Folkstone, England	1883
GODWIN-AUSTEN, Lieut.-Col. HENRY HAVERSHAM, Nore, Hascombe, Godalming, Surrey, England	1884
GRANDIDIER, ALFRED, 6 Rond-Point des Champs Elysées, Paris	1883
GURNEY, JOHN HENRY, Keswick Hall, Norwich, England	1883
GYLDENSTOLPE, COUNT NILS, Naturhistoriska Riksmuseum, Vetenskapsakademien, Stockholm, Sweden	1918
HALL, ROBERT, Tasmanian Museum, Hobart, Tasmania	1916
HARTING, JAMES EDMUND, Portmore Lodge, Weybridge, Surrey, England	1883
HENNICKE, DR. CARL R., Gera, Reuss, Germany	1907
HENSON, HARRY V., Yokohama, Japan	1888
HUDSON, WILLIAM HENRY, Tower House, St. Luke's Road, Westbourne Park, London, W.	1895
IREDALE, TOM, 39 Northcote Ave., Ealing, London, W. 5, England	1918
JOURDAIN, Rev. FRANCIS C. R., Appleton Rectory, Abingdon, Berks, England	1918
KLOSS, CECIL BODEN, Kuala Lumpur, Federated Malay States	1918
KRÜPER, DR. THEOBALD J., University Museum, Athens, Greece	1884
KURODA, NAGAMICHI, Fukuyoshi Cho, Akasaka, Tokyo, Japan	1918
LE SOUËF, DUDLEY, Zoölogical Gardens, Melbourne, Australia	1911
LOWE, DR. PERCY R., The Hatch, Windsor, England	1916
MACFARLANE, RODERICK, 251 Colony St., Winnipeg, Manitoba	1886
MADARÁSZ, DR. JULIUS VON, National Museum, Budapest, Hungary	1884

MATHEWS, GREGORY M., Foulis Court, Fair Oak, Hants, England . . .	1911
MENZBIER, Prof. Dr. MICHAEL, University for Women, Devitchje, Pola, Moscow, Russia	1884
MILLAIS, JOHN GUILLE, Compton's Brow, Horsham, Sussex, England .	1911
NAMIYE, M., Tokio, Japan	1886
NICHOLSON, FRANCIS, Ravenscroft, Windermere, Westmoreland, Eng- land	1884
OGILVIE-GRANT, WILLIAM ROBERT, British Museum (Nat. Hist.), Cromwell Road, London, S. W. 7	1899
PALMÉN, Dr. J. T., Helsingfors, Finland	1883
RAMSDEN, Dr. CHARLES T., Box 146, Guantanamo, Cuba	(1912)1918
RINGER, FREDERIC, Nagasaki, Japan	1888
ROBINSON, HERBERT C., Selangor State Museum, Kuala Lumpur, Federated Malay States	1918
SNETHLAGE, Dr. EMILIA, Museu Goeldi, Pará, Brazil	1915
SWYNNERTON, CHARLES FRANCIS MASSY, Gungunyana, Melsetter, South Rhodesia	1918
THEEL, Dr. JOHAN HJALMAR, University of Upsala, Upsala, Sweden .	1884
TICEHURST, NORMAN FREDERIC, 24 Pevensey Road, St. Leonards-on- Sea, Sussex, England	1918
TSCHUSI ZU SCHMIDHOFFEN, VICTOR, RITER VON, Villa Tännenhof, bei Hallein, Salzburg, Austria	1884
VAN OORT, EDUARD DANIEL, Museum Nat. Hist., Leyden, Holland .	1913
WATERHOUSE, F. H., Zool. Soc. of London, Regents' Park, London, N. W., England	1889
WINGE, Dr. HERLUF, Univ. Zoöl. Museum, Copenhagen, Denmark .	1903
WITHERBY, HARRY FORBES, 3 Cannon Place, Hampstead, London, N. W. 1, England	1916
WORCESTER, Prof. DEAN C., Manila, P. I.	1603
ZELEDON, Don JOSÉ C., San José, Costa Rica	1884

MEMBERS.

ALLEN, ARTHUR A., McGraw Hall, Cornell Univ., 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., Mus. Geol. Survey, Ottawa, Canada. (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, U. S. Nat. Museum, Washington, D. C. (1896)1902
 BECK, ROLLO HOWARD, San José, R. D. 288, Cal. (1894)1917
 BERGTOLD, Major 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., 425 Clinton Ave., Brooklyn, N. Y. (1894)1902
 BROOKS, Major ALLAN, Okanagan Landing, B. C. (1902)1909
 BROOKS, Ensign WM. SPRAGUE, 234 Berkeley St., Boston, Mass. (1907)1917
 BRYAN, WILLIAM ALANSON, College of Hawaii, Honolulu, Hawaiian
 Islands. (1898)1901
 BRYANT, HAROLD CHILD, Mus. Vert. Zoöl., Berkeley, Cal. (1913)1918
 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
 CHAPIN, Lieut. JAMES P., Amer. Mus. Nat. Hist., New York, N. Y.
 (1906)1917
 CHERRIE, GEORGE K., Newfane, Vt. (1917)1918
 CLARK, Dr. HUBERT LYMAN, Mus. Comparative Zoöl. Cambridge, Mass.
 (1886)1902
 DAGGETT, FRANK S., Museum, Exposition Park, Los Angeles, Cal.
 (1889)1901
 DAWSON, WM. L., R. D., No. 3, Box 110, Santa Barbara, Cal. (1895)1905
 DEANE, WALTER, 29 Brewster St., Cambridge, Mass. (1897)1901
 EATON, Prof. ELON HOWARD, 678 Main St., Geneva, N. Y. (1895)1907
 EVERMANN, Prof. BARTON W., Cal. Acad. Sci., San Francisco, Cal.
 (1883)1901
 FINLEY, WILLIAM L., 651 East Madison St., Portland, Ore. (1904)1907
 GAULT, BENJAMIN TRUE, Glen Ellyn, Ill. (1885)1903
 GOLDMAN, Major EDWARD A., Biological Survey, Washington, D. C.
 (1897)1902
 GRISCOM, Lieut. LUDLOW, 37 5th Ave., New York, N. Y. (1908)1918
 HARPER, Lieut. FRANCIS, 3001 24th St. N. E., Washington, D. C. (1907)1917
 HERSEY, F. SEYMOUR, 6 Maple Ave., Taunton, Mass. (1911)1916
 HOFFMANN, RALPH, 5554 Waterman Ave., St. Louis, Mo. (1893)1901
 HOLLISTER, NED, Nat. Zoölogical Park, Washington, D. C. (1894)1910
 HOWELL, A. BRAZIER, Covina, Cal. (1909)1916
 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 A., 11 Pemberton Square, Boston, Mass. (1883)1901
 JOB, HERBERT K., 291 Main St., West Haven, Conn. (1896)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
 LAW, J. EUGENE, 833½ S. Catalina St., Los Angeles. (1907)1916
 MACKAY, GEORGE H., 304 Bay State Road, Boston, Mass. (1890)1901

- MAILLIARD, JOHN W., 230 California St., San Francisco, Cal. (1895)1901
 MOORE, ROBERT THOMAS, 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 T., Am. Mus. Nat. Hist., New York, N. Y. . . . (1901)1914
 NORTON, ARTHUR H., Mus. Nat. Hist., 22 Elm St., Portland, Me. (1890)1902
 PEARSON, T. GILBERT, 1974 Broadway, New York, N. Y. . . . (1891)1902
 PETERS, Lieut. JAMES LEE, Harvard, Mass. (1904)1918
 PHILLIPS, Capt. JOHN C., Wenham, Mass. (1904)1912
 PREBLE, EDWARD A. Biological Survey, 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, Nat. Hist. Museum, Balboa Park, San Diego, Cal.
 (1883)1901
 STRONG, Dr. REUBEN M., Vanderbilt Medical School, Nashville, Tenn.
 (1889)1903
 SWALES, BRADSHAW HALL, U. S. Nat. Mus., Washington, D. C. (1902)1909
 THAYER, JOHN ELIOT, Lancaster, Mass. (1898)1905
 TOWNSEND, Dr. CHARLES H., Aquarium, Battery Park, New York, N. Y.
 (1883)1901
 TOWNSEND, Dr. CHARLES WENDELL, 98 Pinckney St., Boston, Mass.
 (1901)1905
 TROTTER, Dr. SPENCER, Swarthmore College, Swarthmore, Pa. (1888)1901
 TYLER, Capt. WINSOR M., 522 Mass. Ave., Lexington, Mass. . . (1912)1917
 WARREN, EDWARD ROYAL, 1511 Wood Ave., 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)1913
 WILLIAMS, ROBERT WHITE, Dept. Agric., Washington, D. C. . . (1900)1918
 WOLCOTT, Dr. ROBERT H., State University, Lincoln, Neb. . . (1901)1903
 WOOD, NORMAN A., Museum Univ. of Mich., Ann. Arbor, Mich. (1904)1912
 WRIGHT, Mrs. MABEL OSGOOD, Fairfield, Conn. (1895)1901

* Life Member.

ASSOCIATES.

ABBOTT, CLINTON GILBERT, Orchard Hill, Rhinebeck, N. Y.....	1898
ABBOTT, Miss FLORENCE I., Upland Road, Andover, Mass.....	1917
ABBOTT, Miss HARRIET, Fryeburg, Me.....	1918
ACKERMAN, JOSEPH MOODY, High St., Newburyport, Mass.....	1918
ADAMS, BENJAMIN, Wethersfield, Conn.....	1911
ADAMS, WALLACE, 2630 Webster Ave., Berkeley, Cal.....	1901
ADAMS, Dr. Z. B., 43 Cottage Farm Rd., Longwood, Mass.....	1908
AIKEN, Hon. JOHN, Superior Court, Court House, Boston, Mass.....	1905
AIMAR, Dr. CHARLES PONS, 4 Vanderhorst St., Charleston, S. C.....	1916
ALEXANDER, Miss ANNIE M., Suisun City, Cal.....	1911
ALLAMAN, RANSOM PERRY, R. D. No. 4, Bedford, Pa.....	1918
ALLEN, MARY P., 206 Moore St., Hackettstown, N. J.....	1913
ANDERSON, ERNEST M., Provincial Museum, Victoria, B. C.....	1915
ANDERSON, Mrs. J. C., Great Barrington, Mass.....	1903
ANGELL, WALTER A., 33 Westminster St., Providence, R. I.....	1901
ANTHONY, Capt. H. E., Amer. Mus. Nat. Hist., New York, N. Y.....	1911
APPEL, W. D., 4119 Houston Ave., Norwood, Ohio.....	1917
ARMITAGE, LUCIUS, 282 E. 162 St., New York, N. Y.....	1918
ARMSTRONG, EDWARD, E., 2249 Calumet Ave., Chicago, Ill.....	1904
ARNOLD, EDWARD, Grand Trunk R'y., Montreal, Quebec.....	1894
ARNOLD, Dr. W. W., 504 N. Nevada Ave., Colorado Springs, Colo.....	1910
ARTHUR, STANLEY CLISBY, 1109 Henry Clay Ave., New Orleans, La.....	1916
ASPINWALL, Mrs. CLARENCE A., 1839 Wyoming Ave., Washington, D. C.....	1916
ATHERTON, EDWARD H., 82 Ruthven St., Grove Hall, Mass.....	1917
AYRES, Miss MARY ADELINE, 119 High St., Medford, Mass.....	1915
BABCOCK, DEAN, Long's Peak, Colo.....	1911
BABCOCK, Capt. HAROLD LESTER, Woodleigh Road, Dedham, Mass.....	1916
BACHRACH, Mrs. BENJAMIN, 1437 West Main St., Decatur, Ill.....	1918
BACON, FRANCIS L., 236 Winona Ave., Germantown, Pa.....	1917
BADÉ, Dr. WM. FREDERIC, 2616 College Ave., Berkeley, Cal.....	1916
BADGER, ARTHUR C., 167 Dudley Road, Newton Centre, Mass.....	1917
BAGG, AARON C., 70 Fairfield Ave., Holyoke, Mass.....	1916
BAGG, EGBERT, JR., 406 Genesee St., Utica, N. Y.....	1916
BAGG, JOHN LEONARD, 89 Lexington Ave., Holyoke, Mass.....	1918
BAILEY, ALFRED M., La. State Mus., New Orleans, Louisiana.....	1918
BAILEY, Prof. GUY A., Geneseo, N. Y.....	1910
BAIRD, Miss KATHARINE BRUCE, 815 Webster St., N. W., Washington, D. C.....	1918
BAKER, Lieut. JOHN H., Nat. Cash Register Co., Dayton, Ohio.....	1911
BALDWIN, ROGER N., 70 5th Ave., New York, N. Y.....	1904
BALDWIN, S. PRENTISS, 2930 Prospect Ave., Cleveland, Ohio.....	1917

BALES, DR. BLENN R., 149 W. Main St., Circleville, Ohio.....	1907
BALL, MRS. BENNET F., Oakville, Conn.....	1905
BALL, EDWARD M., East Falls Church, Va.....	1918
BALL, DR. JAS. P., 5001 Frankford Ave., Philadelphia, Pa.....	1911
BARBOUR, REV. ROBERT, Y. M. C. A., Montclair, N. J.....	1902
BARKER, MISS HELEN, 421 E. Adams St., Sandusky, O.....	1918
BARNARD, JUDGE JOB, 1401 Fairmont St., Washington, D. C.....	1886
BARNES, CLAUDE T., 359 Tenth Ave., Salt Lake City, Utah.....	1908
BARNES, HON. R. MAGOON, Lacon, Ill.....	1889
BARRETT, CHAS. H. M., 1339 Valley Place, S. E., Washington, D. C.....	1912
BARRETT, HAROLD LAWRENCE, 172 Huntington Ave., Boston, Mass.....	1909
BARRY, MISS ANNA K., 5 Bowdoin Ave., Dorchester, Mass.....	1907
BARTLETT, HENRY, 49 Middle St., Acushnet, Mass.....	1917
BARTLETT, MISS MARY F., 227 Commonwealth Ave., Boston, Mass.....	1912
BARTRAM, EDWIN B., 200 N. 3rd St., Philadelphia, Pa.....	1913
BATCHELOR, MR. MARION C., 27 Janssen Pl., Kansas City, Mo.....	1916
BATTEN, GEORGE, 93 Union St., Montclair, N. J.....	1914
BAYNES, ERNEST HAROLD, Meriden, N. H.....	1918
BELL, DR. W. B., Biological Survey, Washington, D. C.....	1912
BENNETT, REV. GEORGE, Iowa City, Iowa.....	1913
BENNETT, WILLIAM J., 1941 1st St. N. W., Washington, D. C.....	1901
BENSON, C. STANLEY, 75 Plymouth St., North Abington, Mass.....	1915
BICKNELL, MRS. F. T., 319 S. Normandie Ave., Los Angeles, Cal.....	1913
BIDDLE, MISS EMILY WILLIAMS, 2201 Sansom St., Philadelphia, Pa.....	1898
BIGELOW, DR. LYMAN F., 80 Winter St., Norwood, Mass.....	1914
BLACKWELDER, ELIOT, Natural History Bldg., Urbana, Ill.....	1895
BLOOMFIELD, MRS. C. C., 723 Main St., W., Jackson, Mich.....	1901
BOARDMAN, MISS E. D., 416 Marlborough St., Boston, Mass.....	1906
BODINE, MRS. DONALDSON, 4 Mills Place, Crawfordsville, Ind.....	1916
BOGARDUS, MISS CHARLOTTE, Elm St., Coxsackie, N. Y.....	1909
BOGERT, WILLIAM S., 2610 Eldridge St., Bellingham, Wash.....	1904
BOLT, BENJAMIN FRANKLIN, 1421 Prospect Ave., Kansas City, Mo.....	1909
BOND, HARRY L., Lakefield, Minn.....	1908
BONFILS, FREDERICK G., 1500 E. 10th Ave., Denver, Colo.....	1918
BORLAND, WM. G., 7 Wall St., New York, N. Y.....	1911
BOSSON, CAMPBELL, 30 State St., Boston, Mass.....	1906
BOULTON, W. RUDYUD, JR., 338 1st St., Beaver, Pa.....	1915
BOURNE, THOS. L., Hamburg, N. Y.....	1913
BOWDISH, B. S., Demarest, N. J.....	1891
BOWDISH, MRS. B. S., Demarest, N. J.....	1902
BOWDITCH, DR. HAROLD, 60 Harvard Ave., Brookline, Mass.....	1900
BOWDITCH, JAMES H., 903 Tremont Bldg., Boston, Mass.....	1913
BOYD, MRS. HARRIET T., 17 Marsh St., Dedham, Mass.....	1917
BOYLE, HOWARTH S., Amer. Mus. Nat. Hist., New York, N. Y.....	1916
BOYNTON, CHARLES T., 1005 S. Sheridan Road, Highland Park, Ill.....	1912

BRACKEN, MRS. HENRY M., 1010 Fourth St., S.E., Minneapolis, Minn.	1897
BRADBURY, W. C., 1440 Race St., Denver, Colo.	1915
BRADLEE, Major THOMAS STEVENSON, Somerset Club, Boston, Mass.	1902
BRAINERD, BARRON, 57 Monmouth St., Brookline, Mass.	1917
BRANDRETH, COURTENAY, Ossining, N. Y.	1905
*BRANDRETH, FRANKLIN, Ossining, N. Y.	1889
BRANDT, HERBERT W., 2025 East 88th St., Cleveland, Ohio	1915
BREWSTER, EDWARD EVERETT, Iron River, 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
BRIGGS, JOSEPH S., 1372 Powell St., Norristown, Pa.	1916
BRITTEN, Capt. G. S., 807 Walnut Ave., Syracuse, N. Y.	1913
BROCKWAY, ARTHUR W., Hadlyme, Conn.	1912
BROOKS, Rev. EARLE AMOS, 10 Beacon St., Everett, Mass.	1892
BROWN, Miss ANNIE H., 31 Maple St., Stoneham, Mass.	1909
BROWN, Miss BERTHA L., 53 Court St., Bangor, Me.	1918
BROWN, EDWARD J., 1609 S. Van Ness Ave., Los Angeles, Cal.	1891
BROWN, G. FRANKLIN, "Stonebridge," Needham, Mass.	1917
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, N. Y.	1911
BRUEN, FRANK, 69 Prospect St., Bristol, Conn.	1908
BRUMBAUGH, CHALMERS S., 1020 Cathedral St., Baltimore, Md.	1916
BUCHANAN, ROLLIN E., Excelsior, Minn.	1918
BUNKER, CHARLES D., Kansas Univ. Museum, Lawrence, Kan.	1916
BURGESS, JOHN KINGSBURY, "Broad Oak," Dedham, Mass.	1898
BURLEIGH, THOS. D., 825 N. Negley Ave., Pittsburgh, Pa.	1913
BURNETT, WILLIAM L., State Agric. College, Fort Collins, Colo.	1895
BURTCH, VERDI, Branchport, N. Y.	1903
BUTTERWICK, CLAUDE A., 116 Broad St., Telford, Pa.	1917
BUTTERWORTH, FRANK SEILER, Prospect St., New Haven, Conn.	1918
BUZZELL, MRS. JAS. C., 11 Hudson St., Bangor, Me.	1918
BYRD, MRS. HIRAM, Winter Park, Fla.	1918
CADUC, EUGENE E., 512 Massachusetts Ave., Boston, Mass.	1910
CAHN, ALVIN R., 4720 Greenwood Ave., Chicago, Ill.	1917
CALLENDER, JAMES PHILLIPS, 32 Broadway, New York, N. Y.	1903
CAMPBELL, MRS. Editha S., 263 W. 7th St., Erie, Pa.	1917
CANTWELL, GEORGE G., 901 W. Main Ave., Puyallup, Wash.	1916
CARNE, MRS. THOMAS, 41 Melrose St., Adams, Mass.	1917

* Life Associate.

CARPENTER, Rev. CHARLES KNAPP, 174 Forest Ave., Oak Park, Ill.	1894
CARPENTER, GEORGE I., 129 Dean St., Brooklyn, N. Y.	1907
CARRIGER, H. W., 5185 Trask St., Fruitvale Station, Oakland, Cal.	1913
CARROLL, Mrs. OLIVIA GARNSEY, Rutland, Mass.	1918
CARTER, JOHN D., Lansdowne, Pa.	1907
CASH, HARRY A., 448 Hope St., Providence, R. I.	1898
CASWELL, Mrs. ARTHUR E., 241 Union St., Athol, Mass.	1918
CHAMBERLAIN, CHAUNCY W., 36 Lincoln St., Boston, Mass.	1885
CHAPIN, Prof. ANGIE CLARA, Wellesley College, Wellesley, Mass.	1896
CHAPMAN, Mrs. F. M., Englewood, N. J.	1908
CHAPMAN, ROYAL N., Dept. Animal Biology, Univ. of Minnesota, Minneapolis, Minn.	1911
CHASE, SIDNEY, 25 Ames Bldg., Boston, Mass.	1904
CHEESMAN, MORTON R., 2703 Ocean Front, Ocean Park, Cal.	1911
CLAGET, CHAS. W., Upper Marlboro, Md.	1918
CLARK, CLARENCE H., Lubec, Me.	1913
CLARK, JOSIAH H., 238 Broadway, Paterson, N. J.	1895
CLARKE, CHARLES E., 51 Summit R'd, Medford, Mass.	1907
CLARKE, Miss HARRIET E., 9 Chestnut St., Worcester, Mass.	1896
CLARKE, Miss MARY S., The Lamont, Pittsburgh, Pa.	1916
CLAY, C. IRVIN, Box 353, Eureka, Cal.	1918
CLEAVES, HOWARD H., Conservation Comm., Albany, N. Y.	1907
CLEVELAND, Dr. CLEMENT, 925 Park Ave., New York, N. Y.	1903
CLEVELAND, Miss LILIAN, Woods Edge Road, West Medford, Mass.	1906
COALE, HENRY K., Highland Park, Ill.	1883
COBB, Miss ANNIE W., 20 Amsden St., Arlington, Mass.	1909
COBB, PHILIP HACKER, Loomis Inst., Windsor, Conn.	1917
COBB, Dr. STANLEY, 340 Adams St., Milton, Mass.	1909
CODY, Prof. WALTER GUYTON, 49 High St., Middletown, Conn.	1916
COFFIN, Mrs. PERCIVAL B., 3232 Ellis Ave., Chicago, Ill.	1905
COFFIN, ROBERT L., Mass. Agric'l. Exp. Sta., Amherst, Mass.	1917
COGGINS, HERBERT L., 2929 Piedmont Ave., Berkeley, Cal.	1913
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
CONE, Mrs. HENRY F., 4 Trinity St., Hartford, Conn.	1917
CONEY, Mrs. GEO. H., R. F. D., Box 25, Windsor, Conn.	1906
CONGER, PAUL SIDNEY W., Prairie du Sac, Wis.	1918
COOK, FREDERICK W., 1604 East Harrison St., Seattle, Wash.	1915
COOK, Miss LILIAN GILLETTE, Long Lea Farm, Amherst, Mass.	1899
COOKE, GEORGE J., Ambler, Pa.	1916
COOKE, Miss MAY THACHER, 1328 Twelfth St., Washington, D. C.	1915
COPE, FRANCIS R., Jr., Dimock, Pa.	1892
COPELAND, Miss ADA B., 1103 White Ave., Grand Junction, Colo.	1917
COPELAND, MANTON, 88 Federal St., Brunswick, Me.	1900

CORRINGTON, JULIAN DANA, 406 University Ave., Ithaca, N. Y.....	1916
COURSEN, BLAIR, Univ. of Chicago, Chicago, Ill.....	1918
COVELL, DR. HENRY H., 1600 East Ave., Rochester, N. Y.....	1918
CRAIG, WALLACE, Univ. of Maine, Orono, Me.....	1912
CRAM, R. J., 26 Hancock Ave., W., Detroit, Mich.....	1893
CRANDALL, LEE S., N. Y. Zoöl. Park, New York, N. Y.....	1909
CRANE, MISS CLARA L., Dalton, Mass.....	1904
CRANE, MRS. ZENAS, Dalton, Mass.....	1904
CREHORE, FREDERIC M., Box 1252, Boston, Mass.....	1913
CRESSY, MRS. A. S., 287 Sargeant St., Hartford, Conn.....	1912
CRIDDLE, NORMAN, Trusbank, Man.....	1918
CROSBY, CAPT. MAUNSELL S., Rhinebeck, N. Y.....	1904
CROSS, ALBERT ASHLEY, Huntington, Mass.....	1918
CROWELL, MISS J. OLIVIA, Dennis, Mass.....	1918
CUMMINGS, MISS EMMA G., 16 Kennard Road, Brookline, Mass.....	1903
CURRIER, EDMONDE SAMUEL, 416 E. Chicago St., Portland, Ore.....	1894
CURRY, HASKELL BROOKS, 60 Bay State Road, Boston, Mass.....	1916
CURTIS, CHARLES P., 244 Beacon St., Boston, Mass.....	1915
CUSHMAN, MISS ALICE, 919 Pine St., Philadelphia, Pa.....	1910
DANE, MRS. ERNEST B., Chestnut Hill, Mass.....	1912
DANFORTH, STUART T., 115 N. 6th Ave., New Brunswick, N. J.....	1916
DAVENPORT, MRS. ELIZABETH B., Brattleboro, Vt.....	1898
DAVIDSON, MRS. GAYLORD, 1302 W., S. Grand Ave., Springfield, Ill.....	1912
DAY, CHESTER SESSIONS, 1711 Commonwealth Ave., Boston, Mass.....	1897
DEAN, R. H., 720 Quintard Ave., Anniston, Ala.....	1913
DEANE, GEORGE CLEMENT, 80 Sparks St., Cambridge, Mass.....	1899
DECKER, HAROLD K., 342 Guyon Ave., Oakland Heights, N. Y.....	1916
DELOACH, R. J. H., 6605 Harvard Ave., Chicago, Ill.....	1910
DENSMORE, MISS MABEL, 910 4th St., Red Wing, Minn.....	1910
DERBY, MAJOR RICHARD, 116 E. 79th St., New York, N. Y.....	1898
DERBY, WILLIAM M., JR., 4857 Kimbark Ave., Chicago, Ill.....	1916
DEWEY, DR. CHARLES A., 78 Plymouth Ave., Rochester, N. Y.....	1900
DEXTER, LEWIS, 1889 Elm St., Manchester, N. H.....	1915
DICE, LEE RAYMOND, Dept. Zoöl., Univ. Illinois, Urbana, Ill.....	1918
DICKEY, DONALD R., San Rafael Heights, Pasadena, Cal.....	1907
DILL, PROF. HOMER R., State Univ. of Iowa, Iowa City, Ia.....	1916
DILLE, FREDERICK M., Niobrara Reservation, Valentine, Neb.....	1892
DIMICK, CHARLES W., 1007 Tremont Bldg., Boston, Mass.....	1917
DIONNE, C. E., Laval University, Quebec, Canada.....	1893
DIXON, FREDERICK J., 111 Elm Ave., Hackensack, N. J.....	1891
DIXON, JOSEPH S., Univ. of Cal., Berkeley, Cal.....	1917
DORN, PROF. LOUIS, Concordia College, Fort Wayne, Ind.....	1912
DRUMMOND, MISS MARY, 510 Spring Lane, Lake Forest, Ill.....	1904
DUBOIS, ALEXANDER D., Dutton, Mont.....	
DULL, MRS. A. P. L., 211 N. Front St., Harrisburg, Pa.....	1900

DUNBAR, Miss LULU, R. D. 1, Elkhorn, Wis.....	1918
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
EASTMAN, Major FRANCIS B., Camp Grant, Ill.....	1909
*EATON, HOWARD, Wolf, Sheridan Co., Wyo.....	1918
EATON, Miss MARY S., 8 Monument St., Concord, Mass.....	1909
EATON, SCOTT HARRISON, Box 653, Lawrenceville, Ill.....	1912
EDSON, JOHN M., Marietta Road, Bellingham, Wash.....	1886
EDSON, WM. L. G., 54 Fairview Avenue, Rochester, N. Y.....	1916
EDWARDS, KATHARINE M., Wellesley College, Wellesley, Mass.....	1918
EHINGER, Dr. CLYDE E., 100 W. Rosedale Ave., West Chester, Pa... 1904	
EIFRIG, Prof. C. W. GUSTAVE, 504 Monroe Ave., Oak Park, Ill.....	1901
EIMBECK, Dr. AUGUST F., New Haven, Mo.....	1906
EKBLAW, SIDNEY E., R. F. D. 23, Rantoul, Ill.....	1918
EKBLAW, WALTER ELMER, 713 W. Washington Blv'd., Urbana, Ill.. 1911	
ELDRIDGE, ARTHUR S., South Lincoln, Mass.....	1912
ELIOT, WILLARD AYRES, 1011 Thurman St., Portland, Ore.....	1918
ELLIOT, Mrs. J. W., 124 Beacon St., Boston, Mass.....	1912
ELLS, GEORGE P., Norwalk, Conn.....	1904
EMERSON, W. OTTO, Hayward, Cal.....	1916
ENO, HENRY LANE, Princeton, N. J.....	1918
EVANS, Dr. EVAN M., 550 Park Ave., New York, N. Y.....	1918
EVANS, WILLIAM B., Moorestown, N. J.....	1897
EYER, GEO. A., Short Hills, N. J.....	1918
FANNING, Dr. WALTER G., 2 Hunt St., Danvers, Mass.....	1917
FALGER, Mrs. WM., 1019 16th St., Modesto, Cal.....	1918
FARLEY, JOHN A., 52 Cedar St., Malden, Mass.....	1904
FARQUHAR, ARTHUR, York, Pa.....	1916
FARRAR, EDWARD ROGERS, South Lincoln, Mass.....	1917
FAXON, ALLAN HART, 7 Edwards St., Southbridge, Mass.....	1916
*FAY, DUDLEY B., 287 Beacon St., Boston, Mass.....	1916
FAY, Lieut. 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
FIELD, Dr. GEORGE W., Biological Survey, Washington, D. C.....	1910
FISHER, Miss ELIZABETH WILSON, 2222 Spruce St., Philadelphia, Pa. 1896	
FISHER, Dr. G. CLYDE, American Mus. Nat. Hist., New York, N. Y.. 1908	
FLANAGAN, JOHN H., 89 Power St., Providence, R. I.....	1898
FLEISHER, EDWARD, 539 4th St., Brooklyn, N. Y.....	1916
FLETCHER, Mrs. MARY E., Proctorsville, Vt.....	1898
FLOYD, CHARLES BENTON, 382 Wolcott St., Auburndale, Mass.....	1916
FOOT, Dr. NATHAN CHANDLER, Readville, Mass.....	1916

FOOTE, Miss F. HUBERTA, 260 Valentine Lane, Yonkers, N. Y.....	1897
FORBES, RALPH E., 328 Adams St., Milton, Mass.....	1917
FORDYCE, GEO. L., 40 Lincoln Ave., Youngstown, Ohio.....	1901
FOSTER, FRANCIS A., Edgartown, Mass.....	1918
FOSTER, FRANK B., Haverford, Pa.....	1916
FOWLER, Capt. FREDERICK HALL, 221 Kingsley Ave., Palo Alto, Cal.....	1892
FOWLER, HENRY W., Acad. Nat. Sciences, Philadelphia, Pa.....	1898
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, LEONARD, Jr., 1374 Elizabeth St., Denver, Colo.....	1918
FREEMAN, Miss HARRIET E., 37 Union Park, Boston, Mass.....	1903
FRENCH, CHARLES H., Canton, Mass.....	1904
FRENCH, Mrs. CHAS. H., Canton, Mass.....	1908
FROTHINGHAM, Mrs. RANDOLPH, The Copley Plaza, Boston, Mass.....	1913
FRY, Rev. HENRY J., 66 Eagle Rock Way, Montclair, N. J.....	1916
FULLER, HENRY C., 1348 Euclid St., Washington, D. C.....	1916
FULLER, Mrs. T. OTIS, Needham, Mass.....	1909
GABRIELSON, IRA N., Biological Survey, Washington, D. C.....	1912
GANIER, ALBERT F., 1023 Villa St., Nashville, Tenn.....	1917
GARDINER, CHARLES BARNES, 175 W. Main St., Norwalk, Ohio.....	1903
GARST, Dr. JULIUS, 29 Oread St., Worcester, Mass.....	1916
GERTH, WALTER G., 3929 Greenview Ave., Chicago, Ill.....	1918
GETKEN, Prof. SEVERIN, St. John's University, Collegeville, Minn.....	1912
GHANINI, CHAS. A., Poland, N. Y.....	1911
GIBSON, LANGDON, 5 Union St., Schenectady, N. Y.....	1887
GILMAN, M. FRENCH, Banning, Cal.....	1907
GLADDING, Mrs. JOHN R., 30 Stimson Ave., Providence, R. I.....	1912
GLEASON, Mrs. C. H., 700 Madison Ave., S. E., Grand Rapids, Mich.....	1917
GODING, EDWARD N., 73 Tremont St., Boston, Mass.....	1916
GOELITZ, WALTER A., 1622 Judson Ave., Ravinia, Ill.....	1916
GOLSAN, LEWIS S., Box 97, Prattville, Ala.....	1912
GOODE, Mrs. F. B., Billings St., Sharon, Mass.....	1918
GOODRICH, Miss JULIET T., 1210 Astor St., Chicago, Ill.....	1904
GORDON, HARRY E., 168 Asbury St., Rochester, N. Y.....	1911
GORMLEY, A. LIGNORI, Arnprior, Ont.....	1918
GORST, CHARLES C., 2 Arnold Circle, Cambridge, Mass.....	1916
GOULD, ALFRED M., Malden, Mass.....	1916
GOULD, JOSEPH E., Arcadia, Fla.....	1889
GRAHAM, Hon. WM. J., Aledo, Ill.....	1909
GRANGER, WALTER, Amer. Mus. Nat. Hist., New York, N. Y.....	1891
GRANT, WM. W., 600 Castle St., Geneva, N. Y.....	1910
GRAVES, Mrs. CHARLES B., 4 Mercer St., New London, Conn.....	1905
GRAY, GEORGE M., Box 89, Woods Hole, Mass.....	1916
GREEN, HORACE OAKES, 114 North Ave., Wakefield, Mass.....	1917

GREENOUGH, HENRY VOSE, 1134 Beacon St., Brookline, Mass.....	1901
GREENWOOD, FREDERICK, 1724 8th Ave., Spokane, Wash.....	1917
GREGORY, RAYMOND J., Princeton, Mass.....	1917
GREGORY, STEPHEN S., Jr., 2609 Hampden St., Chicago, Ill.....	1916
GRIFFIN, BERTRAM S., 22 Currier Ave., Haverhill, Mass.....	1917
GROW, MRS. EUGENE J., Lebanon, N. H.....	1916
HADLEY, ALDEN H., Monrovia, Indiana.....	1906
HAGAR, Lieut. J. A., 79 Washington Park, Newtonville, Mass.....	1914
HAGER, GEORGE W., R. F. D. 3, Peterboro, N. H.....	1917
HALL, F. GREGORY, Milton, Wis.....	1917
HALL, WM. WEBSTER, Jr., 70 W, 49th St., New York, N. Y.....	1917
HANDLEY, CHARLES O., Lewisburg, W. Va.....	1916
HANKINSON, THOS. LEROY, 900 11th St., Charleston, Ill.....	1897
HARDISTY, ARTHUR H., 2326 First St., N. W., Washington, D. C....	1918
HARDON, MRS. HENRY W., Wilton, Conn.....	1905
HARRINGTON, RALPH M., 328 W. 57th St., New York, N. Y.....	1915
*HARRIS, HARRY, Kansas City, Mo.....	1911
HARTSHORN, HAROLD IRA, Am. Mus. Nat. Hist., New York, N. Y....	1918
HARVEY, MRS. C. F., Vernon Hall, Kinston, N. C.....	1918
HARVEY, JOHN L., 3 Moody St., Waltham, Mass.....	1916
HASKELL, MISS SADIA, The Plymouth, Washington, D. C.....	1916
HATHAWAY, HARRY S., Box 1466, Providence, R. I.....	1897
HAVEMEYER, H. O., Mahwah, N. J.....	1893
HEACOCK, MISS ESTHER, Wyncote, Pa.....	1918
HELME, ARTHUR H., Miller Place, N. Y.....	1888
*HENDERSON, JOHN BROOKS, 16 St. & Florida Ave., N. W., Washing- ton, D. C.....	1918
HENDERSON, Judge JUNIUS, 627 Pine St., Boulder, Colo.....	1903
HENDERSON, WALTER C., 4727 13th St., N. W., Washington, D.C....	1917
HENDRICKSON, W. F., 276 Hillside Ave., Jamaica, N. Y.....	1885
HENNESSEY, FRANK C., 457 Albert St., Ottawa, Canada.....	1914
HERMANN, THEODORE L., 273 Neal Dow Ave., W. New Brighton, N.Y.	1916
HERRICK, FRANCIS H., Adelbert College, Cleveland, Ohio.....	1913
*HERRICK, HAROLD, 123 William St., New York, N. Y.....	1905
HERRICK, NEWBOLD, L., War College, Newport, R. I.....	1913
HERRICK, N. LAWRENCE, Jr., War College, Newport, R. I.....	1917
HERRICK, MRS. W. H., Topsfield, Mass.....	1918
HEWITT, Dr. C. GORDON, Dept. Agric., Ottawa, Canada.....	1918
HIGGINS, A. W., Sandwich, Mass.....	1918
HILL, JAMES HAYNES, Box 485, New London, Conn.....	1897
HILL, MRS. THOMAS R., Box 491, Chautauqua, N. Y.....	1903
HINCKLEY, GEO. LYMAN, Redwood Library, Newport, R. I.....	1912
HINE, Prof. JAMES STEWART, Ohio State Univ., Columbus, Ohio....	1899

* Life Associate.

HIX, GEORGE E., 100 W. 91st St., New York, N. Y.....	1904
HOLLAND, HAROLD MAY, Galesburg, Ill.	1910
HOLLAND, DR. WILLIAM J., Carnegie Museum, Pittsburgh, Pa.....	1899
HOLLISTER, WARREN D., 2527 Albion St., Denver, Colo.....	1901
HOLMAN, RALPH H., 481 Main St., Stoneham, Mass.....	1907
HOLT, Lieut. ERNEST G., Biological Survey, Washington, D. C.....	1911
HONYWILL, ALBERT W., Jr., 210 Farmington Ave., Hartford, Conn.....	1907
HORSFALL, ROBERT BRUCE, 1457 E. 18th St., Portland, Ore.....	1905
HOTCHKISS, HIRAM A., Harding, Mass.....	1917
HOWLAND, R. H., 164 Wildwood Ave., Upper Montclair, N. J.....	1903
HOYT, WILLIAM H., Box 425, Stamford, Conn.....	1907
HUBBARD, C. ANDRESEN, 1249 E. Harrison St., Portland, Ore.....	1916
HUBBARD, Prof. MARIAN E., 15 Appleby Road, Wellesley, Mass.....	1916
HUBBARD, RALPH, 1038 University Ave., Boulder, Colo.....	1916
HUBER, WHARTON, 225 St. Marks Sq., Philadelphia, Pa.....	1915
HUNN, JOHN T. SHARPLESS, 1218 Prospect Ave., Plainfield, N. J.....	1895
HUNT, RICHARD MONTAGUE, Mus. Vert. Zoöl., Berkeley, Cal.....	1918
HUSHER, MRS. GERTRUDE H., 821 So. Hope St., Los Angeles, Cal.....	1918
HUSSEY, ROLAND F., 1308 Ann St., Ann Arbor, Mich.....	1915
HYDE, MRS. S. E., Mayfield, Idaho.....	1908
INGERSOLL, ALBERT M., 908 F St., San Diego, Cal.....	1885
ISHAM, CHAS. B., 27 W. 67 St., New York, N. Y.....	1891
JACKSON, DR. HARTLEY H. T., Biological Survey, Washington, D. C.....	1910
JACKSON, RALPH W., R. D. 1, Cambridge, Md.....	1918
JACKSON, THOMAS H., 304 N. Franklin St., West Chester, Pa.....	1888
JAMES, NORMAN, Catonsville, Md.....	1913
JENKS, CHAS. W., Bedford, Mass.....	1912
JENNEY, CHARLES F., 100 Gordon Ave., Hyde Park, Mass.....	1905
JENNINGS, DR. GEO. H., Jewett City, Conn.....	1918
JENNINGS, RICHARD D., 129 Harrison St., East Orange, N. J.....	1913
JENSEN, J. K., U. S. Indian School, Wahpeton, N. Dak.....	1912
JEWETT, STANLEY G., Pendleton, Ore.....	1906
JOHNSON, FRANK E., 16 Amackassin Terrace, Yonkers, N. Y.....	1888
JOHNSON, MRS. GRACE PETTIS, City Library Asso., Springfield, Mass.....	1908
JONES, DR. LOMBARD CARTER, Falmouth, Mass.....	1917
JONES, WILLIAM F., Norway, Me.....	1918
JORDAN, A. H. B., Everett, Wash.....	1888
JUMP, MRS. EDWIN R., 97 Oakleigh Road, Newton, Mass.....	1910
JUNKIN, FRANCIS T. A., 2541 Michigan Ave., Chicago, Ill.....	1917
KAEDING, GEO. L. Battle Mountain, Nev.....	1918
KEAYS, JAMES EDWARD, 328 St. George St., London, Ontario.....	1899
KELLOGG, RALPH T., Silver City, N. M.....	1913
KELSO, DR. JOHN E. H., Edgewood, Lower Arrow Lake, B. C.....	1915
KENISTON, ALLAN, Vineyard Haven, Mass.....	1917
KENNEDY, DR. HARRIS, Readville, Mass.....	1916

KENT, DUANE E., 47 West St., Rutland, Vt.....	1913
KENT, EDWIN C., 156 Broadway, New York, N. Y.....	1907
KERMÓDE, FRANCIS, Provincial Museum, Victoria, B. C.....	1904
*KIDDER, NATHANIEL T., Milton, Mass.....	1906
KILGORE, WILLIAM, JR., 132 Orlin Ave., S. E., Minneapolis, Minn.....	1906
KINGSBURY, FREDERICK S., Univ. Club, Milwaukee, Wis.....	1916
KING, LeROY, 20 E. 84th St., New York, N. Y.....	1901
KIRKHAM, MRS. JAMES W., 275 Maple St., Springfield, Mass.....	1904
*KIRKHAM, STANTON D., 152 Howell St., Canandaigua, N. Y.....	1910
KIRKWOOD, FRANK C., R. F. D. 3, Monkton, Md.....	1892
KITREDGE, Lieut. JOSEPH, JR., Engineers, H. L. C., A. E. F., France	1910
KLOSEMAN, Miss JESSIE E., Beal Hall, 20 Charlesgate W., Boston, Mass.....	1909
KNAEBEL, ERNEST, 3707 Morrison St., Chevy Chase, D. C.....	1906
KNOLHOFF, FERDINAND WILLIAM, Amityville, N. Y.....	1890
KREZMAN, 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
LACEY, HOWARD GEORGE, R. F. D. 1, Kerrville, Texas.....	1899
LADD, HARRY STEPHEN, 71 Madison St., Seattle, Wash.....	1917
LaDOW, STANLEY V., 622 W. 113th St., New York, N. Y.....	1913
LAING, HAMILTON M., 1277 E. 32nd St., Portland, Ore.....	1917
LAMB, CHAS. R., 8 Highland St., Cambridge, Mass.....	1912
LANCASHIRE, Mrs. JAMES HENRY, 7 West 75th St., New York, N. Y.....	1909
LANG, HERBERT, Amer. Mus. Nat. Hist., New York, N. Y.....	1907
LANGDON, ROY M., 709 N. 3rd Ave., Maywood, Ill.....	1918
LARRABEE, Prof. AUSTIN P., Yankton College, Yankton, S. Dak.....	1918
LATHAM, ROY, Orient, N. Y.....	1916
LAURENT, PHILIP, 31 E. Mt. Airy Ave., Philadelphia, Pa.....	1902
LAWSON, RALPH, 88 Washington Sq. East, Salem, Mass.....	1917
LEE, JOHN C., Grove St., Wellesley, Mass.....	1917
LEISTER, CLAUDE W., 113 Osmun Place, Ithaca, N. Y.....	1916
LENGERKE, JUSTUS VON, 211 Highland Ave., Orange, N. J.....	1907
LEOPOLD, ALDO, 135 S. 14th St., Albuquerque, N. Mex.....	1916
LEOPOLD, NATHAN, JR., 4754 Greenwood Ave., Chicago, Ill.....	1916
LEVEY, Mrs. WILLIAM, Alton Bay, N. H.....	1915
LEWIS, HARRISON F., P. O. Box 6, Quebec, Canada.....	1912
LEWIS, Mrs. HERMAN E., 120 Grove St., Haverhill, Mass.....	1912
LIEBOLD, ERNEST G., 94 Rhode I. Ave., Highland Park, Mich.....	1918
LIGON, J. STOKLEY, Box 131, Albuquerque, New Mexico.....	1912
LINCOLN, FREDERICK CHARLES, 4150 Clay St., Denver, Colo.....	1910
LINDSAY, CLARENCE M., 213 Congress St., Brooklyn, N. Y.....	1918

* Life Associate.

LINGS, GEO. H., Richmond Hill, Cheadle, Cheshire, England.....	1913
LITTLE, LUTHER 2d, 1403 Garfield Ave., So. Pasadena, Cal.....	1913
LLOYD, HOYES, 406 Queen St., Ottawa, Canada.....	1916
LONG, CHAS. IRVING, 130 5th Ave., Roselle, N. J.....	1918
LORD, THOMAS HENRY, Newington, N. H.....	1916
LORING, Lieut. J. ALDEN, Owego, N. Y.....	1917
LOW, ETHELBERT I., 38 E. 64th St., New York, N. Y.....	1907
LUCE, Mrs. FRANCIS P., Box 216, Vineyard Haven, Mass.....	1912
LUM, EDWARD H., Chatham, N. J.....	1904
MACKIE, DR. WILLIAM C., 54 Coolidge St., Brookline, Mass.....	1908
MACLAY, MARK W., JR., 106 E. 85 St., New York, N. Y.....	1905
MACREYNOLDS, GEORGE, 76 E. State St. Doylestown, Pa.....	1917
MADDOCK, Miss EMELINE, 6386 Drexel Road, Overbrook, Pa.....	1897
MAHER, J. E., 59 Robinson St., Sharon, Pa.....	1902
MAIN, FRANK H., Pittsfield, Mass.....	1913
MAITLAND, ROBERT L., 141 Broadway, New York, N. Y.....	1889
MANN, ELIAS P., Williamstown, Mass.....	1912
MAPLES, JAMES C., Port Chester, N. Y.....	1913
MARBLE, RICHARD M., Woodstock, Vt.....	1907
MARCKRES, GEO. M., Sharon, Conn.....	1918
MARKS, EDWARD SIDNEY, 655 Kearney Ave., Arlington, N. J.....	1915
MARRS, Mrs. KINGSMILL, 9 Commonwealth Ave., Boston, Mass.....	1903
MARSHALL, ALFRED, 17 S. Jefferson St., Chicago, Ill.....	1916
*MARSHALL, Mrs. ELLA M. O., New Salem, Mass.....	1912
MARX, Capt. EDWARD J. F., 207 Burke St., Easton, Pa.....	1907
MATHEWS, F. SCHUYLER, 17 Frost St., Cambridge, Mass.....	1917
MATTERN, EDWIN S., 1042 Walnut St., Allentown, Pa.....	1912
MATERN, WALTER I., 1042 Walnut St., Allentown, Pa.....	1916
MAY, DR. JOHN B., Cohasset, Mass.....	1912
MAYFIELD, DR. GEORGE R., Kissam Hall, Nashville, Tenn.....	1917
McCLINTOCK, NORMAN, 504 Amberson Ave., Pittsburgh, Pa.....	1900
McCONNELL, THOMAS S., 1813 Huey St., McKeesport, Pa.....	1915
McCOOK, Major PHILIP J., 571 Park Ave., New York, N. Y.....	1895
McGEEVER, MYLES STANDISH, 60 Keene St., Lowell, Mass.....	1918
McGRAW, HARRY A., 1805 15th Ave., Altoona, Pa.....	1917
McGREW, ALBERT D., 5611 Stanton Ave., Pittsburgh, Pa.....	1917
McHARG, THOMAS A., 725 Highland Ave., Boulder, Colo.....	1918
McHATTON, T. H., 163 Mell St., Athens, Ga.....	1917
McILHENNY, EDWARD AVERY, Avery Island, La.....	1894
McINTIRE, Mrs. HERBERT BRUCE, 4 Garden St., Cambridge, Mass.....	1908
McLAIN, ROBERT BAIRD, Market and 12th St., Wheeling, W. Va.....	1893
McLANE, JAMES LATIMER, Jr., Garrison, Md.....	1915
McLEAN, Hon. GEO. P., 1520 New Hampshire Ave., Washington, D. C.....	1913

McMILLAN, Mrs. GILBERT N., Gorham, N. H.....	1902
MEAD, Mrs. E. M., 303 W. 84th St., New York, N. Y.....	1904
MEANS, CHAS. J., 29 Marlborough St., Boston, Mass.....	1912
MENGEL, G. HENRY, 739 Madison Ave., Reading, Pa.....	1913
MERRIAM, HENRY F., R. F. D. 1, Newton, N. J.....	1905
MERRILL, ALBERT R., Hamilton, Mass.....	1912
MERRILL, B. G. Hinsdale, Ill.....	1917
MERRILL, D. E., State College, New Mexico.....	1913
MERRILL, HARRY, 316 State St., Bangor, Maine.....	1883
MERSHON, W. B., Saginaw, Mich.....	1905
METCALF, Lieut. F. P., Biological Survey, Washington, D. C.....	1917
METCALF, Z. P., A. & M. College, West Raleigh, N. C.....	1913
MEYER, Major G. RALPH, 126 South, Ft. Monroe, Va.....	1913
MEYER, Miss HELOISE, Lenox, Mass.....	1913
MILES, Mrs. HENRY A., Hingham, Mass.....	1917
MILLER, Miss BERTHA STUART, Box 2, Palisade, N. J.....	1915
MILLER, Miss CARRIE ELLA, 36 Cottage St., Lewiston, Me.....	1918
MILLER, CHAS. W., Jaffna College, Jaffna, Ceylon.....	1909
MILLER, Mrs. ELISABETH C. T., 1010 Euclid Ave., Cleveland, Ohio..	1916
MILLER, Dr. LOYE HOLMES, State Normal School, Los Angeles, Cal..	1918
MILLS, ENOS A., Estes Park, Colo.....	1916
MINER, LEO D., 1836 Vernon St., N. W. Washington, D. C.....	1913
MITCHELL, CATHERINE ADAMS, Riverside, Ill.....	1911
MITCHELL, MASON, U. S. Consul, Apia, Samoa.....	1916
MITCHELL, Capt. WALTON I., 3210 E. 1st St., Wichita, Kan.....	1893
MOODY, A. J., c/o Aetna Life Ins. Co., Hartford, Conn.....	1918
MOODY, HARRY LEE, Glyndon, Minn.....	1916
MOODY, Dr. WM. LADD, Newport, R. I.....	1918
MOORE, ELIZABETH PUTNAM, North Anson, Me.....	1905
MORCOM, G. FREAN, 243 N. Coronado St., Los Angeles, Cal.....	1886
MORLEY, S. GRISWOLD, 2535 Etna St., Berkeley, Cal.....	1911
MORRISON, ALVA, 3 Shady Hill Sq., Cambridge, Mass.....	1915
MORSE, HARRY GILMAN, Huron, Ohio.....	1912
MORSS, CHAS. B., 35 Greenleaf St., Bradford, Mass.....	1918
MOSELEY, Prof. EDWIN LINCOLN, Bowling Green, Ohio.....	1918
MOSHER, FRANKLIN H., 17 Highland Ave., Melrose Highlands, Mass..	1905
MOUSLEY, WM. HENRY, Hatley, Quebec, Canada.....	1915
MUNRO, J. A., Okanagan Landing, British Columbia, Canada.....	1913
MURIE, Lieut. O. J., 219 7th Ave. S, Moorhead, Minn.....	1913
MYERS, Mrs. HARRIET W., 311 N. Ave. 66, Los Angeles, Cal.....	1906
MYERS, Miss LUCY F., 127 Academy St., Poughkeepsie, N. Y.....	1898
NAUMAN, E. D., Box 606, Sigourney, Iowa.....	1918
NICHOLS, L. NELSON, N. Y. Public Library, New York, N. Y.....	1917
NIMS, Mrs. LUCIUS, 17 Union St., Greenfield, Mass.....	1913
NOBLE, ELEANOR G., 66 Sparks St., Cambridge, Mass.....	1916

NOBLE, Ensign G. KINGSLEY, Mus. Comp. Zoölogy, Cambridge, Mass.....	1916
NOKES, Dr. I. D., 134 W. 55th St., Los Angeles, Cal.....	1915
NOLTE, Rev. FELIX, St. Benedict's College, Atchison, Kan.....	1903
NORRIS, EDWARD, 301 W. Springfield Ave., Philadelphia, Pa.....	1916
NORRIS, J. PARKER, JR., 2122 Pine St., Philadelphia, Pa.....	1904
NORTON, MRS. CARRIE MORSE, Faulkton, S. Dak.....	1918
NOWELL, JOHN ROWLAND, 300 Parkwood Boulev., Schenectady, N. Y.....	1897
OGDEN, Dr. HENRY VINING, 141 Wisconsin St., Milwaukee, Wis.....	1897
OLDYS, HENRY, Silver Springs, Md.....	1896
OLIVER, MRS. EDITH HOLLICK, 48 St. Nicholas Pl., New York, N. Y.....	1918
*OLIVER, Dr. HENRY KEMBLE, 4 Newbury St., Boston, Mass.....	1900
OSBORN, ARTHUR A., 58 Washington St., Peabody, Mass.....	1912
OSGOODE, HARRY W., 16 Elm St., Pittsfield, N. H.....	1918
OTTEMILLER, FREE, 30 N. Pine St., York, Pa.....	1914
OVERTON, Dr. FRANK, Patchogue, N. Y.....	1909
*OWEN, Miss JULIETTE AMELLA, 306 N. 9th St., St. Joseph, Mo.....	1897
PACKARD, WINTHROP, 1442 Washington St., Canton, Mass.....	1917
PAINÉ, AUGUSTUS G., JR., 18 West 49th St., New York, N. Y.....	1886
PAINÉ, CHARLES JACKSON, 705 Sears Bldg., Boston, Mass.....	1917
PALMER, MRS. BERTHA ELLIS, 1939 Biltmore St., N. W., Washington, D. C.....	1918
*PALMER, Miss ELIZABETH DAY, 1741 S. Harvard Blv'd, Los Angeles, Cal.....	1918
PALMER, R. H., 222 Dietrich Blk., Pocatello, Ida.....	1917
PALMER, Dr. SAMUEL C., 712 Ogden Ave., Swarthmore, Pa.....	1899
PALMER, MRS. T. S., 1939 Biltmore St., Washington, D. C.....	1918
PANGBURN, CLIFFORD H., 731 Elm St., New Haven, Conn.....	1907
*PARKER, EDWARD LUDLOW, Nashawtuc Rd., Concord, Mass.....	1916
PARKS, MRS. F. R., 128 Crafts Rd., Chestnut Hill, Mass.....	1918
PAUL, LUCIUS H., 1485 North St., Rochester, N. Y.....	1908
PAXTON, MRS. REGINA A., 3135 Highland Pl., Cleveland Park, D. C.....	1917
PEABODY, Rev. P. B., Blue Rapids, Kan.....	1903
PEMBERTON, JOHN ROY, 803 Mayo Bldg., Tulsa, Okla.....	1918
PENARD, THOS. E., 16 Norfolk Road, Arlington, Mass.....	1912
PENFIELD, Miss ANNIE L., 155 Charles St., Boston, Mass.....	1912
PENNELL, Miss ELIZABETH A. S., 252 Maine St., Brunswick, Me.....	1918
PEPPER, Lt. Col. WM., 1811 Spruce St., Philadelphia, Pa.....	1911
PERINE, KEBLE, 26 Trull St., Boston, Mass.....	1917
PERKINS, Dr. ANNA E., Gowanda Hospital, Collins, N. Y.....	1917
PERKINS, ARTHUR W., 21 High St., Farmington, Me.....	1915
PERKINS, Dr. GEO. H., Univ. of Vt., Burlington, Vt.....	1912

* Life Associate.

PERRY, DR. HENRY JOSEPH, 45 Bay State Road, Boston, Mass.....	1909
PETERS, ALBERT S., Lake Wilson, Minn.....	1908
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, N. Y.....	1907
PHILLIPS, ALEXANDER H., 54 Hodge Road, Princeton, N. J.....	1891
PHILLIPS, CHAS. LINCOLN, 5 West Weir St., Taunton, Mass.....	1912
PIERCE, WRIGHT McEWEN, Box 343, Claremont, Cal.....	1918
PILSBURY, FRANK O., 1088 Main St., Walpole, Mass.....	1917
PINCHOT, GIFFORD, 1617 Rhode Island Ave., Washington, D. C.....	1910
PLATT, HON. EDMUND, Poughkeepsie, N. Y.....	1917
POE, MISS MARGARETTA, 1204 N. Charles St., Baltimore, Md.....	1899
POOLE, EARL L., School Admin. Bldg., Reading, Pa.....	1916
PORTER, LOUIS H., Stamford, Conn.....	1893
POST, WILLIAM S., Bernardsville, N. J.....	1911
POTTER, JULIAN K., 563 Bailey St., Camden, N. J.....	1912
PRAEGER, WILLIAM E., 421 Douglas Ave., Kalamazoo, Mich.....	1892
PRATT, HON. GEO. D., State Conservation Commission, Albany, N. Y.....	1917
PRICE, JOHN HENRY, Crown W Ranch, Knowlton, Mont.....	1906
PRICE, LIGON, R. F. D. 1, Dunmore, W. Va.....	1913
PRITCHARD, MRS. F. A., 203 N. Court St., Medina, Ohio.....	1918
PROVO, W. F., Wickliffe, Ohio.....	1916
PURDY, JAMES B., R. F. D. 4, Plymouth, Mich.....	1893
QUARLES, EMMET AUGUSTUS, 40 Davenport Ave., Stamford, Conn.....	1918
QUIGGLE, JAMES C., 1410 M St., N. W., Washington, D. C.....	1915
RAKER, MISS MARY E., 1484 E. Sherman St., Portland, Ore.....	1918
RATLIFF, HON. WALTER S., R. R. B., Box 276, Richmond, Ind.....	1918
RAVEN, HENRY CUSHIER, Bayshore, N. Y.....	1918
RAWSON, CHAS. I., Oxford, Mass.....	1917
REA, PAUL M., Charleston Museum, Charleston, S. C.....	1912
REAGH, DR. ARTHUR LINCOLN, 39 Maple St., West Roxbury, Mass.....	1896
REGAR, H. SEVERN, 1400 De Kalb St., Norristown, Pa.....	1916
REHN, JAMES A. G., 6033 B Catherine St., Philadelphia, Pa.....	1901
REICHENBERGER, MRS. VICTOR M., Hotel Essex, New York, N. Y.....	1916
REID, MRS. BRUCE, Gulf Refinery, Port Arthur, Tex.....	1918
RETT, EGMONT Z., 3902 Pecos St., Denver, Colo.....	1917
RHOADS, CHARLES J., National Reserve Bank, Philadelphia, Pa.....	1895
RICE, JAMES HENRY, Brick House Plantation, Wiggins, S. C.....	1910
RICE, WARD J., Roachdale, Ind.....	1913
RICHARDS, MISS HARRIET E., 36 Longwood Ave., Brookline, Mass.....	1900
RICHARDSON, W. D., 4215 Prairie Ave., Chicago, Ill.....	1917
RIDDLE, ROBERT, 21 W. Rogers Ave., Merchantville, N. J.....	1916
RIDDLE, S. EARL, Y. M. C. A., Chester, Pa.....	1916
RIDGWAY, JOHN L., Geological Survey, Washington, D. C.....	1890
RIKER, CLARENCE B., 43 Scotland Road, South Orange, N. J.....	1885

ROBBEN, MISS NANCY P. H., 412 E. Merrimack St., Lowell, Mass.	1917
ROBBINS, CHARLES A., Onset, Mass.	1914
ROBBINS, ROYAL E., 61 Monmouth St., Brookline, Mass.	1917
ROBERTS, WILLIAM ELY, 207 McKinley Ave., Lansdowne, Pa.	1902
ROBERTSON, HOWARD, 157 S. Wilton Drive, Los Angeles, Cal.	1911
ROBINSON, ANTHONY W., Haverford, Pa.	1903
*ROGERS, CHARLES H., Amer. Mus. Nat. Hist., New York, N. Y.	1904
ROLAND, CONRAD K., 1208 De Kalb St., Norristown, Pa.	1917
ROOSEVELT, FRANKLIN DELANO, Hyde Park, N. Y.	1896
ROSS, GEORGE H., 23 West St., Rutland, Vt.	1904
ROSS, DR. LUCRETIOUS H., 507 Main St., Bennington, Vt.	1912
ROWLEY, JOHN, 42 Plaza Drive, Berkeley, Cal.	1889
RUST, HENRY J., Coeur d'Alene, Ida.	1918
SACKETT, CLARENCE, Rye, N. Y.	1910
SAGE, HENRY M., Menands Road, Albany, N. Y.	1885
SAMPSON, MISS MYRA M., 30 Green St., Northampton, Mass.	1918
SANBORN, COLIN C., Box 50, Evanston, Ill.	1911
SANTENS, REMI H., Carnegie Museum, Pittsburgh, Pa.	1918
SAUNDERS, ARETAS A., 143 East Ave., Norwalk, Conn.	1907
SAVAGE, L. F., 1210 Jenny Lind St., McKeesport, Pa.	1917
SCHAEFER, OSCAR FREDERICK, 66 Genesee St., Rochester, N. Y.	1916
SCHAFER, J. J., Port Byron, Ill.	1918
SCHENCK, FREDERIC, LENOX, Mass.	1912
SCHONNEGEL, JULIAN ELIOT, 92 Morningside Ave. E., New York, N. Y.	1918
SCHORGER, A. W., 2021 Kendall Ave., Madison, Wis.	1913
SCOVILLE, SAMUEL, JR., 415 Lancaster Ave., Haverford, Pa.	1916
SCUDDER, BRADFORD A., 146 W. 105th St., New York, N. Y.	1917
SEARS, WILLIAM R., 73 Tremont St., Boston, Mass.	1916
SERRILL, WILLIAM J., Haverford, Pa.	1916
SEWELL, JAS. W. JR., 2218 Patterson St., Nashville, Tenn.	1918
SHARPLES, ROBERT P., West Chester, Pa.	1907
SHAW, HENRY S., 78 Cypress St., Newton Centre, Mass.	1916
SHAW, WILLIAM T., 1000 Thatuna St., Pullman, Wash.	1908
SHEA, DANIEL W., Catholic Univ. of Amer., Washington, D. C.	1917
SHEARER, DR. AMON R., Mont Belvieu, Tex.	1905
SHELDON, CHARLES, 16th & Webster Sts., Washington, D. C.	1911
SHELLEY, F. L., Cottonwood Falls, Kan.	1918
SHELTON, Lieut. ALFRED C., Care Johnston Shelton Co., Dayton, Ohio.	1911
SHIRLEY, GARLAND L., Dayton, Va.	1916
SHIRLEY, LESTER L., 604 So. 10th St., Vincennes, Ind.	1917
SHOEMAKER, CLARENCE R., 3116 P St., Washington, D. C.	1910
SHOEMAKER, HENRY W., McElhattan, Pa.	1912

SHOFFNER, CHARLES P., 2011 Wallace St., Philadelphia, Pa.....	1915
SHROSBREE, GEORGE, Public Museum, Milwaukee, Wis.....	1899
SILLIMAN, O. P., 220 Salinas St., Salinas, Cal.....	1915
SILSBEE, THOMAS, 115 Marlborough St., Boston, Mass.....	1916
SILVER, JOHN A., Aberdeen, Md.....	1918
SIMMONS, GEO. FINLAY, Rice Institute, Houston, Texas.....	1910
SKINNER, M. P., Summerville, S. C.....	1916
SMITH, AUSTIN PAUL, 2102 E. 83d St., Cleveland, Ohio.....	1911
SMITH, Rev. FRANCIS CURTIS, 22 Jewett Pl., Utica, N. Y.....	1903
SMITH, Prof. FRANK, 913 West California Ave., Urbana, Ill.....	1909
SMITH, HORACE G., 2918 Lafayette St., Denver, Colo.....	1888
SMITH, LESTER W., 60 Cottage St., Meriden, Conn.....	1916
SMITH, NAPIER, 46 Côtés des Neiges Road, Montreal, Canada.....	1915
SMITH, Mrs. WALLIS C., 525 N. Michigan Ave., Saginaw, W. S., Mich.	1916
SMYTH, Prof. ELLISON A., Jr., Polytechnic Inst., Blacksburg, Va.....	1892
SNYDER, WILL EDWIN, 226 First St., Beaver Dam, Wis.....	1895
SOPER, JOSEPH DEWEY, R. D. 2, Preston, Ont., Canada.....	1918
SOULE, CAROLINE GRAY, 187 Walnut St., Brookline, Mass.....	1917
SPELMAN, HENRY M., 48 Brewster St., Cambridge, Mass.....	1911
SPENCER, Miss CLEMENTINA S., Dept. of Zoology, Coe College, Cedar Rapids, Iowa.....	1917
STANWOOD, Miss CORDELIA JOHNSON, Ellsworth, Me.....	1909
STAPLETON, RICHARD, 219 High St., Holyoke, Mass.....	1916
STEELE, HENRY B., 4530 Drexel Boulevard, Chicago, Ill.....	1917
STEPHENS, T. C., Morningside College, Sioux City, Iowa.....	1909
STEPHENSON, Mrs. JESSE, Monte Vista, Colo.....	1918
STEVENS, Dr. J. F., Box 1546, Lincoln, Neb.....	1908
STEWART, Mrs. CECIL, 451 Beacon St., Boston, Mass.....	1917
STILES, EDGAR C., 345 Main St., West Haven, Conn.....	1907
STIMSON, Dr. ARTHUR M., Raymond St., Chevy Chase, Md.....	1917
STODDARD, HERBERT LEE, Field Museum Nat. Hist., Chicago, Ill....	1912
STORER, Lieut. TRACY IRWIN, Mus. Vert. Zoology, Berkeley, Cal....	1916
STRAW, Mrs. HERMAN F., 607 Chestnut St., Manchester, N. H.....	1916
STREET, J. FLETCHER, Beverly, N. J.....	1908
STRUTHERS, Rev. ALFRED L., Townsend, Mass.....	1918
STUART, FRANK A., 118 Green St., 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., 35 Concord St., Hartford, Conn.....	1913
SWAIN, JOHN MERTON, Box 528, Farmington, Me.....	1899
SWEENEY, J. A., Forest Service, Halsey, Neb.....	1916
SWENK, MYRON H., 3028 Starr St., Lincoln, Neb.....	1904
TATNALL, SAMUEL A., 503 Hansberry St., Philadelphia, Pa.....	1916
TAYLOR, ALEXANDER R., 1410 Washington St., Columbia, S. C.....	1907

TAYLOR, HORACE, 3 Netherlands Rd., Brookline, Mass.....	1917
TAYLOR, LIONEL E., Bankhead, Kelowna, B. C.....	1913
TAYLOR, Dr. WALTER P., 1428 Perry Place, N. W., Washington, D. C.....	1916
TAYLOR, WARNER, 419 Sterling Court, Madison, Wis.....	1916
TERRILL, LEWIS McI., 44 Stanley Ave., St. Lambert, Quebec.....	1907
THOMAS, Miss EMILY HINDS, Bryn Mawr, Pa.....	1901
THOMPSON, J. WALCOTT, 527 East First South St., Salt Lake City, Utah.....	1916
THORNE, GERALD, 334 N. 5 E. St., Logan, Utah.....	1917
THORNS, Miss JULIA A., care Dr. D. H. Hill, Raleigh, N. C.....	1916
TILTON, Miss MABEL THURSTON, Vineyard Haven, Mass.....	1918
TINKER, ALMERIN D., 631 Haven Ave., Ann Arbor, Mich.....	1907
TOWNE, Miss ANNIE FLORENCE, Topsfield, Mass.....	1918
TOWNSHEND, HENRY HOTCHKISS, 69 Church St., New Haven, Conn.....	1915
TREGANZA, A. O., 614 E. 6th St., Salt Lake City, Utah.....	1906
TROTTER, WILLIAM HENRY, 36 N. Front St., Philadelphia, Pa.....	1899
TRUESDELL, JOHN F., 230 Post Office Bldg., Denver, Colo.....	1918
TRULL, HARRY S., 317 East 196th St., New York, N. Y.....	1917
TRUMBELL, J. H., Plainville, Conn.....	1907
TUDBURY, WARREN C., 925 Modoc St., Berkeley, Cal.....	1903
TUTTLE, HENRY EMERSON, Lake Forest, Ill.....	1909
TWITCHELL, A. H., Flat, Alaska.....	1918
TYLER, JOHN G., Turlock, Cal.....	1912
UFFORD, Dr. EUGENE U., 221 Central St., Auburndale, Mass.....	1918
UNDERWOOD, WM. LYMAN, Mass. Inst. of Tech., Cambridge, Mass.....	1900
VALENTINE, Miss ANNA J., Bellefonte, Pa.....	1905
VALLANDINGHAM, Miss KATIE, 811 Highland Ave., Carrollton, Ky.....	1918
VAN CORTLANDT, Miss ANNE S., Croton-on-Hudson, N. Y.....	1895
*VANDERGRIFT, S. H., 311 Riggs Bldg., Washington, D. C.....	1918
VAN NAME, WILLARD G., Am. Mus. Nat. History, New York, N. Y.....	1900
VETER, Dr. CHARLES, 67 West 12th St., New York, N. Y.....	1898
VIERECH, HENRY L., Biological Survey, Washington, D. C.....	1916
VISHER, Dr. STEPHEN S., Univ. Indiana, Bloomington, Ind.....	1904
VORHIES, Dr. CHAS. T., Univ. of Ariz., Tucson, Ariz.....	1918
WADSWORTH, CLARENCE S., 27 Washington St., Middletown, Conn.....	1906
WALKER, ERNEST P., Wrangell, Alaska.....	1918
WALKER, GEO. R., R. D. 3, Murray, Utah.....	1909
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, 125 23rd St., Elmhurst, N. Y.....	1902
WARD, FRANK H., 18 Grove Place, Rochester, N. Y.....	1908
WARD, HENRY L., 520 Lake Drive, Milwaukee, Wis.....	1906
WARNER, EDWARD P., Mass. Inst. of Technology, Cambridge, Mass.....	1910
WATSON, JAMES D., 6042 Harper Ave., Chicago, Ill.....	1917

WEBER, J. A., Moore and Grand Aves., Leonia, N. J.....	1907
WEBSTER, Dr. GEORGE A., 419 Boylston St., Boston, Mass.....	1916
WEBSTER, Mrs. JENNIE E. B., 44 East 23rd St., New York, N. Y....	1917
WEEKS, Rev. LEROY TITUS, Emmetsburg, Iowa.....	1918
WEISEMAN, T. WALTER, 226 Beaver Road, Emsworth, Pa.....	1916
WEISER, CHARLES S., 105 W. Springettsbury Ave., York, Pa.....	1916
*WELLMAN, GORDON B., 54 W. Beltran St., Malden, Mass.....	1908
WETMORE, Mrs. EDMUND H., Babylon, N. Y.....	1902
WEYGANDT, Dr. CORNELIUS, 6635 Wissahickon Ave., Philadelphia, Pa.	1907
*WHARTON, WILLIAM P., Groton, Mass.....	1907
WHEELER, JOHN B., East Templeton, Mass.....	1917
WHEELER, Mrs. JAS. W., 403 15th Ave., N. Seattle, Wash.....	1918
WHITE, FRANCIS BEACH, St. Paul's School, Concord, N. H.....	1891
WHITE, GEORGE R., Dead Letter Office, Ottawa, Canada.....	1903
WHITE, W. A., 14 Wall St., New York, N. Y.....	1902
WHITTLE, CHARLES L., 10 Channing St., Cambridge, Mass.....	1916
WHITTLE, Mrs. H. G. Peterboro, N. H.....	
WIEGMANN, Dr. WILLIAM HENRY, 436 East 5th St., New York, N. Y....	1916
WILBUR, ADDISON P., 60 Gibson St., Canandaigua, N. Y.....	1895
WILCOX, Capt. T. FERDINAND, 118 E. 54th St., New York, N. Y....	1895
WILEY, Miss LENA CATHARINE, Buckland, Mass.....	1918
WILLARD, BERTEL G., 1619 Massachusetts Ave., Cambridge, Mass....	1906
WILLARD, FRANK C., Farmingdale, N. Y.....	1909
WILLCOX, Prof. M. A., 63 Oakwood Road, Newtonville, Mass.....	1913
WILLIAMS, Miss BELLE, Colonia Hotel, Columbia, S. C.....	1915
WILLIAMS, ENRIQUE RUIZ, Reporto Almendarez, Marianao, Cuba....	1918
WILLIAMS, ROBERT S., N. Y. Botanical Gardens, New York, N. Y....	1888
WILLIAMSON, E. B., Bluffton, Ind.....	1900
WILLIS, Miss CLARA L., 72 Main St., Framingham Center, Mass....	1915
WILMOT, NELSON E., 24 New St., West Haven, Conn.....	1916
WILSON, Mrs. E. S., 2 Clarendon Ave., Detroit, Mich.....	1917
WING, DEWITT C., 5344 Dorchester Ave., Chicago, Ill.....	1913
WINGARD, TODD ALBERT, 1929 Park Rd., Washington, D. C.....	1918
WOLFE, PATRICK R., 1129 Tinton Ave., New York, N. Y.....	1917
WOOD, Lieut. Col. CASEY A., 7 W. Madison St., Chicago, Ill.....	1917
WOOD, GEORGE B., 129 S. 18th St., Philadelphia, Pa.....	1916
WOOD, Mrs. N. P., Northfield, Mass.....	1917
WOOD, NELSON R., Smithsonian Institution, Washington, D. C....	1895
WOODRUFF, FRANK M., Acad. of Sciences, Lincoln Park, Chicago, Ill..	1894
WOODRUFF, LEWIS B., 14 E. 68th St., New York, N. Y.....	1886
WOODWARD, Dr. LEMUEL, 52 Pearl St., Worcester, Mass.....	1917
WORCESTER, Mrs. ALFRED J., 314 Bacon St., Waltham, Mass.....	1908
WRIGHT, Dr. ALBERT H., Cayuga Heights, Ithaca, N. Y.....	1906

* Life Associate.

WRIGHT, FRANK S., 14 Cayuga St., Auburn, N. Y.....	1917
WRIGHT, Miss HARRIET H., 1637 Gratiot Ave., Saginaw, W. S., Mich.	1907
WRIGHT, HORACE WINSLOW, 107 Pinckney St., Boston, Mass.....	1902
WYMAN, LUTHER E., 3927 Wisconsin St., Los Angeles, Cal.....	1907
YOUNG, Rev. CHAS. JOHN, Brighton, Ont., Canada.....	1918
YOUNG, Major JOHN P., 1510 5th Ave., Youngstown, Ohio.....	1911
ZIMMER, J. T., Dept. of Agriculture, Port Moresby, British Papua...	1908

DECEASED MEMBERS.

FELLOWS.

	<i>Date of Death</i>
ALDRICH, CHARLES.....	March 8, 1908
BAIRD, SPENCER FULLERTON.....	Aug. 19, 1887
BEAL, FOSTER ELLENBOROUGH LASCELLES.....	Oct. 1, 1916
BENDIRE, CHARLES EMIL.....	Feb. 4, 1897
COOKE, WELLS WOODBRIDGE.....	March 30, 1916
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
MEARNS, EDGAR ALEXANDER.....	Nov. 1, 1916
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

RETIRED FELLOWS.

BELDING, LYMAN.....	Nov. 22, 1917
GILL, THEODORE NICHOLAS.....	Sept. 25, 1914

HONORARY FELLOWS.

BLANFORD, WILLIAM THOMAS.....	June 23, 1905
BARBOZA DU BOCAGE, JOSÉ VICENTE.....	July —, 1908

* Presidents of A. O. U.

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
FINSCH, FRIEDRICH HERMANN OTTO.....	Jan. 31, 1917
GÄTKE, HEINRICH.....	Jan. 1, 1897
GIGLIOLI, ENRICO HILLYER.....	Dec. 16, 1909
GODMAN, FREDERICK DUCANE.....	Feb. 9, 1919
GUNDLACH, JOHANNES CHRISTOPHER.....	March 17, 1896
GURNEY, JOHN HENRY.....	April 20, 1890
HARTLAUB, [KARL JOHANN] GUSTAV.....	Nov. 20, 1900
HARVIE-BROWN, JOHN ALEXANDER.....	July 26, 1916
HUME, ALLAN OCTAVIAN.....	July 31, 1912
HUXLEY, THOMAS HENRY.....	June 29, 1895
KRAUS, FERDINAND.....	Sept. 15, 1890
LAWRENCE, GEORGE NEWBOLD.....	Jan. 17, 1895
MEYER, ADOLF BERNHARD.....	Feb. 5, 1911
MILNE-EDWARDS, ALPHONSE.....	April 21, 1900
NEWTON, ALFRED.....	June 7, 1907
PARKER, WILLIAM KITCHEN.....	July 3, 1890
PELZELN, AUGUST VON.....	Sept. 2, 1891
SALVIN, OSBERT.....	June 1, 1898
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 RUSSELL.....	Nov. 7, 1913

CORRESPONDING FELLOWS.

ALTUM, JOHANN BERNARD THEODOR.....	Feb. 1, 1900
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
BLASIUS, WILHELM AUGUST HEINRICH.....	May 31, 1912
BOGDANOW, MODEST NIKOLAEVICH.....	March 16, 1888
BROOKS, WILLIAM EDWIN.....	Jan. 18, 1899
BRYANT, WALTER [PIERC]E.....	May 21, 1905
BULLER, WALTER LAWRY.....	July 19, 1906
BUTLER, EDWARD ARTHUR.....	April 16, 1916
COLLETT, ROBERT.....	Jan. 27, 1913

COOPER, JAMES GRAHAM.....	July 19, 1902
CORDEAUX, JOHN.....	Aug. 1, 1899
DAVID, ARMAND.....	Nov. 10, 1900
DUGÈS, ALFRED.....	Jan. 7, 1910
FATIO, VICTOR.....	March 19, 1906
GIRTANNER, GEORG ALBERT.....	June 4, 1907
GOELDI, EMIL AUGUST.....	July 5, 1917
HAAST, JOHANN FRANZ JULIUS VON.....	Aug. 16, 1887
HARGITT, EDWARD.....	March 19, 1895
HAYEK, GUSTAV EDLER VON.....	Jan. 9, 1911
HERMAN, OTTO.....	Dec. 27, 1914
HOLUB, EMIL.....	Feb. 21, 1902
HOMEYER, EUGEN FERDINAND VON.....	May 31, 1889
KNUDSEN, VALDEMAR.....	Jan. 8, 1898
KRUKENBERG, CARL FRIEDRICH WILHELM.....	Feb. 18, 1889
LAYARD, EDGAR LEOPOLD.....	Jan. 1, 1900
LEGGE, WILLIAM VINCENT.....	Mar. 25, 1918
LEVERKÜHN, PAUL.....	Dec. 5, 1905
LILFORD, LORD (THOMAS LITTLETON POWYS).....	June 17, 1896
MALMGREN, ANDERS JOHAN.....	April 12, 1897
MARSCHALL, AUGUST FRIEDRICH.....	Oct. 11, 1887
MIDDENDORFF, ALEXANDER THEODOROVICH.....	Jan. 28, 1894
MOSJISOVICS VON MOJSVAR, FELIX GEORG HERMANN AUGUST.....	Aug. 27, 1897
NORTH, ALFRED JOHN.....	May 6, 1917
OATES, EUGENE WILLIAM.....	Nov. 16, 1911
OUSTALET, [JEAN FRÉDÉRIC] ÉMILE.....	Oct. 23, 1905
PHILIPPI, RUDOLF AMANDUS.....	July 23, 1904
PRJEVALSKY, NICOLAS MICHAELOVICH.....	Nov. 1, 1888
PRENTISS, DANIEL WEBSTER.....	Nov. 19, 1899
PRYER, HARRY JAMES STOVIN.....	Feb. 17, 1888
RADDE, GUSTAV FERDINAND RICHARD VON.....	March 15, 1903
RAMSAY, EDWARD PIERSON.....	Dec. 16, 1916
SCHRENCK, LEOPOLD VON.....	Jan. 20, 1894
SÉLYS-LONGCHAMPS, MICHEL EDMOND DE.....	Dec. 11, 1900
SEVERTZOW, NICOLAS ALEKSYEVICH.....	Feb. 8, 1885
SHELLEY, GEORGE ERNEST.....	Nov. 29, 1910
STEVENSON, HENRY.....	Aug. 18, 1888
TRISTRAM, HENRY BAKER.....	March 8, 1906
WHARTON, HENRY THORNTON.....	Sept. —, 1895
WOODHOUSE, SAMUEL WASHINGTON.....	Oct. 23, 1904

MEMBERS.

BAGG, EGBERT.....	July 12, 1915
BROWN, HERBERT.....	May 12, 1913
CAMERON, EWEN SOMERLED.....	May 25, 1915

FANNIN, JOHN.....	June 20, 1904
HARDY, MANLY.....	Dec. 9, 1910
JUDD, SYLVESTER DWIGHT.....	Oct. 22, 1905
KNIGHT, ORA WILLIS.....	Nov. 11, 1913
MILLER, OLIVE THORNE (Mrs. Harriet Mann Miller).....	Dec. 25, 1918
PENNOCK, CHARLES JOHN (disappeared).....	May 15, 1913
RALPH, WILLIAM LEGRANGE.....	July 8, 1907
TORREY, BRADFORD.....	Oct. 7, 1912
WHITMAN, CHARLES OTIS.....	Dec. 6, 1910

ASSOCIATES.

ADAMS, CHARLES FRANCIS.....	May 20, 1893
ALLEN, CHARLES SLOVER.....	Oct. 15, 1893
ANTES, FRANK TALLANT.....	Feb. 6, 1907
ATKINS, HARMON ALBRO.....	May 19, 1885
AVERY, WILLIAM CUSHMAN.....	March 11, 1894
BAILEY, BERT HEALD.....	June 22, 1917
BAILEY, CHARLES E.....	———, 1905
BAIRD, LUCY HUNTER.....	June 19, 1913
BANKS, MISS MARTHA BURR.....	Dec. 13, 1917
BARLOW, CHESTER.....	Nov. 6, 1902
BATTEN, GEORGE.....	Feb. 16, 1918
BAUR, GEORG [HERMANN CARL LUDWIG].....	June 25, 1898
BECKHAM CHARLES WICKLIFFE.....	June 8, 1888
BERIER, DELAGNEL.....	Feb. 11, 1916
BETTS, NORMAN DEWITT.....	May 21, 1917
BILL, CHARLES.....	April 14, 1897
BIRTWELL, FRANCIS JOSEPH.....	June 28, 1901
BOARDMAN, GEORGE AUGUSTUS.....	Jan. 11, 1901
BODINE, DONALDSON.....	Aug. 26, 1915
BOLLES, FRANK.....	Jan. 10, 1894
BRACKETT, FOSTER HODGES.....	Jan. 5, 1900
BRANTLEY, WILLIAM FOREACRE.....	Sept. 9, 1914
BRESE, WILLIAM LAWRENCE.....	Dec. 7, 1888
BRENINGER, GEORGE FRANK.....	Dec. 3, 1905
BRENNAN, CHARLES F.....	Mar. 21, 1907
BROKAW, LOUIS WESTEN.....	Sept. 3, 1897
BROWN, JOHN CLIFFORD.....	Jan. 16, 1901
BROWNE, FRANCIS CHARLES.....	Jan. 9, 1900
BROWNSON, WILLIAM HENRY.....	Sept. 6, 1909
BURKE, WILLIAM BARDWELL.....	April 15, 1914
BURNETT, LEONARD ELMER.....	March 16, 1904
BUTLER [THOMAS] JEFFERSON.....	Oct. 23, 1913
BUXBAUM, MRS. CLARA E.....	March 23, 1914

CAIRNS, JOHN SIMPSON.....	June 10, 1895
CALL, AUBREY BRENDON.....	Nov. 20, 1901
CAMPBELL, ROBERT ARGYLL.....	April —, 1897
CANFIELD, JOSEPH BUCKINGHAM.....	Feb. 18, 1904
CARLETON, CYRUS.....	Nov. 15, 1907
CARTER, EDWIN.....	Feb. 3, 1900
CARTER, ISABEL MONTIETH PADDOCK (MRS. EDGAR N. CARTER)	Sept. 15, 1907
CHADBOURNE, ETHEL RICHARDSON (MRS. ARTHUR PATTERSON CHADBOURNE).....	Oct. 4, 1908
CHARLES, FRED LEMAR.....	May 6, 1911
CLARK, JOHN NATHANIEL.....	Jan. 13, 1903
COE, WILLIAM WELLINGTON.....	April 26, 1885
COLBURN, WILLIAM WALLACE.....	Oct. 17, 1899
COLLETT, [COLLETTE] ALONZO MCGEE.....	Aug. 22, 1902
CONANT, MARTHA WILSON (MRS. THOMAS OAKES CONANT).....	Dec. 28, 1907
CONKLIN, CHARLES EDGAR.....	Sept. 8, 1916
CORNING, ERASTUS JR.....	April 8, 1893
DAFFIN, WILLIAM H.....	April 21, 1902
DAKIN, JOHN ALLEN.....	Feb. 21, 1900
DAVIS, SUSAN LOUISE (MRS. WALTER ROCKWOOD DAVIS).....	Feb. 13, 1913
DAVIS, WALTER ROCKWOOD.....	April 3, 1907
DEXTER, [SIMON] NEWTON.....	July 27, 1901
DODGE, JULIAN MONTGOMERY.....	Nov. 23, 1909
DUNLOP, ERIC BROOKE.....	May 19, 1917
DYCHE, LEWIS LINDSAY.....	Jan. 20, 1915
ELLIOTT, SAMUEL LOWELL.....	Feb. 11, 1889
FAIRBANKS, FRANKLIN.....	April 24, 1895
FARWELL, MRS. ELLEN SHELDON DRUMMOND.....	Aug. 6, 1912
FERRY, JOHN FARWELL.....	Feb. 11, 1910
FERRY, MARY BISSELL.....	March 18, 1915
FISHER, WILLIAM HUBBELL.....	Oct. 6, 1909
FOWLER, JOSHUA LOUNSBURY.....	July 11, 1899
FULLER, CHARLES ANTHONY.....	March 16, 1906
FULLER, TIMOTHY OTIS.....	Aug. 17, 1916
GESNER, ABRAHAM HERBERT.....	April 30, 1895
GOSS, BENJAMIN FRANKLIN.....	July 6, 1893
GRONBERGER, SVEN MAGNUS.....	April 24, 1916
HALES, HENRY TEASDEL.....	Nov. 6, 1913
HATCH, JESSE MAURICE.....	May 1, 1898
HAZARD, ROWLAND GIBSON.....	Jan. 23, 1918
HILL, WILLIAM HENRY.....	Oct. 14, 1913
HINE, MRS. JANE LOUISA.....	Feb. 11, 1916
HITCHCOCK, MRS. ELEANOR BECKWITH.....	March 3, 1917
HODLEY, FREDERICK HODGES.....	Feb. 26, 1895

HOLMES, LARUE KLINGLE.....	May 10, 1906
HOOPEES, JOSIAH.....	Jan. 16, 1904
HOWE, FLORENCE AURELLA.....	July 9, 1913
HOWE, LOUISE.....	Sept. 13, 1912
HOWLAND, JOHN SNOWDEN.....	Sept. 19, 1885
HUBBARD, SARA ANDERSON.....	July 31, 1918
INGALLS, CHARLES EDWARD.....	May 31, 1917
INGERSOLL, JOSEPH CARLETON.....	Oct. 1, 1897
JENKS, JOHN WHIPPLE POTTER.....	Sept. 26, 1894
JEWEL, LINDSEY LOUIN.....	Sept. 5, 1915
JOUY, PIERRE LOUIS.....	March 22, 1894
JUSTICE, HENRY.....	March 1, 1918
KELKER, WILLIAM ANTHONY.....	Feb. 15, 1908
KNAPP, MRS. HENRY A.....	Spring, 1918
KNIGHT, WILBER CLINTON.....	July 28, 1903
KNOX, JOHN COWING.....	June 10, 1904
KOCH, AUGUST.....	Feb. 15, 1907
KUMLIEN, LUDWIG.....	Dec. 4, 1902
KUMLIEN, THURE LUDWIG THEODOR.....	Aug. 5, 1888
LAKE, LESLIE WALDO.....	Feb. 7, 1916
LANTZ, DAVID ERNEST.....	Oct. 7, 1918
LATIMER, CAROLINE P.....	April 19, 1916
LAWRENCE, ROBERT HOE.....	April 27, 1897
LEE, LESLIE ALEXANDER.....	May 20, 1908
LEVEY, WILLIAM CHARLESWORTH.....	July 5, 1914
LINDEN, CHARLES.....	Feb. 3, 1888
LLOYD, ANDREW JAMES.....	June 14, 1906
LORD, WILLIAM ROGERS.....	Feb. 2, 1916
MABBETT, GIDEON.....	Aug. 15, 1890
MABBOTT, DOUGLAS CLIFFORD.....	Sept. 15, 1918
MAITLAND, ALEXANDER.....	Oct. 25, 1907
MARBLE, CHARLES CHURCHILL.....	Sept. 10, 1900
MARCY, OLIVER.....	March 19, 1899
MARIS, WILLARD LORRAINE.....	Dec. 11, 1895
MARSDEN, HENRY WARDEN.....	Feb. 26, 1914
McEWEN, DANIEL CHURCH.....	Nov. 1, 1909
McHATTON, HENRY.....	April 22, 1917
McKINLAY, JAMES.....	Nov. 30, 1899
McMAHON, WALTER FREEMAN.....	Aug. 28, 1918
MEAD, GEORGE SMITH.....	June 18, 1901
MINOT, HENRY DAVIS.....	Nov. 13, 1890
MORRELL, CLARENCE HENRY.....	July 15, 1902
NICHOLS, HOWARD GARDNER.....	June 23, 1896
NIMS, LEE.....	March 12, 1903
NORTHROP, JOHN ISALAH.....	June 26, 1891

PARK, AUSTIN FORD.....	Sept. 22, 1893
PAULMIER, FREDERICK CLARK.....	March 4, 1906
POMEROY, GRACE VIRGINIA.....	May 14, 1906
POMEROY, HARRY KIRKLAND.....	Jan. 27, 1915
POWELL, MRS. S. W.....	1918
PUTNAM, FREDERIC WARD.....	Aug. 14, 1915
RAGSDALE, GEORGE HENRY.....	March 25, 1895
RAWLE, FRANCIS WILLIAM.....	June 12, 1911
READY, GEORGE HENRY.....	March 20, 1903
REED, CHESTER ALBERT.....	Dec. 16, 1912
RICHARDSON, JENNESS.....	June 24, 1893
ROBINS, JULIA STOCKTON (Mrs. EDWARD ROBINS).....	July 2, 1906
SAND, ISABELLA LOW.....	April 20, 1906
SAVAGE, WALTER GILES.....	Aug. —, 1917
SELOUS, PERCY SHERBORN.....	April 7, 1900
SHANNON, WILLIAM PURDY.....	Oct. 29, 1916
SLATER, JAMES HOWE.....	Feb. 22, 1895
SLEVIN, THOMAS EDWARDS.....	Dec. 23, 1902
SMALL, EDGAR ALBERT.....	April 23, 1884
SMALL, HAROLD WESLEY.....	Mar. 12, 1912
SMITH, CLARENCE ALBERT.....	May 6, 1896
SMITH, RUTH COOK (Mrs. H. A. HAMMOND SMITH).....	Jan. 2, 1912
SNOW, FRANCIS HUNTINGTON.....	Sept. 20, 1908
SOUTHWICK, JAMES MORTIMER.....	June 3, 1904
SPAULDING, FREDERICK BENJAMIN.....	Oct. 22, 1913
STANTON, JONATHAN YOUNG.....	Feb. 17, 1918
STONE, WILLARD HARRISON.....	March 15, 1895
STYER, KATHARINE REBECCA (Mrs. J. J. STYER).....	Jan. 20, 1917
SWEIGER, HELEN BRONSON (Mrs. JACOB L. SWEIGER).....	March 24, 1907
TAYLOR, ALEXANDER O'DRISCOLL.....	April 10, 1910
THOMPSON, MILLETT TAYLOR.....	Aug. 7, 1907
THORNE, PLATT MARVIN.....	March 16, 1897
THORNE, SAMUEL.....	July 4, 1915
THURBER, EUGENE CARLETON.....	Sept. 6, 1896
TWEEDY, EDGAR.....	Nov. 17, 1918
UPHAM, MARY CORNELIA (Mrs. WILLIAM HENRY UPHAM).....	Nov. 29, 1912
VENNOR, HENRY GEORGE.....	June 8, 1884
WATERS, EDWARD STANLEY.....	Dec. 27, 1902
WALKER, ROBERT LATSHAW.....	Nov. 16, 1916
WELLES, CHARLES SALTER.....	Feb. 24, 1914
WHITE, JAMES CLARKE.....	Jan. 5, 1916
WILEY, LEO.....	Oct. 31, 1918
WILLARD, SAMUEL WELLS.....	May 24, 1887
WILSON, SIDNEY STEWART.....	Nov. 22, 1911
WINDLE, FRANCIS.....	Feb. 24, 1917

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WISTER, WILLIAM ROTCH.....	Aug. 21, 1911
WOOD, JOHN CLAIRE.....	June 16, 1916
WOOD, WILLIAM.....	Aug. 9, 1885
WOODRUFF, EDWARD SEYMOUR.....	Jan. 15, 1909
WORTHEN, CHARLES KIMBALL.....	May 27, 1909
WRIGHT, SAMUEL.....	Jan. 18, 1917
YOUNG, CURTIS CLAY.....	July 30, 1902
ZAPPEY, WALTER REAVES.....	Feb. 20, 1914

Old
Series, }
Vol. XLIV }

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BULLETIN OF THE NUTTALL ORNITHOLOGICAL CLUB

} New
Series,
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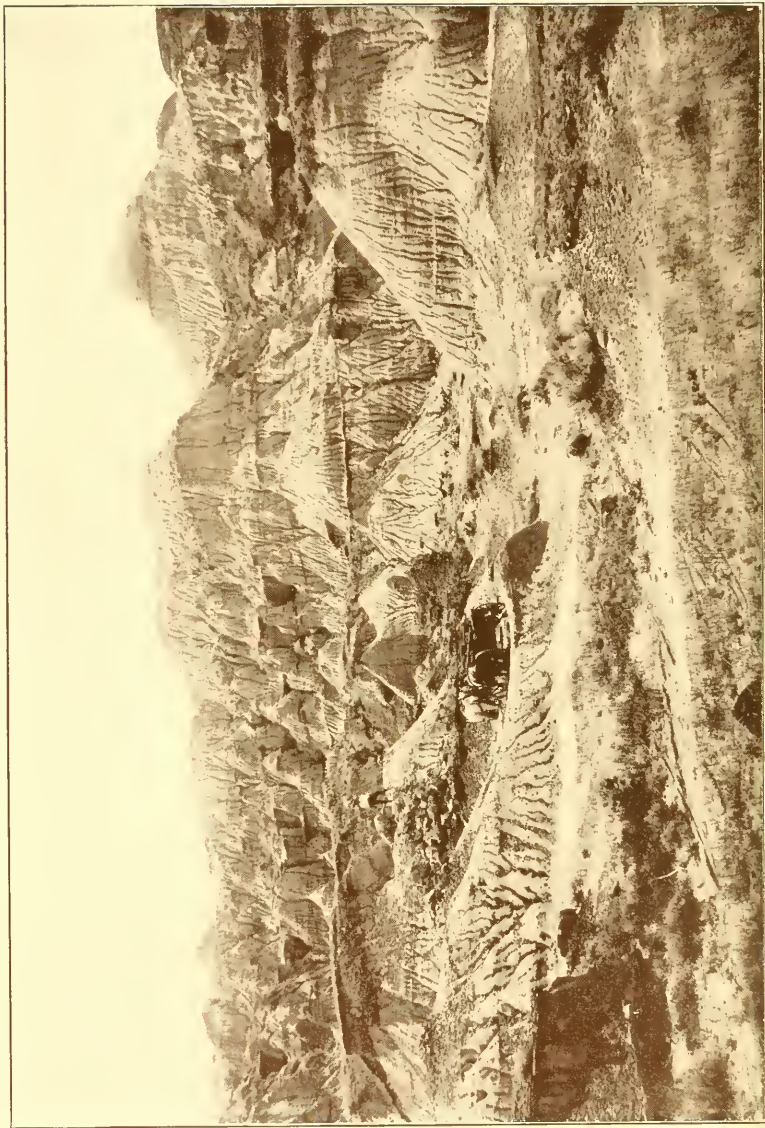
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CAMP 11, LITTLE SANDHILL CREEK, ALBERTA.
Typical Erosion Effects.

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No. 1.

THE BIRDS OF THE RED DEER RIVER, ALBERTA.

BY P. A. TAVERNER.¹

Plates I-IV.

THE region about Red Deer and Calgary, Alta., has received the attention of several ornithological observers; but while individual notes and specimens from there are scattered through many publications and various collections no attempt has been made to correlate or bring them all together. During the summers of 1915 and 1916 the Geological Survey of Canada had parties collecting large fossils in the Edmonton and Belly River formations in the bad-lands of the Red Deer River. Incidental to this work Mr. George Sternberg of this museum collected a number of interesting birds. His account of the country and the ornithological specimens he secured, added to the fragmentary references in literature, proved so interesting that it was decided to make a more intensive ornithological investigation of the river during the summer of 1917.

June 18 found the writer and C. H. Young in Red Deer, where a rough scow-shaped boat was built, sixteen feet long and four and a half feet wide, capable of carrying ourselves and a comfortable amount of camp and collecting equipment. An outboard motor was attached and the descent of the river begun on June 25. While on the subject it may be well to state that this outfit was eminently

¹ Published by permission of the Geological Survey, Ottawa, Ont.

satisfactory. The rather clumsy boat and low power motor while not adapted for navigating against the current were admirable for going with it, and had the trip to be made over again I know of no important detail that might be altered.

The river was at about mid-height. The high spring floods were past but the water had not reached its low summer level. No rapids of importance were encountered and in only two places was navigation more than mildly exciting. The first was the "Canyon," some twenty-five miles from Red Deer via the river, though only eight miles overland. The other was just above the Grand Trunk Pacific Railway crossing south of Alix between camps 3 and 4. We had heard from residents of the danger of these places and probably at certain stages of water they may be bad, but when we passed we found that the risk had been much exaggerated.

From Red Deer to Drumbeller the river was usually deep and water could always be found for much deeper draught than ours. Occasional shallows occurred and islands divided the current, necessitating some care in choosing the proper channel. It was necessary also to put such a motor as we had on a hinge to avoid disaster when through misjudgment the wrong channel was taken and shallow water was unexpectedly encountered. A little above Drumbeller and continuing below, the river widens and shallows and the bottom changes from boulder and gravel to sandy mud, forming shifting shoals between which the channel meanders confusingly, rendering navigation more complicated though mistakes were annoying rather than serious.

The whole valley of the river lies some 100 to 250 feet below the general prairie level. Above Nevis, Camp 4, it is comparatively narrow and bounded by simple hills, steep bluffs or rocky cliffs, usually as well covered with vegetation as the slope and age of exposure permits. The prairie begins close to the river at the verge of the first embankment and the ox-bow bends are well wooded. Below Nevis the aspect of the landscape changes considerably, bare, raw, freshly eroded exposures are the rule and bad-land conditions are assumed. The ox-bows are extensive gumbo flats with the woods confined to the river edge; otherwise bare bluffs rise straight from the water, or raw clay hills, striped horizontally with black coal seams, succeed each other as far as the eye

can reach, shaped by the elements into strange forms, gashed into gullies with sharp knife-edged buttresses between, or carved into domes and sugar loaf shapes. Between Camps 9 and 10 this sculpturing becomes more pronounced and stranger still. The domes are more conical, their sides steeper, vertical cliffs and sink-holes are more common and the sky line more ragged. Gothic cathedral outlines replace Byzantine domes and the landscape exhibits a confusion of buttressed spires and balanced rock-capped pinnacles.

The country about Red Deer is rolling prairie of varied and interesting aspect with considerable spruce bush covering the hills and following watercourses. On the river, as far as Nevis, spruce of considerable size is a conspicuous element in the vegetation, ascending the hills on either hand wherever root hold can be obtained, while the stream margin is well clothed with poplar, birch and willow. Below Nevis the spruce gets less common and smaller, and within a few miles further down exists only as small scrub covering the higher and colder slopes. Below Drunheller it ceases to exist at all. As the spruce gives out the cottonwood along the banks takes on a larger and stronger growth. Wherever the swing of the river has built up an alluvial plain the margins are well wooded for a hundred yards or so back from the water. Most of this is cottonwood and large trees with great rough trunks and spreading branches like grove-grown oaks occur commonly. The smaller shrubbery is largely saskatoon or willow and alder. This character of vegetation persists, except on the eroded banks, to near Steveville, Camp 10, below which the timber becomes smaller and scantier, and at our final Camp 11, even tent poles were difficult to find and sage brush and prickly pear cactus generally came down to the river banks.

The ecological conditions follow the physiographical aspects. About Red Deer and nearly to Nevis the river valley is mesophytic, while below drier conditions prevail, until at our last station, Camp 11, below Steveville, the raw bare landscape, scanty buffalo grass, sage brush and prickly pear cactus proclaimed the typical desert, except here and there on the narrow flood banks and in traces along the lower courses of occasional intermittent creeks.

The river valley as far as we followed it is practically unin-

habited. Here and there on the most promising of the wider bends little ranch establishments peep out of the wooded shores, but many of them in war time, alas, were closed and deserted, others seem to have been occupied only long enough to obtain legal homestead title, and only a few of them were occupied. Grazing is the principal industry in such places and most of the bush margin is traversed by cattle paths. However, though scarcely a soul was visible throughout most of the trip, we had only to climb to the prairie level to find some of the most fruitful and best cultivated lands in the Canadian west: so, though apparently traveling in the wilderness, we were really never far out of touch with settled communities. This was especially true and striking on the upper reaches and down as far as the Tolman Ferry, Camp 6, where we made our last excursion out of the valley. At the last camp, No. 11, when we finally left the river, the upper level conditions were rather different, and wide reaches of dry flat prairie dotted occasionally with bunches of cattle and horses and only suitable for cultivation by aid of the irrigation project of the Canadian Pacific Railroad met the eye from the river to the railroad at Millicent.

We left Red Deer June 25, arriving at Camp 11 near Steeveville, 217 miles below, July 19. This was the site of the Survey's palaeontological collecting camp under Mr. Chas. Sternberg and here C. H. Young remained until September 26, but the writer left for British Columbia July 21. During this trip, occupying about a month, no regular schedule was followed and we remained stationary or moved to the next location as local conditions suggested. The weather after the first day or two at Camp 1 was ideal for our work and we were even spared, by the seasonal conditions, serious trouble from mosquitoes that report had led us to expect to be bad. All who travel on the river do not escape so easily. Once or twice we camped too close to cattle herds and for our lack of foresight were vexed with flies. These were a more serious menace to our specimens than to us and our slow drying specimens of young raptors were seriously threatened by the pests. Careful screening of our drying trays however prevented further loss than the disfigurement of a few individual specimens.

Our first camp (No. 1) was made some twenty-seven miles below Red Deer, though only some 8-9 miles by road and just after we

passed the "Canyon." Here we remained until July 4, working the uplands as well as the valley, and obtained a fairly representative collection of the birds of the locality and an idea of the general conditions. Most species were breeding and all were very shy and retiring. We were further handicapped by being disinclined to take adults having families dependent upon them. This increased the work and limited practical results. From here on we made but short stops at varying distances and except at Camp 4, near Nevis, and at Camp 6, Tolman's Ferry, confined our attentions to the river valley itself.

At Camp 11, after the writer left, Young made a general survey of the locality, worked thoroughly all the surrounding territory within walking distance and made as complete a collection as possible. As he remained until the fall migrations were well under way he added many species to our list. His material is of exceptional interest as can be seen in the following annotations.

I have included in the list references to the collections made by Mr. Geo. Sternberg in 1915 and 1916 as well as some specimens collected by Mr. Chas. Horsbrough at Alix, in the vicinity of the upper river, besides occasional other notes from the same general locality. Those accredited to G. F. Dippie are cited, unless otherwise stated, from the 'Catalogue of Canadian Birds,' J. and J. M. Macoun, 1909. A good many specimens from this neighborhood are extant in various collections and should any reader of 'The Auk' have additional material or information I should be pleased to have it published as addenda to this list.

Since writing the above, a paper entitled 'Further Notes on the Birds Observed at Alix, Buffalo Lake and Red Deer, Alta., in 1915 and 1916' by Chas. B. Horsbrough, has appeared in 'The Ibis' for July 1918, pp. 417-496, giving annotations on ninety-five species and calling attention to a previous paper by the same author, 'Ornithological Notes from Alix and Buffalo Lake Districts, Alta., in 1914,' *Ibid.*, October, 1915, pp. 670-689, annotating eighty species. From these two lists much additional data has been extracted and a number of species added to our list. Mr. Horsbrough's rather free use of subspecific designations is a little disconcerting. In a few cases he has given his authority for his decisions but the majority are evidently made on geographical assumptions and hence whilst

most of his specific determinations can be confidently received I have not allowed his finer divisions to influence me. In this I am not wishing to criticise the writer personally, only the current system which he follows. As I may myself be called to task for sins of subspecific determination I wish to state that my decisions are based entirely upon the material in view and it is not the intention to cast reflections upon the conclusions of others or those based upon different material. I also wish to be judged by the letter of my statements and not upon inferences that may be read into them. Many of my conclusions are contrary to accepted authority, but in explanation I herewith quote from one whose authority can not be questioned and whose words though written in support of a somewhat opposite standpoint interpret my attitude much better than I can express it myself. The bracketed interpolations are mine,—“No doubt many of the forms which the author has [or has not] recognized as subspecies in the present work may [or may not] appear trivial [or important] to others, especially those who have not had the advantage of the material upon which they are based; but in all cases it has been the author's desire to express exactly the facts as they appear to him in the light of the evidence examined, without any regard whatever to preconceived ideas, either his own or others', and without consideration of the inconvenience which may result to those who are inclined to resent innovations, forgetful of the fact that knowledge can not be complete until all is known.”¹

The following is a schedule of the Camps which are referred to in the annotations. The fractional camp numbers in the text refer to occurrences en route between camps. Mileage is by the river as the boat traveled.

- | | | | |
|------|-----|-------|--|
| Camp | 1.— | 25 | Miles below Red Deer, June 25–July 4. |
| Camp | 2.— | 30 | Miles below Red Deer, July 4–5. |
| Camp | 3.— | 37.65 | Miles below Red Deer, July 5–6. |
| Camp | 4.— | 55.80 | Miles below Red Deer, the Pump-house near Nevis, July 6–9. |
| Camp | 5.— | 83.40 | Miles below Red Deer, Ross's Ranch, July 9–11. |

¹ Robert Ridgway, *Birds of North and Middle America*, Vol. I, 1901, pp. x-xi.



RED DEER RIVER BELOW NEVIS, ALBERTA.
Erosion on right, Alluvial Flats on left.

- Camp 6.— 97.20 Miles below Red Deer, Tolman's Ferry, July 11–13.
- Camp 7.— 132.00 Miles below Red Deer, Drumheller, July 13–14.
- Camp 8.— 139.50 Miles below Red Deer, near Rosedale Mines, July 14–17.
- Camp 9.— 163.20 Miles below Red Deer, 31–20 below Drumheller, July 17–18.
- Camp 10.— 213.60 Miles below Red Deer, 1 mile above Stevestille, July 18–19.
- Camp 11.— 217.50 Miles below Red Deer, 3 miles below Stevestille, July 19–September 26.

1.* ***Æchmophorus occidentalis***. WESTERN GREBE.— Two birds collected by Horsbrough, Buffalo Lake, near Alix Alta, June 1914, where he reports them breeding commonly. One of these, a female, is the form with slender recurved bill, once called Clarke's Grebe, *Æ. clarki*.

2.* ***Colymbus holbøelli***. HOLBELL'S GREBE.— Three seen on Brock's Lake at Camp 1: a female taken contained an egg ready to lay. Seen also on small pond near Bullocksville with young and on small waters in vicinity of Nevis. Though lakes apparently admirably adapted to them were examined on the upper levels at Tolman Ferry, no birds were noted upon them. Horsbrough reports them rare on Buffalo Lake but common on many smaller waters.

3.* ***Colymbus auritus***. HORNED GREBE.— A pair with nest containing a partially hatched brood was found on a small slough near Camp 1 and all collected. Only two seen thereafter at Camp 11 after the writer left, one juvenile being taken in extremely emaciated condition. This can probably be explained by the extremely muddy condition of the water preventing the bird from seeing its prey.

4.* ***Colymbus nigricollis***. EARED GREBE.— We saw no Eared Grebe ourselves but we have a specimen taken by Charles Horsbrough at Buffalo Lake, near Alix, June 11, 1914. He mentions the species in neither of his lists.

5. ***Podilymbus podiceps***. PIED-BILLED GREBE.— Horsbrough reports a pair breeding on a small pond near Alix and commonly on Buffalo Lake in 1914.

6. ***Gavia immer***. COMMON LOON.— Reported as being occasionally seen on Brock's Lake, Camp 1, on whose shores we found the decomposed remains of a single specimen. Horsbrough does not regard it as common.

7.* ***Larus delawarensis***. RING-BILLED GULL.— After July 8 at

* The asterisk denotes that specimens were taken or are in the collection of the Museum of the Geological Survey of Canada.

Camp 4 we saw occasional large gulls of the Ring-bill type but it was not until the 12th on a small lake near Tolman's Ferry that a specimen was secured and identified. It is an adult non-breeding male. The bill was yellow with dark spots on the mandibles not forming a complete ring. The inside of mouth was orange shading to bright red in throat and showing externally at the gape. Eye-ring vermilion. The legs and feet are clear chrome yellow instead of the greenish yellow that most of the written descriptions call for. It is not impossible that these prairie birds will be found to be distinguishable from the eastern race on the basis of leg coloration. Colored drawings of the soft parts were from the fresh specimen.

8.* **Larus franklini.** FRANKLIN'S GULL.—Seen almost daily in singles to occasional fairly large flocks as far as Camp 8½ July 17, after which they were observed less regularly. We found none breeding though we have downy young taken by Horsbrough at Mirror Lake, where he found large numbers of them in 1915. At Camp 11, July 27, Young collected a juvenile in an emaciated and starving condition, the only one seen there. From the remains found in the Duck Hawk nests we examined it was evident that Franklin's Gull is a favorable prey of that bird.

9. **Larus** sp. LARGE GULL.—Horsbrough received a report of Herring Gulls, *L. argentatus*, that formerly bred on Buffalo Lake, but does not personally substantiate it further than by recording the presence of a pair there June 2, 1914. These records may refer to the California Gull, *L. californicus*, or even *L. delawarensis*.

10. **Sterna** sp. TERN.—At the Pump House Camp 4 near Nevis, July 8, terns were seen but not taken and their identity, whether Common or Forster's, is problematical. Horsbrough records the Common Tern as breeding near Alix but does not mention Forster's.

11.* **Hydrochelidon nigra.** BLACK TERN.—A few seen about small lakes at Camp 1 and again at Tolman's Ferry. We have downy young taken by Horsbrough at Alix, 1915. He found them breeding commonly at Buffalo Lake.

12. **Phalacrocorax auritus.** DOUBLE-CRESTED CORMORANT.—Reported by Dippie at Buffalo Lake (1896?). Horsbrough mentions a bird, provisionally referred to this species, seen there May 20, 1915, and repeats reports of its breeding near Edmonton.

13. **Pelecanus erythrorhynchos.** WHITE PELICAN.—Though we saw no Pelicans we heard of them from several sources and Charles Sternberg reported seeing one at his camp on the Little Sandhill Creek, June 24.

14. **Mergus** sp. MERGANSER.—One was seen between Tolman's Ferry and Drumbeller July 13. It was a female or juvenile and its species could not be determined.

15.* **Anas platyrhynchos.** MALLARD.—Quite common breeder on sloughs and ponds of the upper prairie level but less often seen on the river itself. Local residents near Red Deer speak with disdain of the locally

raised "green heads" saying that the migrants that come in the fall are a much finer race of birds and easily recognizable by their superior size.

16.* **Chaulelasmus streperus.** GADWALL.— An adult and brood of newly hatched young seen and four of the latter collected between Camps 4 and 5, July 9. Dippie found it common on Buffalo Lake in 1896 and Horsbrough reports nests in 1914.

17.* **Mareca americana.** BALDPATE.— At least two pairs observed on Brock's Lake near Camp 1, and a male collected, June 28. Horsbrough noted it near Alix and records nests at Buffalo Lake.

18.* **Nettion carolinense.** GREEN-WINGED TEAL.— Common and with young on some of the smallest sloughs on the prairie level but not often seen on the river itself. The only specimens obtained were flying juveniles at Camp 11, August 15 and 23 where Young reported them as not common.

19.* **Querquedula discors.** BLUE-WINGED TEAL.— Common on the lakes and sloughs on the prairie level but not seen often in the river valley. Specimens taken at Camps 1 and 11 August 24.

20.* **Spatula clypeata.** SHOVELLER.— Only seen at Camp 11 on the Little Sandhill Creek, August 17 and 18 when specimens were taken.

21.* **Dafila acuta.** PINTAIL.— This species did not seem to be very common. A female was seen swimming in the river between Tolman Ferry and Drumheller and acted as if it had young nearby. Young saw one large flock near the Little Sandhill Creek and took specimens of juvenile birds August 3 and 4. We have another specimen taken by Horsbrough at Buffalo Lake, May 1915, who records nests at Buffalo Lake and vicinity.

22.* **Marila marila.** GREATER SCAUP.— Though we did not specifically identify Greater Scaups we have one taken by Horsbrough, October 1915, at Alix, who reports nests at Buffalo Lake.

23.* **Marila affinis.** LESSER SCAUP.— Numbers of Scaups were seen on the ponds on the prairie level near Camp 1 and near Nevis. Most seen were males. The few females seen acted as if they had nests nearby but none were found. Our only specimen was taken at Camp 1 and is of this species. The Lesser Scaup is not mentioned by Horsbrough.

24.* **Marila valisineria.** CANVAS-BACK.— Two downy young in our collections taken by Horsbrough June 1914 at Buffalo Lake, who records several nests.

25.* **Clangula clangula.** AMERICAN GOLDEN-EYE.— The commonest duck on the upper river but not seen below Tolman's Ferry. The absence of the Golden-eye on the lower river is probably due to the lack of large timber supplying nesting holes. Most of the birds seen were females and it seems probable that the sexes separate before reproductive duties are finished. We surmise that the males might be found in numbers on the larger lakes in the vicinity. None were seen closely enough to detect Barrow's Golden-eye, though they were looked for carefully, and Horsbrough does not mention it. Our only adult specimen is a female and an undoubted American Golden-eye. Several broods of young were met with on the

river and on Brock's Lake near Camp 1. Near the latter place we were shown a hollow tree where the species was said to have nested. At Camp 4 near Nevis is a pump house supplying water to the railroad some several miles away. The engineer in charge told us that ducks frequently entered the attic of his dwelling quarters through an open stovepipe hole and made considerable scratching noise overhead. I climbed up into the space through a man-hole but saw no indication of a nest. Without doubt these must have been Golden-eyes that were attracted to the place but did not find it satisfactory. Our specimens include representatives of two downy broods and one adult taken on Brock's Lake, Camp 1, June 28 and downy young above Nevis, July 6.

26.* **Charitonetta albeola.** BUFFLEHEAD.—Two females with small broods were seen on Brock's Lake near Camp 1 and afterwards occasionally as far as Ross's Ranch, July 9. Young saw two at Camp 11, Little Sandhill Creek, September 14. Our specimens consist of downy young, Camp 1, June 28. Also adults and downy young from Buffalo Lake, taken by Horsbrough, June 21 and May and September 1914, who records several nests.

27.* **Oidemia deglandi.** WHITE-WINGED SCOTER.—White-winged Scoters were common on the river as far down as Camp 5. There were quite a number on Brock's Lake near Camp 1 and singles and small flocks and pairs were encountered here and there flying up or down the river. Both sexes were present in about equal numbers and a female taken on Brock's Lake July 2 contained an egg nearly ready for deposition. The residents, however, do not know of their nesting in the neighborhood and were as curious as to where they nested as we were. We have another specimen from Buffalo Lake, June 1915, taken by Horsbrough, who says they nest late in the season.

28. **Erismatura jamaicensis.** RUDDY DUCK.—Dippie reports finding eggs at Buffalo Lake, June 14, 1896, and Horsbrough also records a nest there.

29. **Chen hyperboreus.** SNOW GOOSE.—We heard of white geese being occasionally seen on the river but did not meet with any. Chas. Sternberg reports seeing one near the Little Sandhill Creek, June 2. This must have been a belated straggler. Horsbrough records both Greater and Lesser Snow Geese from Red Deer and Buffalo Lake respectively. He gives the length of the former as 27 inches but no further corroboration. He is probably mistaken in his diagnosis.

30.* **Chen rossi.** ROSS GOOSE.—Two specimens in our collections taken by Horsbrough, Buffalo Lake, September 26 and October 10, 1914. He does not mention the species in his lists.

31.* **Anser albifrons.** WHITE-FRONTED GOOSE.—We have a specimen in the museum collection taken by Dippie on the Red Deer River, Sept. 12, 1896. Horsbrough reports a specimen in October 1915.

32.* **Branta canadensis.** CANADA GOOSE.—A Mr. Krieger, upon whose land we camped at Camp 1, told us that geese used to nest on the



1



2

1. CAMP 1, NEAR RED DEER, ALBERTA.
2. NESTS OF CLIFF SWALLOWS AND PRAIRIE FALCON NEAR LITTLE SANDHILL CREEK, ALBERTA.

clay banks in the immediate vicinity but have not done so for a number of years past. He further remarked that they are usually seen migrating high overhead and seldom come down into the river. Another Geological Survey party whom we met making a similar trip to ours under Dr. J. A. Allen of Edmonton, met two broods below Ross's Ranch. Between Camps 7 and 8 and 8 and 9 we met with nearly full grown families. When first seen they made for the shore along which they ran, trying to hide in the scanty bushes or in rock crevices. When routed out of these places or when they failed to find satisfactory concealment, they again took to the water and as none, not even the adults, could fly, they swam vigorously ahead of us, diving when we came too close. The female adult of one of these broods swam on ahead of us for several miles until the river widened enough to enable her to pass. The last seen of her she was paddling vigorously against the current endeavoring to rejoin her lost family, which were, by the way, sufficiently developed to be in little need of her care. Two specimens were taken, a nearly grown gosling and an adult female, July 17 and 18.

33. **Olor columbianus** (?). SWAN.—Both Mr. Krieger and Mr. Brock at Camp 1 informed us that swans were occasionally seen passing over but know of none being taken. Horsbrough repeats reports of occasional flocks near Alix and Haunted Lakes in April.

34.* **Botaurus lentiginosus**. AMERICAN BITTERN.—Mr. Brock near Camp 1, gave us a clear description of the Bittern in his neighborhood but it did not seem to be as common as would be expected amongst the numerous sloughs on the uplands and we did not note it until Young took a specimen August 22 at Camp 11 on the Little Sandhill Creek in the heart of the desert-like country. Horsbrough records nests at Buffalo Lake.

35. **Ardea herodias**. GREAT BLUE HERON.—Between Camps 3 and 4 and 9 and 10 single individuals were seen and followed from bend to bend for several miles before they circled back over the low bends and were lost. Young reports individuals in the vicinity of Camp 11, Little Sandhill Creek, August 14 and September 3. Horsbrough records only occasional birds and cites a couple of specimens.

36. **Grus mexicana** or **canadensis**. CRANE.—Inquiries about Camp 1 brought forth reports that a few years ago three cranes, "exceedingly good eating," were killed in the neighborhood, but our informants were not otherwise familiar with the species. Probably this refers either to the Sandhill or the Little Brown Crane which should migrate through this section. Horsbrough mentions seeing a crane of undetermined species May 4 at Alix.

37.* **Porzana carolina**. SORA RAIL.—Several Soras were seen in sloughs in the vicinity of Camp 1. Doubtless if we had worked adjoining ponds they would have been found throughout the country. Young took one near Camp 11 in a slough on the upper prairies near the Little Sandhill Creek.

38. **Fulica americana**. AMERICAN COOT.—Not seen by us, but Horsbrough records it as the commonest breeding bird on Buffalo Lake.

39. **Steganopus tricolor.** WILSON'S PHALAROPE.—Recorded near Innesfail by Wm. Geary, Oologist, XIV, 1897, p. 24, but not seen by us. A few were noted by Horsbrough at Alix, Buffalo Lake and Red Deer, and he found a nest at Alix.

40. **Recurvirostra americana.** AMERICAN AVOCET.—Horsbrough records a few breeding birds about Buffalo Lake.

41. **Gallinago delicata.** WILSON'S SNIPE.—Heard in their love flights, but not seen, as far down the river as Nevis. Young saw several and took specimens in the vicinity of Camp 11 on the Little Sandhill Creek, August 16. Horsbrough records nests at Buffalo Lake.

42. **Macrorhamphus griseus.** DOWITCHER.—Horsbrough records one taken at Buffalo Lake, August 22, referring it, probably incorrectly, to the western race, *M. g. scolopaceus*.

43. **Pisobia minutilla.** LEAST SANDPIPER.—July 8 at Camp 4 near Nevis six small waders were observed flying by but under circumstances that precluded specific identification. From the date they might as well have been late spring Semipalmated as early fall Least. Horsbrough records the latter as migrants at Buffalo Lake.

44. **Totanus melanoleucus.** GREATER YELLOW-LEGS.—Horsbrough records the species and says it frequently occurs with the Lesser Yellow-legs throughout the season at Alix and Buffalo Lake.

45. **Totanus flavipes.** LESSER YELLOW-LEGS.—Dippie thought they were breeding at Buffalo Lake in July 1896 and Horsbrough mentions them incidentally as occurring with the Greater in the same locality.

46. **Helodromas solitarius.** SOLITARY SANDPIPER.—A pair were seen on a small pool in an old ox-bow channel of the river near Nevis, Camp 4, July 6-9. Their strong reluctance to leave the immediate neighborhood and general actions were presumptive evidence of their breeding. I suspected the presence of young but could not verify it.

46.* **Catoptrophorus semipalmatus.** WILLET.—Just below Steveville and on the last few miles of our trip we saw three Willets on a mud bar in the middle of the river and collected two of them. They were both juveniles and could not be subspecifically determined. Dippie found young of Buffalo Lake, July 4, 1895, and Horsbrough records a nest there May 20, 1915.

47. **Bartramia longicauda.** UPLAND PLOVER.—Near Camp 1 a bird that we supposed to be of this species was seen and heard though not plainly enough to make certain identification. Mr. Brock, a local farmer, told us that two snipe-like birds bred in the vicinity besides the Spotted Sandpiper; a small one nesting in the swamps which we supposed to be Wilson's Snipe and a larger one on the uplands, laying a remarkably large egg. The latter is a quite suggestive description of this species. Horsbrough records a pair at Buffalo Lake.

49.* **Actitis macularia.** SPOTTED SANDPIPER.—Common all along the river and breeding everywhere. One bird on being flushed from her eggs flew into adjoining bushes and climbed about them in most unwaderlike style while complaining at our intrusion.

50. **Numenius americanus.** LONG-BILLED CURLEW.—Both Chas. and Geo. Sternberg who have had several seasons' experience on the Red Deer River have spoken of Curlews occurring in the late summer or early fall. July 22, when leaving, as I drove into Millicent I saw two or three Curlew flying in the distance. I refer them to this species on general probabilities. Horsbrough reports a sight record for the Hudsonian Curlew for Buffalo Lake, May 25, 1915, but does not mention the Long-bill. In western Alberta, the Hudsonian is most improbable.

51. **Charadrius dominicus.** GOLDEN PLOVER.—Horsbrough records two specimens sent him from Buffalo Lake, Oct. 11, 1916.

52.* **Oxyechus vociferus.** KILLDEER.—Not seen until August 23 at Camp 11, on the Little Sandhill Creek, where Young collected a single specimen from five seen. We have one downy young taken at Alix June 1915 by Horsbrough, who reports them common.

53. **Perdix perdix.** HUNGARIAN PARTRIDGE.—Horsbrough was informed that this species was introduced near Alix in 1909, but failed to survive to date (1914).

54.* **Bonasa umbellus.** RUFFED GROUSE.—Said to have been very common about Camp 1, a few years ago but now scarce. Though we found much excellent ground we met none in this neighborhood and only occasional ones elsewhere. The same agents that practically exterminated the Sharp-tails doubtless decimated this species. See that species for further discussion. At Camp 3 we saw and took one specimen; another was heard drumming at Camp 4 near Nevis. A brood of half grown young was met between Camps 5 and 6 and a single bird below Drumheller. Besides this specimen we have three birds from Ramsey and three from Morrin, taken by George Sternberg in 1915 and 1916. Of these but two birds are typical *umbelloides*, two cannot be distinguished from eastern *togata*, and the remainder are intermediate. *B. u. umbelloides* as it occurs on the Canadian prairies is a most unstable race and there is little satisfaction in attempting subspecific identification of individuals in these districts. The area of overlapping of the two races is very wide indeed. Horsbrough refers the local form to *togata* but has probably not compared specimens.

55. **Tympanuchus americanus.** PRAIRIE CHICKEN.—I have had the pleasure of examining a specimen of this species taken by Mr. Horsbrough in the vicinity of Red Deer Dec. 26, 1914, as he records. As it was unknown to local shooters it appears that this is the first specimen of the species for this locality and may be the forerunner of a permanent intrusion.

56.* **Pediceetes phasianellus.** SHARP-TAILED GROUSE.—This is the "prairie chicken," so called, of the Prairie Provinces, and as such is well known. They were said to have been exceedingly numerous on the Red Deer a few years ago but are very scarce now. Though we covered much ground where they were said to have been plentiful we saw none until late in July when Young collected four July 27 to September 13, in the neighborhood of the Little Sandhill Creek. We spoke to several residents

who were familiar with them and their tales tallied closely. First there were great numbers of the birds and then they disappeared suddenly and without apparent cause. Coincidentally numbers of "large gray hawks" and "big owls" appeared in the late fall and winter. Had the disappearance been principally due to overshooting, some birds would have been overlooked in the more out of the way localities; but, while the common report was that there had been little if any shooting on many parts of the river valley, the scarcity was general and we did not see a bird except as above. Correlated with the appearance of the raptores and the disappearance of the grouse of all kinds was the disappearance of the rabbits. It was the same story wherever we were in 1917: Shoal Lake, Manitoba; here on the Red Deer River; in British Columbia at Hazelton, and in Jasper Park, Alberta. In the last named place at least, overshooting cannot be blamed for the scarcity of grouse, as there is no shooting allowed there, and such small amount of poaching as might have taken place could not possibly have accounted for the almost total absence of birds. Also the widely scattered localities, practically all of central and western Canada, though perhaps less so in the mountains where heavy timber gives good cover, is suggestive of other causes than local shooting. I think it is evident that the occurrence of the well known rabbit disease that periodically decimates these rodents deprived the large raptores of their usual food and forced them to invade southern sections in unusual numbers and turn their attention to grouse. The Ruffed Grouse, living in the heavier timber where cover is better, suffered less than the more open country species. Without doubt when their usual food supply, the rabbit, is cut off, the large raptores constitute a serious destructive influence. It is an interesting study in the correlation of species and complicates the subject of game protection. All that seems possible to do under the circumstances is to encourage the killing of the large winter raptores, yet if this is carried too far the rabbit pests are likely to increase in normal years to a dangerous extent and in the present state of misinformation the ordinary farmer and shooter are likely to involve in destruction the useful species of *Buteo* and *Archibuteo*, birds that the prairie provinces cannot well spare. I will discuss them and their effects under the subject of Red-tail Hawk. Horsbrough refers his specimens to *campestris*, which is the geographical probability. The condition of plumage makes me unwilling to pronounce upon the subspecies.

57.* **Zenaidura macroura.** MOURNING DOVE.— Not very common. We heard of a pair breeding near Camp 1. One was heard the morning of July 10 at Ross's Ranch and another at Drumheller the 14th. One was noted the 18th above Steveville and one taken the next day between that village and Camp 11. Horsbrough records a single specimen from Buffalo Lake.

58.* **Cathartes aura.** TURKEY BUZZARD.— We saw the first Turkey Buzzards shortly after we entered the real Bad-lands above Camp 5, Ross's Ranch. From then on several or more were noted daily. At Camp 11

on the Little Sandhill we saw aggregations of a dozen to twenty a number of times. Specimens taken at this camp August 20 and September 4. Horsbrough does not mention the species about Alix or Red Deer.

59.* **Circus hudsonicus.** MARSH HAWK.—Occasional Marsh Hawks were seen from Camps 1 to 4 but were not common. About fifteen miles above Steveville a number of juveniles were seen, probably an original family not yet separated. After I left Camp 11 Mr. Young reports that Marsh Hawks became common. One day he saw a female carrying a Flicker for about a mile and a quarter when she dropped it to two young. On approaching and driving them away he found the Flicker still alive. Specimens taken August 6 and 10.

60.* **Accipiter velox.** SHARP-SHINNED HAWK.—Not very common as we descended the river, though Young says they were numerous after the middle of September at Camp 11, on the Little Sandhill Creek, where he observed them teasing Pigeon Hawks. We found a nest with five newly hatched young near Camp 1, June 25. It was in a spruce tree about twelve feet from the ground. These were taken, also several at Camp 11 on the Little Sandhill, August 27 to September 7. We also have an October specimen from Alix taken by Horsbrough, who also records nests at Red Deer.

61.* **Astur atricapillus.** AMERICAN GOSHAWK.—Between Camps 5 and 6, July 11, we saw a Goshawk cross the river ahead of us. Another was seen several times at Camp 8, near Rosedale Mines, and July 16 its nest containing three large downy young was found. It was about twenty feet up in a cottonwood in a slightly open spot in the bush. One was seen at Camp 11 on the Little Sandhill Creek, by Young, July 30. Besides the adult female and young above noted we have October and November specimens from Alix, taken by Horsbrough, and Mr. Edward Arnold informs me he has a set of eggs collected near Red Deer.

62.* **Buteo borealis.** RED-TAILED HAWK.—The most abundant Hawk on the river. It was seldom that one or more were not in sight and its nests dotted the larger trees every quarter of a mile or so to near Steveville. Near that village they grew fewer and finally disappeared and none were seen a few miles below at Camp 11 on the Little Sandhill Creek, in the midst of desert-like conditions. An accurate estimation of their numbers was very difficult owing to the presence of Swainson's Hawks from which it was usually most difficult to distinguish them except in most characteristic plumages. They were not excessively wary and a fine series of both adults and nestlings in various stages was obtained; the young usually with at least one parent taken and sometimes both. Of the birds seen there was a great variety of plumage and colorations, all the way from solidly dark to very light, faded specimens. The dark extremes were rather the least common and, either apparently or actually, more wary, for in spite of serious endeavor we were unable to obtain them. Several were shot, but falling off on a long slant they were lost in dense bush and could not be found. There is therefore still some doubt as to the

identity of many of these birds and many may have been Swainson's instead of Red-tails. In all twenty-two specimens were taken. Of these, except for a very faint to pronounced barring of the tail, there is no constant character to separate them from eastern *borealis*. They average slightly darker on the under-parts but at least two birds are lighter here than typical eastern birds while several are indistinguishable in this respect. Many of the tails are very light, but new incoming plumage of richer coloration indicates that this is due to the bleaching power of the bright prairie sun and is an acquired and not an inherent character. Fading however does not account for all the lightness, as in some cases the feathers are mottled or suffused with white from the shaft outward. While this culminates in a female taken July 9, the half grown offspring of the same bird has a dark tail similar to eastern juveniles, while all other juveniles having enough tail to judge from, show appreciable amounts of intermixed red such as is not seen in eastern birds.

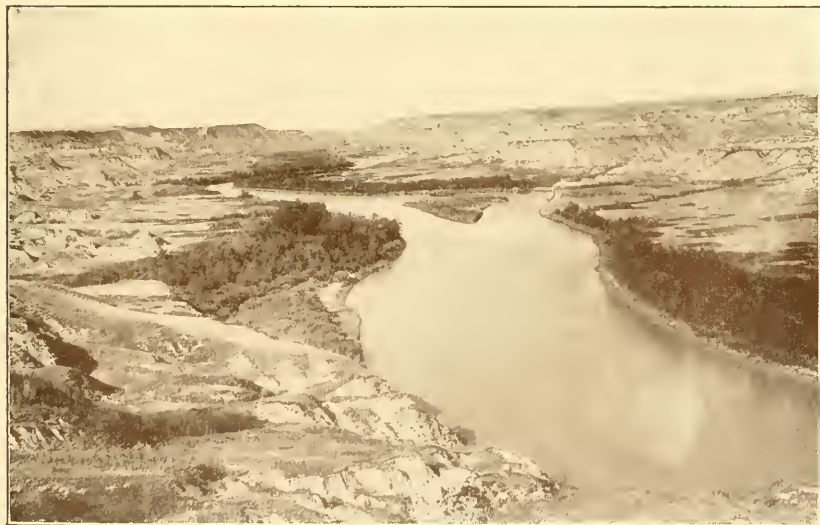
I was in hopes that we would find *krideri* occupying this desert-like country but was disappointed, as we procured nothing that could not be attributed to *calurus*. One interesting point observed was that like usually mated with like, a light bird generally had a similarly colored mate and vice versa. Only in one case did we definitely discover a very dark bird paired with a light one. We obtained the three young of this pair and while they are hardly sufficiently fledged to accurately determine the characters they would finally exhibit, they show considerable difference in color. One tends towards an almost uniformly dark bird while the other two have plain indications of cream colored breasts and throats. It is evident therefore that the darkness of plumage is a congenital condition and not assumed with age; also that there is often a large amount of red in the tails of many juvenile birds such as is never (?) shown in eastern specimens of comparable age.

Naturally the abdomens of all the adults taken in the midst of the breeding season were bare; the skin was thickened and rugose, covered with dry, horny, scab-like plates that peeled off while skinning, and now that incubation was over, seemed ready to shed naturally before the incoming down of the midsummer moult. In addition to this, however, the throats were similarly affected. The throat feathers were ragged, worn and thin, whilst the skin between was excessively warty, the prominences tending to clear yellow in color and similar in appearance to the wattles of gallinaceous birds. It suggests that the throat is used in incubation as well as the abdomen.

The value of these large Buteos to the farmers of the prairie provinces is incalculable. This applies equally to Swainson's Hawk and the Ferruginous Roughleg. The country is infested with gophers, mostly Richardson's Spermophile in the section we visited, but Franklin's and the 13-lined were also present. Upon these the large hawks seem to feed almost entirely and their great number must be a powerful check upon them. However,



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1. NEST OF FERRUGINOUS ROUGH-LEG, BELOW NEVIS.
2. RED DEER RIVER NEAR NEVIS, ALBERTA.

this forms the subject of a separate publication,¹ and calls for no further treatment here.

63.* **Buteo swainsoni.** SWAINSON'S HAWK.— Much that has been said of the previous species especially as to food, can be applied to this. Through the upper part of our course down as far as Camp 4, near Nevis, it seemed less numerous than the Red-tails; below that point it was about equal to them, disappearing with them at the entrance to the desert-like lower bad lands. Owing to the great variety of plumage of these two large Hawks it was in most cases practically impossible to distinguish between them except when in most characteristic plumage. Usually a dark breast band indicates Swainson's Hawk but we saw many variations that made us doubt the absolute reliability of even this character. On the whole, I suspect that the dark phase was slightly more common in *swainsoni* than in *borealis*. The commonest type of coloration had such a breast band but they ran through a redder type with less conspicuous breast band to a nearly black bird on one hand and to light plumages similar to normal juvenile eastern Red-tails. We took twelve specimens in all including downy young. In nesting there was little difference that we observed, between these and Red-tails, though they were perhaps more prone to choose smaller isolated trees standing in the open, a location we did not see used by *borealis* at all.

64. **Archibuteo lagopus.** AMERICAN ROUGHLEGGED HAWK.— Horsbrough reports a few specimens on fall migration dates. Older literature includes nesting records for this and adjoining sections, but it is problematical whether they do not refer to the next species.

65.* **Archibuteo ferrugineus.** FERRUGINOUS ROUGH-LEG.— Though we recognized no Rough-legs as such on the upper river or before we passed Camp 4, near Nevis, the residents about Camp 1 spoke of "Chap Hawks" so called from the feathering of the legs. Just above Camp 4 in the top of a cottonwood we saw a very large old nest that aroused our curiosity and which we later attributed to this species. Below Nevis we had our first view of the species and from thence on it was very common, nesting on the tops of pinnacles and shelves of the bare eroded exposures and occasionally in trees. The nests were immense masses of coarse sticks and seemed to be added to and used year after year. Some nests seen about Camp 11 on the Little Sandhill Creek seemed to have been occupied for many years. One built upon a salient buttress of a cliff had increased with annual additions until it formed a mass of material twelve or fifteen feet high. The lower masses of the nest were rotten and merged into the original clay foundation whilst it grew fresher towards the top until the final layer was of this year's construction,— mostly sage-brush roots. In a little hollow adjacent to such a nest we found an accumulation of over a bushel of dried

¹ The Hawks of the Canadian Prairie Provinces, in their Relation to Agriculture, by P. A. Taverner. Museum Bull. No. 28, Biol. Series No. 7, Geological Survey, Dept. of Mines, Ottawa, Aug. 1918.

bones, and scraps of gophers that had been devoured by successive generations of young Rough-legs. The first nest we found contained three nearly fledged young and was on the top of a pinnacle on a deeply eroded exposure some 150 feet up and overlooking the river at a distance of about a quarter of a mile. In clambering about to get the properly lighted view for a photograph the young became alarmed and started out on their first flight, continuing until they dropped into the river below. One alighted near the margin and scrambled ashore but the other two drifted down and last seen were caught in the rapids below and drawn under and out of sight.

The coloration of these birds was remarkably constant. Most were of the light type, pure white below and with ruddy barred legs. Dark individuals were uncommon and we took only one specimen. This is a completely dark individual, a juvenile, and both parents were seen. One was of normal light coloration and the other all dark. Another juvenile similar to the one taken accompanied the family. We have five specimens of our own taking besides twelve more taken by Geo. Sternberg near Ramsey and Morrin in 1915 and 1916. Of these a brood of three taken June 26 is composed of one all black specimen and two that are evidently developing into the normally light-colored form. It is evident that, like the Western Red-tail, age has nothing to do with the darkness of coloration in this species.

66. **Aquila chrysaetos.** GOLDEN EAGLE.—Horsbrough records fall and winter specimens from the vicinity of Red Deer.

67. **Haliaëtus leucocephalus.** BALD EAGLE.—Single Bald Eagles were seen between Camps 5 and 6 and 9 and 10. They were white-headed adults and easily identified. Horsbrough reports several specimens and gives a breeding record for the Buffalo Lake vicinity.

68. **Falco rusticolus.** GYRFALCON.—Under the heading of Gray Gyrfalcon, *F. r. rusticolus*, Horsbrough records the capture of a specimen at Camrose, Oct. 1915, and mentions another taken about the same time.

69.* **Falco mexicanus.** PRAIRIE FALCON.—Amidst the maze of gullies, pinnacles and strangely eroded hill shapes a short distance back from the river at Camp 11 on the Little Sandhill Creek we met a number of these birds. In all but color they are so like Duck Hawks that at a distance we confidently ascribed them to that species. At least two pairs had raised their broods near the camp and the nests were pointed out to us by Chas. Sternberg, who had marked them down before we arrived. Though in action and general habit similar to *peregrinus* the nests we saw were essentially different. In the first place they were rather solidly built structures of sticks or dead sage-brush roots; secondly they were in small natural caves of rather pronounced character, and finally they were at a considerable distance from the water, the immediate presence of which seems to be a necessity for the nesting site of the Duck Hawk. When we arrived on the scene the young had left the nest but a short time and were still in the vicinity and while full-fledged and apparently strong on the wing, they were under parental care. Between July 20 and August 31

eight specimens were secured including both adults and juveniles. The latter differ from the former in being more creamy yellow. After identifying these birds we realized that we had met them before on the river but had thought them to be light plumaged Duck Hawks. They were usually seen bathing in the shallows of the river shore. At least two were seen between Camp 8 and 9 and one just above Steveville; all in arid country.

70*. **Falco peregrinus.** DUCK HAWK.—Though several of the birds we ascribed to this species during the last days of our trip were probably Prairie Falcons, a number previously observed were Duck Hawks. Friends about Camp 1 spoke of what they called Stone Hawks that nested on the adjacent cliffs, and one morning from our tent we saw a Duck Hawk feinting or making actual attacks on a Red-tail along the high cliffs across the river. The latter hastily took refuge in a tree-top and assumed the defensive while the Duck Hawk circled about chattering loudly and making frequent dashes at it, though as far as we could see no blows actually struck home. Shortly the falcon retired to an observation point on the cliff near by and waited, but at the first movement of the *Buteo*, returned to the attack and again drove it into a tree-top. It was half an hour or more before the Red-tail was allowed to slip away on its business. Just above Camp 2, and it was this that largely decided our stop, we discovered what was probably the same bird. It flew about us screaming loudly and was much disturbed at our presence. Parts of the cliff were liberally sprinkled with excrement and we were confident that a nest was nearby. The next day's careful search, however, failed to reveal it and upon collection the bird itself proved to be a non-breeding female. As when first seen it had one primary feather shaft broken as if by a shot we concluded that its mate had been killed and it having been unable to find another in time for breeding, still lingered and took a proprietary interest in the site of its old eyrie. Between Camps 5 and 6 a nest was found containing three downy young and with both parents in evidence. We collected one of the nestlings. A few miles below this nest another was found containing four nearly grown young and one parent present. In endeavoring to get a photograph of nest and young the better grown nestling took fright and left the nest. It flew up the river for nearly a quarter of a mile and finally came down in the river but soon scrambled ashore where we added it to our collection. Both these nests were on ledges on cliffs overlooking the river. In fact every Duck Hawk nest I have so far seen has been overlooking water and usually with water washing the base of the cliff upon which it was situated. Little or no nesting material was used and the eggs were laid upon the bare shelf. About them were scattered remains of various birds, the most conspicuous among which were the wing feathers of Franklin's Gull which from this evidence seem to be the favorite quarry of the Duck Hawks of this section in the nesting season. There were no indications of mammal remains and I conclude that this noble bird prefers feathered to furred game.

71.* **Falco columbarius.** PIGEON HAWK.—This species was one of

the agreeable surprises of the trip. Throughout our descent of the river a close watch was taken for the species as it was hoped that Richardson's Merlin would be found. Birds were seen at a distance at Tolman's Ferry and Drumheller that were ascribed to this species but either the distance was too great or else the glimpse too fleeting to make positive determination, so up to the time of my leaving from Camp 11 we had no satisfactory record of the species. Shortly after I left Young began to find them quite numerous and to September 20, thirteen were taken. Of these but one was true *F. c. columbarius*, the remainder including 4 adult and 6 juvenile males and 2 juvenile females being typical *richardsoni*. We have also a male and female taken in June, in Cypress Hills, Saskatchewan; two more, probably an original pair from Edmonton taken by Spreadborough in May and a female with two downy young taken by Dippie near Calgary. It can be seen that in all we have a very good series of these birds, yet amongst them I can not see the slightest tendency towards *columbarius* and am strongly inclined to regard *richardsoni* as a true species bearing the same relation to *columbarius* as *Falco mexicanus* does to *F. peregrinus*. The oft repeated statements copied from earlier descriptions inferring that this is practically a single plumaged species are certainly incorrect. Males are distinct from females and adults from juveniles; and all are easily separated from *columbarius* in any plumage.

72.* **Falco sparverius.** AMERICAN SPARROW HAWK.—This species was not very common on the upper reaches of the river but as we descended we found them more and more numerous until at Camp 5, Ross's Ranch, there were at least four nests within three minutes' walk of our tent, and below, every suitable stub along the banks contained a nest. We noted them several times essaying the role of Kingbird and badgering large hawks that intruded upon their privacy.

73. **Pandion haliaëtus.** OSPREY.—At Camp 1, just below Red Deer, I saw a bird that, at the time, I was confident was this species but not meeting it again I had removed it from the list of verified species. However, Horsbrough reports information of a pair that, up to a few years ago, nested at Pine Lake some twenty-five miles southwest of Red Deer, the birds being last seen there April 26, 1915.

74.* **Asio wilsonianus.** LONG-EARED OWL.—Not noted by us but we have specimens taken by Geo. Sternberg at Morrin, October 1 and 8, 1916, and at Alix, September and October, 1914, by Horsbrough who records a nest at Buffalo Lake.

75.* **Asio flammeus.** SHORT-EARED OWL.—Young took one on the upper prairie level near Camp 11, on the Little Sandhill Creek, September 5. Besides this we have one from Alix, October 1914, taken by Horsbrough who also records a nest at Buffalo Lake.

76. **Scotiaptex nebulosa.** GREAT GRAY OWL.—According to W. Raine, Dippie secured a set of eggs in the Red Deer District, probably about 1896. This likely remains the extreme southern breeding record for the species.

77.* **Cryptoglaux acadica.** SAW-WHET OWL.— We have one specimen in our collection from Alix, December 1914, taken by Horsbrough.

78.* **Bubo virginianus.** GREAT HORNED OWL.— Nearly every one who supplied us with information spoke of the large numbers of Big Horned Owls present the previous winter. I am convinced that these were forced out of their usual winter haunts by the failure of the rabbit supply and are largely responsible for the dearth of Grouse of all kinds this year in the western provinces.

Just below Camp 8 near the Rosedale Mines we collected an adult male and a juvenile, probably its offspring. None were seen again until Young took an adult at Camp 11, on the Little Sandhill Creek, August 4. Besides these we have the following specimens from adjoining localities, three birds from Morrin and Sonema June 14 and September 24 and 25, 1915 and 1916, also one bird from Red Deer, an old mounted specimen taken at unknown date some years ago. Of these the Sternberg specimens and the two breeding specimens taken below Camp 8 are well marked *subarcticus*. The Camp 11, Little Sandhill Creek, specimen I regard as *pallescens* as accepted by the A. O. U. or *occidentalis* as defined by Oberholser's revision of the species. The Red Deer specimen is different from either, being an extremely red bird similar in general to a specimen from the mouth of the Salmon River, B. C., identified as *saturatus* by H. C. Oberholser but much redder than it or than any other specimen in our collection. Geographically the only thing it can be reasonably ascribed to is *saturatus* as is so understood by the A. O. U. list or *lagophonus* of Oberholser. This is undoubtedly a migrant from the mountains. *B. v. subarcticus* seems to be the breeding form while *pallescens* can be regarded either as a straggler from further south or an intergrade. The exact determination of these many Horned Owl forms is very difficult and hardly satisfactory when too great exactness is insisted upon. In the museum is a set of two eggs taken near Red Deer by Dippie, April 10, 1896. Horsbrough records *B. v. pallescens* as the breeding form in his first list and *subarcticus* in his second. Probably all breeding birds should be included in the latter form.

79.* **Surnia ulula.** AMERICAN HAWK OWL.— Though not seen by us we have specimens taken by Horsbrough at Alix October 19, 1914, and by Geo. Sternberg, October 17, 1916, at Morrin whilst Chapman in his Handbook cites a breeding record, Red Deer April 16, 18 (?) Horsbrough gives no breeding records but regards the species as common.

(To be concluded.)

THE HAWAIIAN ELEPAIO.

BY VAUGHAN MACCAUGHEY.

THERE is no other region in the world with an avifauna more remarkable or interesting than that of the Hawaiian Archipelago. In extraordinary endemism, specialization, and precinctivity, the Hawaiian bird life is without parallel. Due to the operations of various malign influences, the native forests and birds have greatly diminished within historic times. Many known species of plants, trees, and birds have become wholly extinct, and many others are on the verge of extinction. A time is speedily approaching in which the extinct avian species will exceed in number those still surviving.

The one indigenous forest bird that appears to successfully withstand the devastating influences of "civilization" is the Hawaiian Flycatcher or Elepaio.¹ This form is now the most abundant representative of the native woodland avifauna. In many regions it appears to be practically the sole survivor. A peculiar interest is therefore attached to this beautiful and familiar denizen of the mountain forests.

Although the literature relating to Hawaiian bird life is voluminous, most of it is inaccessible to the average ornithological worker. Moreover, there is nowhere in the literature a comprehensive and modern account of this most abundant of the Hawaiian birds. During a residence of ten years in the islands, the author has had occasion to visit all representative parts of the native forests, and has spent many months in actual field work. He has been particularly interested in field studies and in the ecologic view-point, rather than in taxonomy. The present paper embodies the results of his own field studies, the examination of museum material, and a summary of the literature. In so far as is known to the author, this is the only monographic account of the Hawaiian Elepaio.

¹ Vowels pronounced as in Latin.

Family.— The Old World Flycatchers, *Muscicapidæ*, comprising about 60 genera and some 400 species, are represented in the Hawaiian avifauna by *Chasiempis* only. The family is common in Ethiopian, Indian, and Australian regions; several are Palearctic, and 4 or 5 reach Europe. The family is fairly abundant in the islands of the South Pacific, but in the central North Pacific is confined to the Hawaiian group.

Genus.— The genus *Chasiempis*, comprising all the Hawaiian species, was established by Cabanis in 1847 (*Archiv für Naturgeschichte* 1847: 207). The members are true Flycatchers, with broad soft beaks, the gape of which is beset with long, strong, spreading bristles. The tarsus is characteristically long and slender. The first primary is about one-half as long as the second; the second is about one-fourth inch shorter than the third; the fourth, fifth, and sixth are equal and longest. The tail is about as long as the wing; the rectrices are pointed. The sexes are similar in size and plumage, but the juvenile plumages differ in many striking particulars from those of the adult birds.

Key to adult birds.— The specific status of the Elepaios for many decades was a subject of great perplexity to ornithologists, and led to extended discussions and controversies. The careful studies of such workers as Rothschild, Perkins, Wilson, and Bryan, have reduced the chaotic synonymy to order and conclusively demonstrated that there are three valid species,— one each for the islands of Kauai, Oahu, and Hawaii.

Much perplexity and confusion arose from the numerous intergrading plumage changes through which all the species pass before they reach maturity. The differences between the mature and juvenile birds have misled ornithologists to describe them under different names, so that as many as six or more species were recognized by some investigators, while others have referred all to a single species.

The adults of all three species are characterized by wing-coverts spotted with white; black or white or both on the throat; tail-coverts white; lower mandible dark. The adults of all species have the rump white; the young have the rump tawny. They not infrequently breed in quite immature plumages; there are numerous records of pairs, one white-rumped, the other rufous-

rumped. The following key is rewritten and modified from the excellent keys of Rothschild and Bryan.

- A. Upper-parts bluish-gray or smoky;
Kauai only. KAUAI ELEPAIO,
C. sclateri.
- AA. Upper-parts brownish.
- B. White tips of outer-tail-feathers
usually longer than .50 inch;
white tips and outer edgings of
secondaries neither wide nor
prolonged; Hawaii only. HAWAII ELEPAIO,
C. sandwichensis.
- BB. White tips of outer-tail feathers
usually shorter than .50 inch;
white tips and outer edging of
secondaries quite pronounced;
Oahu only. OAHU ELEPAIO,
C. gayi.
- Key to juvenile birds.*— In all three species the wing-coverts of the young birds are spotted with tawny brownish-yellow (white in adults); throat brownish-yellow, without black or white; base of lower mandible light.
- A. Browner above, brownish-yellow of
throat and tail-coverts deeper;
head not so brownish-yellow;
Hawaii only. HAWAII ELEPAIO,
C. sandwichensis.
- AA. Lighter, more brownish-yellow above,
throat and upper-tail-coverts
rusty brownish-yellow.
- B. Occurs on Oahu only. OAHU ELEPAIO,
C. gayi. fig. 2.
- BB. Occurs on Kauai only. KAUAI ELEPAIO,
C. sclateri. fig. 3.

Chasiempis sandwichensis (Gmel.) THE HAWAII ELEPAIO.

SYNONYMY — Sandwich Flycatcher; Spotted-winged Flycatcher; Brown-faced Flycatcher; *Muscicapa sandwichensis* Gm.; *Muscicapa sandwichensis* Lath.; *Muscicapa maculata* Gmel.; *Cnipolegus* sp. Sel.; *Eopsaltria* (*Chasiempis*) *Sandwichensis* Gray; *Eopsaltria* (*Chasiempis*) *maculata* Gray; *Chasiempis sandviccensis* Sel.; *Chasiempis sandwichensis* Finsch & Hartl.; *Chasiempis ridgwayi* Stejn.; *Chasiempis ibidis* Stejn.

PLUMAGE — There seems to be a tendency toward a differentiation into sub-species. According to Henshaw birds on the windward side of the island have forehead, lores and superciliary stripe *chestnut*; birds on the leeward side have these parts *white*. This has been confirmed by other collectors. There is no noteworthy difference in the plumage of the sexes. The following very detailed descriptions, which may be taken as typical for the group, have been revised and amended from the careful descriptions by Rothschild.

Final adult plumage: Forehead, lores, and superciliary stripe white or chestnut, more or less spotted, the bases of the feathers black.

Above, from the head to the back, dark olive-brown or bistre, tinged with rufous and spotted with white on the hind-neck and lower back.

Rump and upper-tail-coverts pure white, base of feathers black.

Wing-coverts (except primary-coverts) and inner secondaries black, broadly tipped with white. Primary coverts black. Quills blackish-brown, narrowly edged on the outer webs with olive-brown, distinctly edged with white on the inner webs, the first ones only at the basal parts.

Rectrices black, outermost pair with half of the outer web to the tip white, and with the tip of the inner web for $\frac{1}{4}$ to at least $\frac{1}{2}$ white.

The remaining tail feathers have a large portion of the inner web and a much smaller portion of the outer web white; these spots decreasing in size until the central pair is reached, where only quite narrow white tips are visible.

Feathers of the under-parts black at their bases, white at the tips. The chin remains quite black, then the white tips appear, so that the throat is varied white and black. The white tips become so broad that the entire lower throat, breast, abdomen, and under-tail-coverts are pure white.

Sides of the breast and body are more or less washed with tawny-olive. Under-wing-coverts spotted brown and white, the bases being deep brown, the tips broadly white. Feathers of the thighs black with white tips. Iris dark brown; upper mandible slaty-black, under mandible slaty-blue; legs and feet slaty-blue.

Intermediate plumage: Birds having this plumage may be adult and breed, but it is not the final plumage described above.

Above dark olive-brown with a rufous shade, thus appearing a trifle brighter than the final plumage.

Lores, forehead, and a more or less distinct line above and behind the eyes tawny brownish-yellow, sometimes mixed with whitish or white.

Rump and upper-tail-coverts white, the bases of the feathers black

Quills dark brown, narrowly margined with pale tawny on the outer webs, with creamy buff on the inner webs, more so toward the bases. Secondaries tipped with white.

Rectrices broadly tipped with white, as in the final plumage, but the white color does not extend so far.

Chin and throat spotted black and white, in younger specimens appearing almost pure white. This variation is caused by the feathers being black at the base and more or less broadly tipped with white.

Under-parts below the throat dark tawny brownish-yellow, with a broad, more or less irregularly defined, white patch on the upper breast, and extending to the under-tail-coverts, which are also white. Feathers of the thighs black, tipped with white. Under-wing-coverts deep brown and white.

Iris, bill, legs and feet as in final plumage.

Juvenile plumage: Above tawny brownish-yellow. Pale tawny on rump, browner on head and upper-tail-coverts. Quills dark brown, with pale borders on outer webs and bordered with buff on inner webs.

Wing-coverts deep brown, broadly tipped with bright brownish-yellow buff.

Tail-feathers deep brown, with pale borders to the outer webs. Outermost pair with a small white spot on the outer web and a large white spot on the inner web; the next pairs with white on inner webs only. All these white spots are much less extended than in adult birds and decreasing in size to the middle, so that the central pair of feathers has no white.

Under-parts tawny buff, passing into white on middle of abdomen. Some specimens are much whiter than others. Under-wing-coverts buff.

Iris dark brown. Upper mandible deep brown; lower mandible brown at tip, creamy yellowish at base. Legs and feet slaty-blue, but less bright and paler than in adult birds.

Measurements of adults.

	inches		inches
Length	5.50-6.00	Bill, depth	.20
Wing	2.70-3.05	Bill, width	.18
Tail	2.40-2.70	Tarsus	0.85-0.90
Culmen	.47- .53	Toe	.63

Chasiempis gayi Wilson. THE OAHU ELEPAIO.

SYNONYMY — Gay's Flycatcher, Oahu Flycatcher; see also under 1.

PLUMAGE — *Adult male:* Upper-parts brownish (feathers with bluish bases), washed with tawny brownish-yellow, especially about the head.

Forehead rusty brownish-yellow. Lores and about the eyes white.

Wing-coverts brownish-black, forming a well-defined bar. Lesser coverts tipped less regularly with white. Primaries brown with buff edges. Tail-coverts white.

Chin white. Throat black with more or less white tips (not so conspicuous as in the Hawaii species). Breast with some reddish brown. Abdomen white.

Intermediate plumage: Similar to that of the young, but showing brownish-black in the throat, and more or less white in the wing and tip of tail.

Juvenile plumage: Above tawny yellowish-brown, most yellowish on sides and back of neck.

Forehead, lores, chin, throat and chest tawny brownish-yellow.

Wing-coverts and primaries brown with brownish-yellow edges. Larger wing-coverts sometimes showing white tips, forming a bar less conspicuous than in adults.

Upper-tail-coverts tawny-brownish-yellow. Under-tail-coverts tawny. Abdomen white.

The plumages of the female and young differ from the male in the same manner as those of the Kauai species.

The Oahu species is distinguished from that of Hawaii, with which it was long confused, by its more conspicuous white throat and almost entirely white breast. Seale has given an excellent account of the plumage changes of this species.

Measurements of adults.

	inches		inches
Length.....	5.50-6.00	Culmen.....	.40- .45
Wing.....	2.55-2.65	Tarsus.....	.95-1.00
Tail.....	2.50-2.55	Toe.....	.60

Oahu has been more completely despoiled of its native bird life than any other of the larger islands. More of the known Oahu passerine species are extinct than are living today. The Oahu Elepaio is the most abundant of the remaining native birds and is practically the only species commonly seen.

Chasiempis sclateri Ridgway. THE KAUAI ELEPAIO.

SYNONYMY — Dole's Flycatcher, Sclater's Flycatcher, *Chasiempis dolei* Stejneger. *A-peke-peke* is the designation used by the natives of Kauai for the rufous-rumped form; the white-rumped form is called Elepaio. The first name is used exclusively on Kauai.

PLUMAGE — *Adult male:* Upper-parts uniform dark smoky-gray. Lores and superciliary stripe whitish or buffy-white.

Wing-coverts blackish. Greater and lesser coverts tipped with white forming two fairly distinct bars across the wing. Quills blackish with grayish-fulvous edges tipped with white.

Upper-tail-coverts pure white.

Center of throat white surrounded by buffy and buffy-gray, forming a more or less distinct pectoral girdle. Sides of body grayish-white with a wash of rusty.

Abdomen and under-tail-coverts white.

White on outer web of tail-feathers narrow and extending along the edge for the greater part of its length; white tip about .35 inch long.

The throat and forehead of the adult female are much whiter than those of the adult male.

The young are very rufous above and chiefly orange-rufous below, with tawny-under-tail-coverts and rusty wing bars.

Measurements of adult.

	inches		inches
Length.....	5.25-5.50	Bill, depth.....	.16
Wing.....	2.55-2.95	Bill, width.....	.22
Tail.....	2.35-2.60	Tarsus.....	.80-.89
Culmen.....	.45-.50	Toe.....	.65

This species is abundant in all forested parts of the island; it was observed, mating and nesting, along the Na Pali coast.

The appearance, ranges, habitats, habits, calls and song, breeding habits, nests, eggs, and life-cycles of the three species, in so far as known, are so very similar in every respect that in the remaining sections of this paper, save where otherwise noted, they will be considered as ecologically a single form. Field observations fully warrant this point of view.

RANGE: The native passerine birds of the Hawaiian Islands fall into three groups, according to range. 1. Those which occur on all the main islands of the group. 2. Those which occur on several islands, but also are absent from several islands. 3. Those which are confined to a single island only, and (in many cases) to very limited areas on that island. The genus *Chasiempis* belongs to the second group; the species fall in group three.

The genus occurs on Kauai, Oahu, and Hawaii, and is absent from the islands of Niihau, Molokai, Maui, Lanai, and Kahoolawe. The absence from Niihau and Kahoolawe (the two smallest of the eight large islands), may be explained by deforestation; the primitive forest mantle has been wholly destroyed. Lanai and West Molokai have been largely denuded of forest. East Molokai and Maui, however, possess extensive forest belts closely resembling those of Kauai, Oahu, and Hawaii.

There is no evidence to show that the Elepaio has become

extinct on Molokai and Maui. On the contrary, the evidence is fairly conclusive that this form never inhabited the Molokai-Maui-Lanai-Kahoolawe land-unit. The present islands composing this unit are separated by channels less than 600 feet in depth, and originally constituted a single continuous land-mass. Isolation has taken place through subsidence.

Two theories are tenable concerning the inter-island distribution of *Chasiempis*. These theories also apply to many other Hawaiian organisms. According to one theory the primitive ancestor, from which *Chasiempis* evolved, landed upon the shores of one of the three islands which it now inhabits, as a chance immigrant or waif.¹ After a long period of time fortuitous inter-island migration occurred, which resulted in the chance establishment of the bird on Kauai, Oahu, and Hawaii, but in some unknown way missed the Maui-Molokai group. Through isolation the forms on the three islands developed as endemic species.

The second theory derives the three present species from an ancient stock which inhabited the primitive pan-Hawaii-land. This land, many times larger and higher than the present island-group, reached from northern Hawaii to and probably far beyond Niihau, and has been lost through profound subsidence. The present islands are the apices of subsided mountains.² The primitive Elepaio ranged through pan-Hawaii-land and during subsidence was isolated on the three islands already mentioned. For some unknown cause it failed to continue on the Maui-Molokai unit.

The altitudinal range of *Chasiempis* on Kauai (5250 ft.) and Oahu (4040 ft.) is approximately from 800 ft. to the highest summits. Originally, when the forests covered much more of the lowlands than at present, and extended down to the strand in many districts, the Elepaio was abundant at the lower levels. On Hawaii (rising nearly to 14,000 ft.) the Elepaio ascends to the upper limits of the forest zone (7,000-9,000 ft.) and descends in certain places nearly to sea-level. It is most abundant between

¹ Just as a pair of Belted Kingfishers (*Ceryle alcyon*) landed and lived on the shores of Hawaii, several years ago.

² William Alanson Bryan, Deep Submergence of the Waianaes. Vaughan MacCaughey, Outstanding biological features of the Hawaiian Archipelago.

1000 and 3000 on all the three islands. This wide altitudinal range, which embraces a number of climatic zones, is greater than that of any other native woodland bird, and strikingly indicates the versatility and generalized character of this bird.

Aside from the primitive inter-island or pan-Hawaiian migration the Elepaio does not give any evidence of migration. Within historic times the range has sensibly diminished. There are no observable migration movements within the present range of the species.

HABITAT: The Elepaio is essentially a bird of the humid and mesophytic forests, and is abundant in all parts of its range. It avoids such habitats as arid treeless sections, wind-swept summit ridges, and the very hygrophytic summit bogs, although even in the latter situations it sometimes occurs. It is most plentiful in the protected wooded ravines and on the valley slopes, especially in the somewhat open formations, where the sunlight penetrates, the humidity is not super-excessive, and insects abound.

Typical situations are the forests in the Waimea, Na Pali, and Hanalei districts of Kauai; the Waianae and Koolau Ranges of Oahu, especially in the Punahuu district; and the forests of Kona, Hamakua, and Kohala, Hawaii. The author has studied the species in all of these localities.

It ranges from the ground to the summits of the tallest trees (nearly 100 ft.) Its average elevation is 6-20 ft. from the ground in the shrubbery and tree-crowns. It is not a ground-loving bird, although it frequently descends to the ground in search of insects. The Elepaio, on the other hand, is not distinctive of the treetops, although when the *lehua* (*Metrosideros polymorpha*) is in bloom, the bird haunts the flowery crowns in quest of the insect visitors.

During an eight-weeks' pedestrian tour of the island of Hawaii the author noted the prevalence of the Elepaio in the extensive *koa* and *lehua* forests. In many regions the bird appears to be more abundant on the leeward than on the windward side of the island.

Next to the *lehua* the Elepaio's favorite haunt is probably the *mamake* (*Pipturus albidus*), because of the large insect fauna characteristic of that shrub. Seventy-five or more species of insects and their parasites have been reported as inhabiting the *mamake*; nine species are not known to occur on any other plant.

Food Habits.—The Elepaio is almost exclusively insectivorous. There is no evidence of vegetable food, save possibly nectar. In its feeding habits it combined the traits of the Flycatcher and the Wren, with strong resemblance to the latter. It catches insects in three ways,—on the wing, from vegetation, and from the ground. It often follows and catches insects on the wing, but does not sit for long intervals and watch for prey, as do the American Flycatchers. In its aerial chase the Elepaio's beak snaps audibly in closing. The author has often sat motionless in a secluded situation in the rain-forest and observed the Elepaio's aerial maneuvers. The flight is rapid, usually silent, with considerable fanning of wings and tail, and manifest ability in turning sharp corners.

Most of the insect food is gleaned from the branches and foliage of trees and shrubs, and from the thick envelopment of mosses, lichens, liverworts, etc., which covers the woody vegetation in the rain-forest. Insect larvæ comprise an important element of the diet. Beetles, mature and as larvæ, myriapods, flies, moths, caterpillars of many species, together with spiders and slugs, are the dominant items on the food-list.

Not infrequently the Elepaio feeds from the ground,—among the dead *koa* leaves, in the fern banks, and upon prostrate and mouldering tree trunks. Myriapods, larvæ, spiders and slugs are gathered in these situations. The author has commonly observed the Elepaio feeding on or very close to the ground on the steep slopes in the montane rain-forests of Oahu and Kauai, as well as on the gentle slopes of Hawaii. He has never seen vegetable food eaten by this bird.

The Elepaio feeds all day long, from dawn to darkness, without cessation. There is no special feeding time; the bird is apparently insatiable and always on the *qui vive* for food. Seale found, in a large series of birds shot under widely varying conditions, that all had their stomachs literally gorged with insects and larvæ. The Elepaio is keen-eyed and quick of movement; it catches and devours insects with great rapidity. It holds down large moths in its claws, and tears off the wings, etc., before swallowing the morsel. The author has observed the bird methodically pull off the legs and wings of various adult insects, in preparation for swallowing.

The economic value of the Elepaio as a destroyer of noxious

insects is very high. These pests have multiplied prodigiously in recent years, and it is to be deeply regretted that the native birds are not sufficiently abundant to hold them in check. All native passerine species are now rigidly protected by law, and are rarely molested, in any direct way, by man.

Habits.—Perennial restlessness is an outstanding Elepaioan trait. The birds are always on the move. They chase and scold one another, sometimes more than two participating. When there are several birds in the same immediate vicinity, their program is a continual round of frolic, scolding, and feeding. Fearlessness and curiosity make the Elepaio conspicuous in the woodlands, whereas the other native birds slip away silent and unseen. The young birds are particularly tame and curious. Young and old alike will approach within a few feet of the quiet observer. Their inspection is sometimes silent, but more often is accompanied by chattering and scolding. They are pugnacious to birds other than their own kind, and will chase large birds away from a favorite feeding ground. The author has frequently observed the Elepaio chase and harass such species as *Vestiaria coccinea* and *Chlorodrepanis streperoides*.

The Elepaio has a number of distinctive little mannerisms with wings and tail. Sometimes it droops the wings and cocks the tail up over its back, remarkably like a Wren. Often, upon alighting, it spreads the tail fanwise. The male is not known to manifest any special peculiarities of habit or song during the mating season.

Song and call-notes.—The name Elepaio is the Hawaiian rendition of the simple song, which is scarcely more than a call "E-lé-pai'-o." This is also variously translated,— "O-nó-ka'-ia," "Pe-pá-kéo," "Too-wée-óo," etc. The notes are whistled very clearly and distinctly and carry a long distance. Occasionally the author has heard the bird singing *sotto voce*.

According to the natives the Elepaio is invariably the first bird to sing in the early dawn. In many native legends this matin takes the place of the cock-crowing of European folk-tales, at which time the demigods, ghosts, and fairies must cease their nocturnal enterprises, even though they be incomplete. The bird sings at all hours of the day, and occasionally, when disturbed, at night. The Elepaio has no special song in the mating season, nor are there noteworthy variations in the song.

Another call-note is a sharp "wheet, whto" or "tweé-ou" uttered repeatedly and with piercing shrillness. This "whit" call has a true Flycatcher quality. Frequently the Elepaio meets the human intruder with a scolding "chrr, chrr, chrr." Several gurgling call-notes are also used, particularly when the bird is engaged in catching insects. It has no true flight-song, but on rare occasions sings while on the wing. The young birds sing during the first fall and winter. Altogether the Elepaio possesses at least seven or eight calls, and possibly this number reaches a dozen or more.

Natives' Idcas.—To the early Hawaiians the Elepaio was a sacred bird, a demigod (*aumakua*), and capable of omensing. It occupied a prominent place in native mythology and was revered by the canoe-makers as a presiding genius of their labors. The canoes were hewn chiefly from the massive trunks of the *koa*, which grew abundantly in the Elepaio's range. Many religious rites and ceremonies preceded and accompanied the selection, felling, and shaping of the trunk. If the Elepaio, while inspecting a trunk previously selected by the natives for canoe-making, pecked at it in a certain way, or uttered certain notes, the trunk, even though partially felled, was abandoned by the natives as unfit for use. The author has conversed with many of the old-time Hawaiians concerning the Elepaio and has found that they always speak of the bird with great respect. The modern natives know little or nothing of this lore.

Breeding habits.—There is little accurate information concerning the breeding habits of any of the native passerine birds, owing to the extreme difficulties of studying these birds in the field. More is known concerning the Elepaio, however, than of any other native bird.

No special phenomena of courtship have been observed. It not uncommonly pairs and breeds before assuming the mature plumage. This fact has been determined through observations of nesting birds, and by the examination of a large series of specimens. The exact length of time during which the intermediate plumage is worn is not known, but there is undoubtedly considerable variation at different elevations and situations on the several islands. The Elepaio, so far as is known, is monogamous; it probably takes a new mate for each nesting season.

The breeding season begins in the late winter and early spring (February, March, April), during the latter part of the rainy season, and is conditioned by the severity of the rains. Eggs and young have been found in the nests in March, April, and May. The species are single-brooded.

The nest is the most ornate and easily found of the known nests of Hawaiian birds. The nests and eggs of all three species are identical in every respect. The nest is usually built in a small tree, 6-40 feet from the ground. Occasionally it is placed near the ground, but this is exceptional. Henshaw found a nest on a horizontal tree-fern trunk (*Sadleria*) within two feet of the ground. The Elepaio apparently does not nest in the very high treetops (60-90 ft.) The average elevation is about 20 ft. It is the only Hawaiian woodland bird that habitually nests at low elevation from the ground.

In this connection it should be noted that the introduction of the Mongoose (*Herpestes griseus*) in 1883, for the purpose of eradicating rats from the sugar-cane fields, resulted in great damage to native bird life. The Mongoose quickly found its way up into the forest zones, and has seriously decimated the ranks of all low-nesting birds. The author has found the Mongoose, for example, in all parts of the Oahuan forests, up to an elevation of 2500 ft., and on Maui and Hawaii it ranges to much higher elevations.

The Elepaio shows no preference for any particular species of tree or shrub, but uses any one that is suitable for its purpose. Nests have been found in *Metrosideros polymorpha*, *Acacia koa*, *Dodonaea viscosa*, *Santalum freycinetianum*, *Pipturus albidus*, *Maba sandwichensis*, and other common trees of the humid forests. Interesting light is thrown upon the Elepaio's adaptability by the fact that it occasionally nests in the dense thickets of foreign introduced shrubs, such as guava (*Psidium guajava*) and lantana (*Lantana camara*). These invaders now cover large areas in the lower portions of the Elepaio's range. The other native birds are practically never found in these naturalized thickets, but the Elepaio has evidently taken the change as a matter of course.

The nest is usually placed in an upright fork or saddled upon a horizontal branch and supported by lateral twigs. It is well concealed by foliage. The author has found on two occasions

nests in horizontal forks at the extreme ends of horizontal branches. The nest is a neat, compact, and beautiful structure. It is usually made of grasses, fine roots, moss, or leaves, firmly woven into a deep cup. The strong skeletonized frames of the leaves of various forest trees are commonly used as nest material. There is much variation in size, some nests being 2-3 times as high and wide as others. Typical dimensions are, 1.5 inches deep, 2 inches diameter, walls .75 inch in thickness. Nests 3.25 inches deep and 2.50 inches in diameter are not rare. The exterior is abundantly and artistically decorated with bits of fern-frond or lichen, held in place by silk from spiders' webs. The lining is of fine moss and vegetable fibers. The fine fibers of the *pili* grass are commonly used for the lining. Wilson found a nest which was made almost exclusively of the bleached calyces of the *poha* (*Physalis peruviana*), and that was of unusual delicacy and beauty.

As a rule two eggs only are laid, although sometimes there are three. The intervals between deposition are not known, but probably do not exceed a day or so, as the young emerge at about the same time and do not manifest marked differences in age. The egg is 1.25 inches long by 1.11 inches in diameter; the deviations from this average are very slight. The shape is ovate. The ground-color is pure grayish-white or very pale yellowish, with no indication of bluish or greenish tints. The egg is more or less heavily marked with small spots, speckles, and blotches of brown or reddish-brown; the under spots are pale lilac. The spots are usually most numerous around the larger end of the egg. Both sexes take part in the construction of the nest, incubation of the eggs, and in the feeding of the young. Practically nothing is known concerning the rearing and development of the young. There are no native predatory land-mammals or serpents in the Hawaiian islands; the only animal enemies of the Elepaio during the nesting season are the introduced rats, mongoose, and wild house-cats. The *kona* or southerly storms, which are of frequent occurrence during the nesting season, undoubtedly often prove fatal to the life of the nest.

FURTHER NOTES ON NEW BRUNSWICK BIRDS.

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

Plates V-VI.

RENEWED field work by the authors during the summers of 1917 and 1918, in the same region of northern New Brunswick as that dealt with in previous papers,¹ has resulted in the securing of certain additional data concerning the bird life of that region, that would seem to justify publication.

Since in our previous papers definite locality was not given, it may be here stated that all records, in previous papers as well as the present one, refer to Northumberland County. A large part of this region is wild and undeveloped. Township boundaries are difficult to locate, and it is therefore impracticable to attempt more detailed locality references.

In 1917 the authors were in the field from May 16 to July 2. Mr. T. F. Wilcox was a member of the party from June 15 to 30, and Messrs. George H. Stuart, 3d, and Samuel Scoville, Jr., from June 18 to 25. Earlier arrival in the field was undertaken for the purpose of studying breeding habits of the early nesting species, but the season here, as elsewhere, was extremely backward, and nesting dates by no means normal. Snow banks lay everywhere in the woods, often to a depth of five and six feet, at the time of our arrival, and lingering snow was seen in the woods as late as June 5.

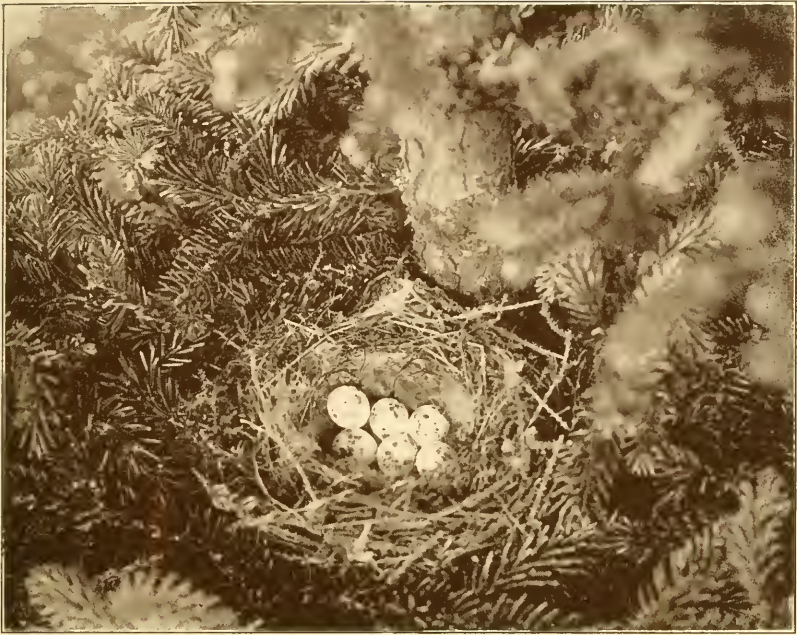
Field work for 1918 occupied the period between June 11 and July 1. The season was apparently a little earlier than normal. Mr. George H. Stuart, 3rd, was again a member of the party from June 15 to 24, and Dr. Henry F. Merriam from June 16 to 29.

Additional Birds Noted.

The last two seasons' work has added twenty-three species to our previous list of birds observed, as follows:

Rissa tridactyla tridactyla. KITTIWAKE.—A flock of about twenty of these birds was observed on a point of beach, June 2, 1917.

¹ The Tennessee Warbler in New Brunswick, Auk, January, 1916, pp. 1-8; Some Summer Birds of Northern New Brunswick, Auk, July, 1917, pp. 265-275.



1



2

1. NEST OF THE CAPE MAY WARBLER.
2. WILSON'S SNIPE ON ITS NEST.

***Sula bassana*.** GANNET.— Considerable numbers noted off the beaches, June 2, 1917.

***Clangula clangula americana*.** GOLDEN-EYE.— On our arrival, June 11, 1918, a nest containing ten eggs, mostly pipped and about hatching, was shown to us by a young man living near by. The eggs reposed in a beautiful and profuse bed of down, at the bottom of a hollow about two feet deep and eight inches in diameter, in the broken top of a yellow birch, dead, save for a thin, live outer shell, standing on a fence line between woods and an open field.

***Oidemia deglandi*.** WHITE-WINGED SCOTER.— Two noted May 17, 1917.

***Branta canadensis canadensis*.** CANADA GOOSE.— Three noted, May 16, 1917, and a few thereafter, two being seen as late as May 28.

***Nycticorax nycticorax nævius*.** BLACK-CROWNED NIGHT HERON.— Two birds noted June 22, 1918, and on several subsequent dates. Doubtless breeds sparingly.

***Philohela minor*.** WOODCOCK.— The omission of the Woodcock from our previous list of birds noted was an oversight, as one of these birds was observed June 6, 1916. One was also noted June 14, 1917. Both records were made at the same place, a muddy island, covered with willow and alder bushes, and this was the only locality where Woodcocks were seen.

***Pisobia minutilla*.** LEAST SANDPIPER.

***Ereunetes pusillus*.** SEMIPALMATED SANDPIPER.— One or both of these sandpipers, in a flock numbering some thirty individuals, were observed, May 20, 1917, and on other occasions, up to May 27.

***Totanus flavipes*.** YELLOW-LEGS.— Two noted, May 17, 1917.

***Canachites canadensis canace*.** CANADA SPRUCE PARTRIDGE.— A brood of half grown young noted, June 21, 1917. Reported as formerly abundant, this bird appears to be now rather scarce in this region.

***Zenaidura macroura carolinensis*.** MOURNING DOVE.— One secured, in scant scrub brush, on beach, May 17, 1917.

***Circus hudsonicus*.** MARSH HAWK.— One noted, May 18, 1917, and on one or two subsequent occasions.

***Falco columbarius columbarius*.** PIGEON HAWK.— One observed, May 16, 1917.

***Falco sparverius sparverius*.** SPARROW HAWK.— Several noted during 1917 visit. One observed entering old Flicker excavation, May 18, 1917, was doubtless nesting there.

***Archilochus colubris*.** RUBY-THROATED HUMMINGBIRD.— A nest containing two fresh eggs was found on June 23, 1917, built on a drooping dead limb of a spruce about twenty feet from the ground, in open woods, and another, in similar situation, on June 25. We met with Hummingbirds quite commonly, both in 1917 and 1918.

***Empidonax traillii alnorum*.** ALDER FLYCATCHER.— Common on some of the mud flats and islands where suitable alder growth occurs. Doubtless breeds.

Empidonax minimus. LEAST FLYCATCHER.— Found breeding quite commonly on mud flats and islands, among willow and alder growth. Two nests, each containing four fresh eggs, were found, on June 15, 1918.

Loxia curvirostra minor. CROSSBILL.— A flock of twenty or thirty birds noted, on June 25, 1917, and a similar flock on June 18, 1918.

Plectrophenax nivalis nivalis. SNOW BUNTING.— Several noted, May 16, 1917.

Spizella monticola monticola. TREE SPARROW.— Two were seen on May 16, 1917, and a few on May 28.

Vireosylva olivacea. RED-EYED VIREO.— Quite common in suitable localities in 1917 and 1918, where, for some reason, it had not been previously noted.

Dendroica tigrina. CAPE MAY WARBLER.— Two males and a female were noted on June 3, 1917, and birds of this species were observed not uncommonly thereafter throughout that season. In 1918 they were found quite common and well distributed in all suitable localities. Four nests were located, position and general conditions being remarkably uniform, and agreeing also, in the main, with the nest found at Lake Edward, Quebec, by Dr. Merriam, in 1916.¹ They were in rather high spruce trees, within two or three feet of the extreme top, usually as near the top as suitable site and cover could be secured. All were built in very thick foliage, against the main stem of the tree, resting lightly on twigs and foliage, but fairly secured thereto by webs, and were entirely invisible from the ground, in every case.

On June 22 the first nest held six eggs, two of which were without incubation, the other four being fairly well incubated. The female sat closely until the climber was within two or three feet of the nest, when she dropped almost perpendicularly to the ground. No pounding, jarring or shaking of the tree served to cause her to leave the nest, even for a moment. This nest measured $4\frac{1}{2}$ by $3\frac{3}{4}$ inches outside diameter, and $2\frac{1}{4}$ inches inside diameter; $2\frac{1}{2}$ inches outside depth, and $1\frac{1}{2}$ inches inside depth. Exteriously it was composed of green moss from dry woods ground, interwoven with fine spruce twigs, dry grasses, a few bits of club moss and vegetable down; interiorly of fine dead grass, with a thick lining of hair, feathers and a little fur, the neat and smooth felting of the lining forming a conspicuous feature of differentiation from nests of Blackpoll and Myrtle Warblers. This nest was about thirty-five feet up, in a thick foliated spruce tree, standing in a semicircular opening in the woods, beside a public road, from which, save for the thick foliage in which it was situated, the nest would have been plainly visible. The six eggs measured: $.65 \times .49$, $.66 \times .48$, $.66 \times .50$, $.65 \times .47$, $.66 \times .47$, $.56 \times .42$. They were white in ground color, well marked with blotches, spots and specks of reddish-brown, and a few fine dots of very dark purple or black.

On June 26, the second nest, about thirty-five feet up in a thick, medium-

¹ Nesting of Cape May Warbler at Lake Edward, Quebec, Auk, October, 1917, pp. 410-413.

sized spruce, standing on the border of woods and clearing, contained six fresh eggs. Both nest and eggs were very much like those described by Dr. Merriam.

On June 29, the third nest held five eggs, which seemed to be the complete laying. This nest was about forty feet up, in a thick spruce, in a fairly open spot in the woods, near a trail. Nest and eggs were much like the second.

The fourth nest held six fresh eggs on June 29. It was about forty feet up, in a thick spruce, in fairly open woods. The material was the same as in the first, with the addition of several dead pine needles in the exterior. It measured $3\frac{3}{4}$ by $3\frac{1}{4}$ inches, outside diameter, 2 inches inside diameter, 2 inches outside depth, by $1\frac{3}{4}$ inches inside depth. The eggs measured $.67 \times .53$, $.65 \times .52$, $.68 \times .53$, $.66 \times .53$, $.67 \times .53$, $.67 \times .52$. In color they were much like the second and third sets, and the one described by Dr. Merriam.

It appears to be characteristic of many of these birds that the nest tree selected is fairly openly situated, at least as to one side, although this is not always the case, since other pairs watched were very evidently nesting in trees where it was much more difficult to detect them. The extent to which our experience in the case of the four nests located in 1918 agreed with that of Dr. Merriam in 1916, tends to suggest that nesting conditions as he found and described them are more typical of the Cape May Warbler than those previously described, at least in the localities where we studied them.

Dendroica æstiva æstiva. YELLOW WARBLER.—One seen, June 13, 1917.

Supplementary Notes.

Notes on species treated in our previous paper are amplified by the results of the past two seasons' work as follows:

Gallinago delicata. WILSON'S SNIPE.—A nest with four eggs, well advanced in incubation, was found on June 16, 1917, and with some difficulty the bird was photographed from a crude and very imperfect blind of cedar branches, despite almost continuous showers. Another nest with four eggs, incubation one half or more, was found in the same bog, June 12, 1918. Only the single pair of birds was positively ascertained to inhabit this bog, and none were observed elsewhere in the region.

Ægialitis meloda. PIPING PLOVER.—In 1917 nesting had commenced by May 28, when one nest with one egg and another with two eggs were found. A total of twelve nests with full complements of four eggs each were observed during the season. Nesting was already well under way when we reached the locality on June 11, 1918, four nests with four eggs each being observed that day, and twelve more with complete layings, four eggs each, some well incubated, on June 13. A total of eighteen nests with complete sets of eggs was noted during the season.

Asio flammeus. SHORT-EARED OWL.—A nest containing six well incubated eggs was found, June 11, 1918, on the same beach where the two nests with young were located on June 19, 1915, and within a few feet of the site of one of the earlier nests.

Dryobates villosus leucomelas. NORTHERN HAIRY WOODPECKER.—A nest with young was found in a dead maple stub in a burnt barren, on May 29, 1917. On May 30 of the same year another nest about fifteen feet up in a dead maple stub in a similar situation, contained four eggs, very slightly incubated. On June 9, 1917, a third nest in a cedar telephone pole beside a public road was examined. It was at a height of about nine feet; cavity $14\frac{1}{2}$ inches deep; entrance $2\frac{3}{8}$ inches in height by $2\frac{1}{4}$ inches in width. This nest contained four nearly fresh eggs.

Picoides arcticus. ARCTIC THREE-TOED WOODPECKER.—One of the objects of the early visit to New Brunswick in 1917 was further investigation of the nesting of this species. These woodpeckers, however, appeared to be markedly affected by the general lateness of the season, and at the time of our arrival it is evident that some of them had not commenced digging nest excavations. On May 22 a nest hole was located in a dead maple stub, near the edge of a large burnt barren, and a short distance from the edge of mixed woods. The male was in the cavity at the time of this visit, and the female came to the stub during the time of our stay. On the following day we again visited the nest stub, and with a large auger bit "tapped" the nest hole, finding that no eggs had yet been laid. The male was again in the hole and remained in it until tapping operations were well under way. The tap hole was carefully plugged, and plug and surrounding surface rubbed with soft, rotten wood. This nest was again visited on May 30, on which occasion the male was found sitting on four eggs, incubation having just commenced. The eggs having been removed, the plug was replaced, and while we were still close to the stub the male re-entered and had not emerged when we lost sight of the stub, as we left the locality. During this visit the female was not seen. It may be surmised that when she returned and discovered the condition of affairs, her worthy spouse had some explaining to do.

On June 19 we again visited this nest and found the male looking out of the entrance, as we approached. The nest was found to contain five well incubated eggs. The birds did not again use the nest, although the plug was replaced.

On May 25 we succeeded in "lining" the various flights of a watched female bird, to where a nest excavation was well under way in a live balsam with dead heart, some two hundred feet into the mixed woods, from the edge of a clearing covered with stubs and small second growth. This excavation was at a height of only about four feet.

On June 6 the female bird was found sitting on three slightly incubated eggs. No difficulty was experienced in getting all the photographs desired of this bird about the nest entrance and looking out of it; in fact it was much more difficult to prevent her entering too quickly, even while



ARCTIC THREE-TOED WOODPECKER AND NEST.

we were operating at a distance of ten feet, it often being necessary for one to stand beside the tree, and even tap on it, to detain her.

The nest located on May 22 was at a height of about ten feet. The cavity measured $10\frac{1}{2}$ inches from the lower edge of entrance to bottom. The entrance measured $1\frac{5}{8}$ inches in height and $1\frac{3}{4}$ inches in width. The first set of four eggs measured: $.99 \times .77$, $1.01 \times .79$, $.99 \times .79$, $1.00 \times .76$; the second set of five eggs measured: $.99 \times .80$, $.97 \times .77$, $.98 \times .80$, $.95 \times .76$, $.97 \times .80$.

Within some five hundred feet of the nest that was located on May 25, there was a nest hole of the year before, quite possibly having belonged to the same pair of birds. It was also in a live balsam with a dead heart, at a height of about eight feet. One old nest hole, which quite evidently belonged to this species, was only about two feet from the ground. On June 6 a nest hole about one half completed, was found in a live balsam with dead heart, in open, mixed woods. For some reason this had been abandoned. Some four or five additional pairs of these birds were observed during the first two weeks of June, but further nests were not located.

The somewhat limited data secured seem to give prominence to several facts in the nesting of this woodpecker in the region under consideration. Apparently nest sites are selected indiscriminately, in dead stubs in open cleared ground or burnt barrens, and in the woods, where nests are often in dead-hearted live trees. The birds have a remarkably strong attachment for their nests, as evidenced by re-laying in nest holes from which eggs had been removed, and their disregard of the immediate presence of intruders. The male evidently performs his full share of the work of incubation, as well as care of young. New nest holes are apparently dug each year, and these may not be in the immediate vicinity of nests of the previous year. The site selected tends to be low, only one nest having been noted at a height of over ten feet, while one, as noted, was as low as two feet. Entrances to nest holes are strongly beveled at the lower edge, forming a sort of "door-step," and more or less at sides and even top. While this is true in some cases with the Northern Hairy and some other woodpecker excavations which we have examined, it has not proved so frequent or pronounced. With experience, one can usually identify the nest hole of this species with comparative certainty, by this one feature.

Tyrannus tyrannus. KINGBIRD.—At least one pair noted each year. A nest containing a full complement of three eggs on July 1, 1918, was built in a dead spruce on a fence line.

Nuttallornis borealis. OLIVE-SIDED FLYCATCHER.—A nest found partly built, on a horizontal branch of a balsam, about thirty-five feet from the ground, in open woods, on June 19, 1918, contained two eggs on June 26. As no more eggs had been laid by June 29, it appeared that this was the full set.

Empidonax flaviventris. YELLOW-BELLIED FLYCATCHER.—Additional nests were found, one on June 21 and two on June 27, 1918, each containing four eggs, one of the two latter sets being well incubated, the others fresh.

Euphagus carolinus. RUSTY BLACKBIRD.—A nest with five young, two or three days old, was found June 13, 1917. It was built about four feet from the ground, in a scrubby spruce, in scanty growth of spruce and tamarack, in boggy ground. Exteriorly it was composed of scrubby spruce twigs, with a little usnea moss in the foundation, and lined with dry grass, some of which retained green color. The female was brooding when the nest was found, and remained on the nest until approached within three feet. It was evident that several pairs of birds were breeding in the general vicinity, as was also the case in 1918.

Spinus pinus. PINE SISKIN.—Nesting was just commencing at the close of our 1918 visit. One nest contained three eggs on July 1, and two others were just being completed.

‡ **Melospiza lincolni lincolni.** LINCOLN'S SPARROW.—More common than our earlier experience indicated. In 1917 six nests with four eggs each were located, June 14, 16, 18, 19, 20 and 27. In 1918 a nest with four and another with five eggs were located, June 11, and another with five eggs, June 12.

Vireosylva philadelphica. PHILADELPHIA VIREO.—In the abnormal season of 1917, no signs of nesting by these birds were noted on a visit on June 14, to the locality where they were found in 1916, though two or three of the birds were observed. In 1918, however, five additional nests, five containing four eggs each, and the sixth three (which was apparently the full laying), were located. These corresponded closely with the nests found in 1916, as to locality, situation and material, the dates, however, averaging a little later, two nests containing fresh eggs as late as June 27.

Vermivora peregrina. TENNESSEE WARBLER.—The seasons of 1917 and 1918 considerably amplified our experience with the breeding of these birds. In 1917 nine nests with complete layings of eggs were examined, as follows: June 23, five eggs; June 25, six eggs; June 27, two nests with six eggs each; June 29, two nests with six eggs each; June 30, five eggs, seven eggs; July 2, six eggs. The first nest found in 1918 was June 16, six slightly incubated eggs, another on the same date containing five. Nests with partially incubated eggs were found as late as June 30, on which date, also, the second nest containing young was noted, eggs previously found having hatched by June 29. In 1918 no less than thirty-four nests were found. Of these three were either deserted or not visited later; one contained only three eggs, which the bird assiduously incubated; one contained four eggs; eight contained five eggs each; eighteen contained six eggs each; three contained seven eggs each.

The experience of the past two years has demonstrated that while the boggy ground nesting, previously described, is the really typical and by far the most common form, not a few of these birds nest on higher and dryer ground. One such nest, found June 24, 1918, was well up on a steep hillside, in rather open woods, on fairly dry ground, utterly devoid of moss and grass cover. It was built among a thick growth of dwarf dogwood, and under a tiny, crooked stemmed maple sapling, very well concealed,

and was rather more substantially built than the average nest of this species. In the light of much added experience, our earlier statement that the usual number of eggs is five is subject to correction, since it appears that more full layings of six eggs are to be found than of five. In most respects, however, data acquired in the past two years substantiate that secured in 1915 and 1916, and previously recorded.

Compothlypis americana usneæ. NORTHERN PARULA WARBLER.—While no nest was located, birds were seen on various occasions, both in 1917 and 1918, and in the latter year a male in full song was always to be found about a particular group of trees, where the abundance of usnea moss afforded innumerable ideal nesting sites.

Dendroica castanea. BAY-BREASTED WARBLER.—This species appeared to be much more abundant during the past two summers than in either of the two preceding. Notwithstanding this abundance, in 1917 only five nests with complete layings were found, two of five, two of six, and one of seven eggs. The earliest was not complete until June 29, and it is probable that many nests were still unbuilt at the time we left. In 1918 we examined a total of thirty-eight occupied nests, complete layings being about equally divided between five and six eggs, with one exception, in which case a bird was incubating three eggs. The first nests, with five and six eggs, were found on June 15, and nests were still being built when we left on July 2. No nests with seven eggs were found this year.

Dendroica virens. BLACK-THROATED GREEN WARBLER.—A nest containing five well incubated eggs was found in a little cedar, about four feet from the ground, June 20, 1918.

Dendroica palmarum hypochrysea. YELLOW PALM WARBLER.—In 1917 a total of seven nests was found; June 19, four eggs; June 20, four eggs; June 21, four eggs, five eggs; June 23, four eggs; June 25, four eggs; July 1, five eggs. Lateness of season was more apparent in the nesting of this species than, perhaps, any other. In 1918 the birds appeared less numerous than in previous years, and the only nest located was one containing five newly hatched young, June 12. By the 19th these birds had left the nest.

Setophaga ruticilla. REDSTART.—Two nests with five eggs each were observed in 1918, June 19 and 24.

Penthestes hudsonicus littoralis. ACADIAN CHICKADEE.—On June 5, 1917, a nest was found, nearly or quite completed, in a natural cavity in a cedar stump, about two feet from the ground. On June 16 the bird was sitting hard on five eggs, and was persuaded to come out only with great difficulty. As she laid no more, this was apparently her full laying. On June 24 a nest containing seven quite small young was found in a knot hole in a small live spruce. On June 13, 1918, another nest with young was found in a cavity in the top of a dead and rotten stub, about ten feet from the ground. This nest was very near the site of the 1917 nest with young, very possibly belonging to the same pair of birds.

SPRING ARRIVALS.

Field work in 1917 was commenced at a sufficiently early date to permit of the noting of the arrival of a number of species, and it was further possible to obtain from an experienced guide, who has been with us in all of our field work in this section, closely approximate arrival dates for a number of additional species which had preceded us. While this information is incomplete, migration data from the region in question are not so ample as to preclude a certain amount of value attaching to the publication of the records we thus obtained.

Dates prior to May 16 were, of course, obtained from the guide, and while not exactly accurate, are very nearly so. Figures following dates indicate the number of birds noted on the date of arrival.

- Great Black-backed Gull, June 2 (2).
- Kittiwake, June 2 (considerable numbers).
- Common Tern, May 28 (6).
- American Bittern, May 19 (1).
- Great Blue Heron, June 2 (2).
- Least or Semipalmated Sandpiper or both, May 20 (20) (?)
- Spotted Sandpiper, May 20 (2).
- Black-bellied Plover, May 26 (30-40).
- Chimney Swift, June 6 (10).
- Kingbird, June 16 (2).
- Olive-sided Flycatcher, May 29 (1)
- Bronzed Grackle, about May 7.
- Purple Finch, May 25 (considerable numbers).
- Pine Siskin, June 13 (6).
- Lincoln's Sparrow, May 27 (2).
- Chipping Sparrow, May 21 (1).
- Junco, about May 4.
- Scarlet Tanager, June 6 (1 male).
- Cliff Swallow, May 31 (6).
- Tree Swallow, May 16 (3).
- Bank Swallow, June 2 (6).
- Blue-headed Vireo, May 27 (2).
- Black and White Warbler, May 27 (1).

- Nashville Warbler, June 7 (5).
Tennessee Warbler, June 1 (3).
Northern Parula Warbler, June 18 (3).
Cape May Warbler, June 3 (3—2 males, 1 female).
Yellow Warbler, June 13 (1).
Myrtle Warbler, May 18 (1).
Black-throated Blue Warbler, May 31 (1).
Magnolia Warbler, May 27 (3).
Bay-breasted Warbler, June 5 (1 male).
Black-poll Warbler, May 27 (1).
Blackburnian Warbler, May 31 (1 male).
Black-throated Green Warbler, June 5 (2).
Yellow Palm Warbler, May 18 (2).
Ovenbird, May 31 (3).
Wilson's Warbler, June 10 (6).
Canadian Warbler, June 11 (1 female).
Redstart, June 3 (1).
Red-breasted Nuthatch, May 31 (2).
Olive-backed Thrush, May 18 (1).
Hermit Thrush, May 18 (1).
Robin, about May 4.
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WINTER BIRDS OF EAST GOOSE CREEK, FLORIDA.

BY R. W. WILLIAMS.

FROM November 16 to 24, 1917, I was a guest at the hospitable house of my friend, George E. Lewis of Tallahassee, Florida, at East Goose Creek, Wakulla County, in that State. We were there for a few days' duck hunt and to enjoy the pleasures and recreations of the sea coast. I took advantage of the opportunity to make some observations on the birds there as well as in the woodlands, prairies, and occasional small fields within two miles.

East Goose Creek is the designation of a small portion of the shore and salt marsh of a quiet bit of more or less land-locked and

shallow water of the Gulf of Mexico, lying immediately east of Goose Creek and about eight miles west of the St. Marks Light House and twenty-five miles southwest of Tallahassee. There are not more than seven houses at the place, all temporary lodgings for a few persons who go there intermittently to hunt or fish. The family of Lieut. Ludlow Griscom owns one of these houses. The place is the base for the operations of a few mullet fishermen who sell their catches largely to persons from southern Georgia and sections of Florida accessible thereto, who, in turn, go there in wagons from time to time in the fall and winter, to lay in a supply of fish for personal use.

Goose Creek is a narrow neck of shallow water cutting into the land for a distance of about two miles, in which are numerous oyster beds, mud flats, and small bulrush-covered islets, all exposed at low tide, thereby furnishing capital feeding grounds for Ducks, Shore-birds, Herons, and Gulls. On each side of the Creek vast marshes, thickly covered by bulrushes, extend for goodly distances to the heavily timbered lands and more or less sterile prairies of the region. Along the sandy shore in front of East Goose Creek there is a narrow ridge of slight elevation upon which there were growing a few scraggly bushes, never more than eight feet high, of *Ilex vomitoria*, *Ira frutescens*, and *Lycium carolinianum*, the last bearing a delicate, pretty little blue flower during my visit. In these bushes I found a few Ruby-crowned Kinglets, a Blue-headed Vireo, and numbers of Palm Warblers. The bulrush marshes were ornithologically characterized by Scott's Seaside and Nelson's Sharp-tailed Sparrows, Prairie Marsh Wrens, and Florida Clapper Rails, of which there were goodly numbers. The Sparrows and Wrens kept themselves well hidden down in the dense rushes and rarely appeared to view except when startled by my unexpected approach or to answer my squeaking call. The Rails were seldom seen; indeed, I saw only two; but their loud cries were heard on every side toward dark and at early morning. From their abundance and the unwariness of the two individuals seen, I am pleased to believe that these birds are not in much requisition for sport or food at East Goose Creek.

Just off the road, in what I call the prairie, about half a mile back toward the woodlands, is a small, shallow, muddy pond,

surrounded by bulrushes and rank weeds. I passed this pond nearly every day and always saw a trio of stately and imperturbable Greater Yellow-legs standing close together in or near its center. Passing further back, the pine, scrub palmetto, and grassy area is reached. Here the Yellow Palm and Myrtle Warblers were abundant, and Phœbes, White-eyed Towhees, Maryland Yellow-throats, Pine Warblers, Mockingbirds, Cardinals, Loggerhead Shrikes, and Brown-headed Nuthatches were fairly represented. This area passed, we reach the vast and magnificent hammock lands supporting giant pines, magnolias, hickories, cedars, sweet gums, live and white oaks, and an occasional cluster of immense cypresses, everywhere interspersed with handsome, graceful cabbage palmettos which often attain a height of at least twenty-five feet. Underbrush is nowhere so dense as to impede progress or observation to any serious extent. This hammock was alive with birds. I could almost imagine that all the Ruby-crowned Kinglets in America had congregated in those woods. Brown Creepers were uncommonly numerous, and Hermit Thrushes were abundant. Downy and Red-bellied Woodpeckers were quite common, and I had the great satisfaction of seeing and listening to the imperious notes of no less than half a dozen majestic Pileated Woodpeckers. Nestled down in the very bosom of this hammock, I ran across a small, grassy pond, completely surrounded and hidden from view by a dense fringe of tall saw grass growing in the black mud out to the very water's edge. My companion that day was Miss Alice Corry of Quincy, Florida, a charming and enthusiastic young lady, who had gone out with me to learn what she might about the birds of the region. We felt sure that a few Wild Ducks must be feeding in this pond, but the problem was how to find it out without flushing them before we could come into range for a shot. We cautiously entered the saw grass, but quickly discovered that if we would reach the edge of the water we must suffer laceration of our hands and the discomfort of wet, muddy shoes and clothing. Nevertheless, we persisted, and upon reaching an open view of the pond I saw, well within gun range, a female Wood Duck energetically feeding in some open water between two grassy plots. The bird took no alarm at our presence and continued its quest for food. As this species is not now very

abundant and also is protected for a term of years by the Federal Migratory Bird Law, I had no purpose to shoot it. I still felt that other ducks must be somewhere on the pond, but our unusually loud conversation failed to stir them. We made our way back to dry land and walked around to another side of the pond. By this time our hands were actually dripping blood from the numerous and in some instances deep, cuts inflicted by the saw grass. We decided that my companion should fire her gun and I would be ready for any legitimate game that might flush in consequence. At the explosion, a large flock of ducks rose, out of which I knocked down two, but recovered only one — a male Pintail. On another occasion I killed a Green-winged Teal out of a flock of ducks, including some Mallards, flushed from this pond, the vicinity of which, I may add, was a favorite resort for several species of the smaller birds. Here, early in the mornings, I found Brown Thrashers, White-throated Sparrows, Ruby-crowned Kinglets, Golden-crowned Kinglets, Maryland Yellow-throats, and Orange-crowned Warblers, quite abundant. I was informed that Wild Turkeys are occasionally met with in these woods. George Lewis killed one there in November, 1916.

For a general pleasure outing, weather conditions during my stay at East Goose Creek could hardly have been improved. We slept on the porch most comfortably, despite the chill of the night atmosphere. Each day was ushered in by the raucous voices of hundreds of Florida and Fish Crows which passed in a steady stream just beyond land in front of our house. They were always headed in the same direction,—toward their feeding grounds somewhere to the westward of Goose Creek. They returned pretty consistently over the same route toward dark every evening. I did not have an opportunity to follow them to their roost which, apparently, is not many miles east of Goose Creek. Without much doubt, this is the St. Marks roost referred to by Mr. Kalmbach in his article entitled "Winter Crow Roosts" in the 'Yearbook' of the Department of Agriculture for 1915, page 92.

Large flocks of Canada Geese were always in sight or hearing. They were feeding out in the bay around the grassy islands a mile or two from the mainland.

Among the ducks at Goose Creek I was surprised to note the

great preponderance of Mallards and Pintails. The quacking of the former was heard at all times of day as they fed, out of gun range, in the Creek, or rested in the open water out in front of the main shore. One afternoon, at low tide, we discovered a large flock of Mallards and Pintails, with a few individuals of other species, feeding on a mud flat in the Creek, but they took wing before we could arrive within gun range.

Great Blue Herons were fairly numerous all along the shores at both high and low tide. Least and Red-backed Sandpipers were not uncommon and fed together in small flocks along the beach and on the mud flats and oyster beds. Ospreys and Marsh Hawks were constantly beating to and fro, the former over the waters and the latter over the marshes and prairies. Like George Cavendish Taylor (*Ibis*, IV, 135), I observed that the Ospreys while flying with fish in their talons invariably hold them in a position parallel with the birds' bodies and with the fish's head always foremost.

I was delighted one day to see two Snowy Egrets feeding at a small, isolated pond, situated on the edge of one of the prairies and at the commencement of a rather heavily timbered area. Not only the woods and prairies, but also the salt marshes, oyster beds, mud flats, and shores were infested by "razor-backs," — a local name for the semi-wild hogs that roam at large in many portions of Florida. They are essentially omnivorous and I can well imagine that the ground-nesting species of birds in that region have somewhat of a struggle to perpetuate their kind. My observations of the birds at East Goose Creek were conducted without special or systematic effort, as I had gone there primarily for other purposes. Nevertheless, I recorded ninety species during my brief visit, a list of which concludes this paper.

Goose Creek has already made its *début* in ornithological literature. Lieut. Ludlow Griscom published a nominal list of 95 species seen there by him in December, 1915. (*Sixteenth Christmas Bird Census, Bird-Lore*, XVIII, 31). Of these, 85 were seen on the 29th and 10 on two other days. His estimate of the total number of individuals of the 85 species seen on the 29th was 7,085. In his list are 21 species which I did not see, namely, Pied-billed Grebe, Loon, Laughing Gull, Royal Tern, Florida Cormorant,

Ring-necked Duck, Baldpate, Shoveller, Redhead, Bufflehead, Semipalmated Sandpiper, Sanderling, Turnstone, Florida Barred Owl, Goldfinch, Savannah Sparrow, Louisiana Seaside Sparrow, Towhee, Winter Wren, Short-billed Marsh Wren and Blue-gray Gnatcatcher. My list includes 16 species which he did not see. Perhaps he did not visit the woodlands and fields covered by me, which would account for the absence from his list of most of these 16. It is likely, also, that had I prosecuted my explorations as thoroughly and as systematically as he did his, I would have accounted for a number of species in his list which are absent from mine. Our combined lists show 111 species recorded at East Goose Creek and in the immediate vicinity in the months of November and December alone. With the summer residents and spring and fall migrants added to this number, it is apparent that East Goose Creek is something of an ornithological field.

LIST OF SPECIES.

1. **Colymbus auritus.** HORNED GREBE.—Several seen on the main waters of the bay and on the Creek. They exhibited very little fear of us. Two were mistaken for ducks and shot by one of our party.
2. **Larus argentatus.** HERRING GULL.—Several seen daily around the main waters of the bay and over the Creek.
3. **Larus delawarensis.** RING-BILLED GULL.—A few seen from time to time around the main waters of the bay.
4. **Pelecanus occidentalis.** BROWN PELICAN.—Two were seen one day flying together over the Creek.
5. **Mergus serrator.** RED-BREASTED MERGANSER.—One was killed by Mr. Robert Gamble in the Creek.
6. **Lophodytes cucullatus.** HOODED MERGANSER.—We picked up a wounded bird of this species on the shore of a small island in the Creek.
7. **Anas platyrhynchos.** MALLARD.—Common on all the waters we visited. This and the Pintail were the predominant ducks at and around Goose Creek. We also found them in a fresh water pond, back in the hammock lands. They mingled freely with other species of ducks, especially the Pintails.
8. **Anas rubripes.** BLACK DUCK.—Fairly abundant and found in flocks with the other species of ducks.
9. **Chaulelasmus streperus.** GADWELL.—One of Mr. Gamble's day's bags contained two of this species, killed in the Creek.
10. **Nettion carolinense.** GREEN-WINGED TEAL.—I procured one

out of a flock of Mallards and Pintails flushed from a fresh water pond back in the hammock lands.

11. ***Dafila acuta***. PINTAIL.—Common on all the waters we visited. This and the Mallard were the predominant ducks at and around Goose Creek. We also found them in a fresh water pond back in the hammock lands. They mingled freely with other species of ducks, especially the Mallards.

12. ***Aix sponsa***. WOOD DUCK.—I saw a female feeding in a fresh water pond back in the hammock lands.

13. ***Marila affinis***. LESSER SCAUP DUCK.—One of Mr. Gamble's day's bags exhibited to me contained two of this species, killed on the Creek.

14. ***Branta canadensis canadensis***. CANADA GOOSE.—On two or three occasions I saw a flock containing at least 250 individuals, and daily saw flocks of lesser size. They were quite wild and wary, but their honking was heard at all hours of the day. They frequented the open waters of the bay and the edges of the large marshes about two miles in front of East Goose Creek. We did not succeed in procuring a single specimen.

15. ***Ardea herodias herodias***. GREAT BLUE HERON.—Fairly numerous at all times, feeding on the shores and in the shallow waters of the bay and the Creek.

16. ***Egretta candidissima candidissima***. SNOWY EGRET.—On the morning of November 22, I saw two of these dainty birds standing close together on the muddy shore of a small, isolated pond in one of the prairie areas about three-quarters of a mile back of East Goose Creek.

17. ***Hydranassa tricolor ruficollis***. LOUISIANA HERON.—Two were seen one morning feeding in the shallow water, at low tide, on a mud flat in the Creek.

18. ***Florida cærulea***. LITTLE BLUE HERON.—On several occasions I saw one or two feeding, at low tide, in the shallow water off the main beach.

19. ***Rallus crepitans scotti***. FLORIDA CLAPPER RAIL.—Fairly abundant in the bulrush marsh between the Creek and the road. They were very noisy near and just after nightfall and in the early morning. Although I explored a large section of the marsh I succeeded in flushing only one, and that close to the Gamble house within a few yards of the road leading to the East Goose Creek beach. Only one other bird was actually seen. It was feeding just before dark in a small open plot between the edge of the bulrushes and the beach. Mrs. Lewis called me from the house to see it. The specimen was collected.

20. ***Gallinago delicata***. WILSON'S SNIPE.—On several occasions I flushed one or two in the bulrush marsh between the Creek and the road.

21. ***Pisobia minutilla***, LEAST SANDPIPER.—Quite abundant on the main beach and on the oyster beds, mud flats, and shores of the Creek, at low tide, where they mingled freely with Red-backed Sandpipers and Killdeers. They were so indifferent to us that I concluded they had not recently been shot at. A few were flushed on several occasions from small, barren spaces in the bulrush marsh.

22. *Pelidna alpina sakhalina*. RED-BACKED SANDPIPER.— Fairly numerous wherever the Least Sandpipers occurred, as above stated. They, too, showed little fear of us, and when one day a Least Sandpiper was unintentionally wounded by a shot from my gun, and fluttered for some moments in the spot where shot, two Red-backed Sandpipers, moved by commiseration for a companion in distress or by some other very strong impulse, flew to the spot and hovered around the sandpiper with half extended wings for some seconds.

23. *Totanus melanoleucus*. GREATER YELLOW-LEGS.— Only three were seen. These I found practically every day of my visit, feeding in a small, shallow, muddy pond just off the road leading to East Goose Creek through one of the prairie areas about half a mile back. Whenever I saw them they were standing abreast, erect, motionless, and apparently regarding us with some degree of doubt as to whether we were hostile or not.

24. *Catoptrophorus semipalmatus inornatus*. WESTERN WILLET.— I did not attempt to collect a specimen, but there is little doubt that those I saw, about four in number, flying over the main beach, were of the western form, as the eastern bird winters extralimally.

25. *Squatarola squatarola*. BLACK-BELLIED PLOVER.— Only one was seen, flying over the main beach.

26. *Oxyechus vociferus*. KILLDEER.— Fairly abundant about all the waters visited except the saw grass pond in the hammock, where conditions were not suitable for them. They mingled freely with the other shore birds on the beach, mud flats, and oyster beds.

27. *Ægialitis semipalmata*. SEMPALMATED PLOVER.— Only one was seen, feeding on a mud flat in the Creek with Least and Red-backed Sandpipers.

28. *Zenaidura macroura carolinensis*. MOURNING DOVE.— Several seen from time to time feeding on the damp, sandy spaces in the bulrush marsh between the main beach and our house.

29. *Cathartes aura septentrionalis*. TURKEY VULTURE.— Fairly common around the Creek, bulrush marshes, and in the back country.

30. *Catharista urubu*. BLACK VULTURE.— Only two seen, back near the heavily timbered areas. This species occurs much less abundantly in the maritime sections than the preceding.

31. *Circus hudsonius*. MARSH HAWK.— Fairly common over the bulrush marshes and prairies.

32. *Accipiter velox*. SHARP-SHINNED HAWK.— One was seen to dash into the cluster of water oaks and cedars near the Gamble house.

33. *Accipiter cooperi*. COOPER'S HAWK.— Two were seen flying over the marsh in front of our house.

34. *Buteo borealis borealis*. RED-TAILED HAWK.— One was seen to enter a heavy woodland from an old field about two miles back of East Goose Creek, and the dead body of another was lying in front of the house of our laundress near the same place.

35. *Buteo lineatus alleni*. FLORIDA RED-SHOULDERED. HAWK.—

Several were seen back in the prairies and in the immediate vicinity of the woodlands.

36. *Buteo platypterus*. BROAD-WINGED HAWK.— One seen flying over an old field about two miles back of East Goose Creek.

37. *Haliaeetus leucocephalus leucocephalus*. BALD EAGLE.— Several seen, from time to time, in both adult and immature plumages, flying over the Creek and adjacent marsh.

38. *Falco columbarius columbarius*. PIGEON HAWK.— One seen flying within three or four feet of the ground between ordinary high water mark and the sandy ridge along the main beach in front of East Goose Creek.

39. *Falco sparverius sparverius*. SPARROW HAWK.— Fairly abundant. Usually seen circling over or flying across the bulrush marsh between the Creek and the road.

40. *Pandion haliaeetus carolinensis*. OSPREY.— Fairly common. Seen daily over all the waters of the bay and Creek, occasionally with fish in their talons. They seemed unafraid of us and on several occasions flew directly over us, although we were in plain sight of the birds for some moments before they reached us.

41. *Bubo virginianus virginianus*. GREAT HORNED OWL.— Shortly after daybreak one morning, I heard the notes of one from a heavy woodland on the western side of the Creek.

42. *Ceryle alcyon alcyon*. BELTED KINGFISHER.— Fairly common around all the salt water sections visited.

43. *Dryobates pubescens pubescens*. SOUTHERN DOWNY WOODPECKER.— Quite common in the hammocks and other wooded areas within two miles of East Goose Creek.

44. *Dryobates borealis*. RED-CKOAKED WOODPECKER.— One seen, in a pine grove about two miles back of East Goose Creek.

45. *Sphyrapicus varius varius*. YELLOW-BELLIED SAPSUCKER.— Three seen, in the hammocks about a mile and a half back of East Goose Creek.

46. *Phlœotomus pileatus pileatus*. PILEATED WOODPECKER.— I had the rare pleasure of seeing six of these birds, — a handsome race, once numerous but now almost in the shadow of extinction over a large area of its normal range. They were at all times noisy, as is usual with the species. Each bird exhibited a spirit of restlessness and excitement which seemed quite apart from any anxiety over our presence in their haunts. All were seen in the magnificent hammocks within two miles of East Goose Creek.

47. *Centurus carolinus*. RED-BELLIED WOODPECKER.— Quite abundant in the hammock lands, where they were somewhat noisy. On several occasions, as I stood in one of these fine hammocks, I listened to a medley of notes of Downy, Pileated, and Red-bellied Woodpeckers and Flickers. It was no mean treat, I can avouch.

48. *Colaptes auratus auratus*. FLICKER.— Not uncommon in the

hammocks where I found other woodpeckers. It is possible, if not probable, that some of these birds were of the northern form (*luteus*). Indeed, it is possible that they all were such; but as I took no specimens for examination, I have listed the resident form.

49. **Sayornis phœbe.** PHEBE.—I was surprised to find these birds so abundant. They were usually in brushy and weedy areas sparsely dotted with medium sized pines.

50. **Cyanocitta cristata florincola.** FLORIDA BLUE JAY.—Met with in all the timbered areas visited, and on several occasions one was seen in the pines close to our house.

51. **Corvus brachyrhynchus pascuus.** FLORIDA CROW.—The crows of the East Goose Creek region, including the Fish Crows, had amalgamated for the winter, with feeding grounds somewhere west of the Creek. I saw them wending their way to these grounds, every morning, in a steady stream and returning over the same general route, to their roost east of the Creek, every evening. I did not find them to any appreciable extent beyond this beaten path. A stray one was now and then seen feeding on an oyster bed in the Creek.

52. **Corvus ossifragus.** FISH CROW.—The above note on the Florida Crow is applicable alike to this species, with this addition, that the Fish Crows seemed to be more numerous.

53. **Agelaius phœniceus floridanus.** FLORIDA RED-WINGED BLACK-BIRD.—Numerous, in flocks around the bulrush marshes.

54. **Sturnella magna argutula.** SOUTHERN MEADOWLARK.—Fairly common in the prairies and brushy pine areas, and not infrequently flushed in the bulrush marshes.

55. **Quiscalus quiscula aglæus.** FLORIDA GRACKLE.—These were seen in flocks several times, flying low over the Creek and adjacent marshes.

56. **Megaquiscalus major major.** BOAT-TAILED GRACKLE.—Common, in the bulrush marshes and on the oyster beds and mud flats in the Creek. They were quite noisy at all times.

57. **Poœcetes gramineus gramineus.** VESPER SPARROW.—Quite abundant in an old corn field about two miles back of East Goose Creek.

58. **Passerherbulus nelsoni nelsoni.** NELSON'S SHARP-TAILED SPARROW.—A specimen taken was identified by Mr. Oberholser as of this race. They were quite common in the marsh between the Creek and the road.

59. **Passerherbulus maritimus peninsulæ.** SCOTT'S SEASIDE SPARROW.—Three specimens taken were identified by Mr. Oberholser as of this race. They were numerous in all the bulrush marshes of the mainland and in those about two miles out in front of East Goose Creek. They were difficult to flush and when flushed quickly disappeared again in the thick masses of bulrushes.

60. **Zonotrichia albicollis.** WHITE-THROATED SPARROW.—A few were seen in the low trees and growths on the edge of the saw grass pond in the hammock about a mile and a half back of East Goose Creek. I was somewhat surprised to find them in such a heavily timbered section.

61. *Spizella passerina passerina*. CHIPPING SPARROW.— Numerous in an old corn field about two miles back of East Goose Creek.

62. *Melospiza melodia melodia*. SONG SPARROW.— A few were met with in all the sections visited, except the densely timbered areas. In the bulrush marshes they were found only on and near the edges, never in the interior sections.

63. *Melospiza georgiana*. SWAMP SPARROW.— A few were seen in the bulrushes and tall weeds around the occasional marshy places in the prairies.

64. *Pipilo erythrophthalmus alleni*. WHITE-EYED TOWHEE.— A specimen taken in the sparsely timbered, scrub-palmetto and weedy area on the side of, and touching, the East Goose Creek road about a mile back, proved to be of this race, and I assume that most, if not all the Towhees seen and heard during my visit were such. They were fairly common. Lieut. Griscom includes the common Towhee in his list.

65. *Cardinalis cardinalis cardinalis*. CARDINAL.— Fairly common in the dry land areas back of East Goose Creek.

66. *Iridoprocne bicolor*. TREE SWALLOW.— Quite abundant. They were seen at various times flying low, back and forth, over the bulrush marshes; also, at times, at a greater elevation.

67. *Lanius ludovicianus ludovicianus*. LOGGERHEAD SHRIKE.— Fairly common in the open areas of dry land sparsely dotted with pines and stunted live oaks. Occasionally one visited the three or four pines close to our house.

68. *Lanivireo solitarius solitarius*. BLUE-HEADED VIREO.— Only one seen. It was in the low bushes on the sandy ridge a few feet back of ordinary high water mark near the landing at East Goose Creek.

69. *Vermivora celata celata*. ORANGE-CROWNED WARBLER.— Fairly numerous in the hammock lands.

70. *Dendroica coronata*. MYRTLE WARBLER.— Met with in large numbers wherever there were trees.

71. *Dendroica dominica dominica*. YELLOW-THROATED WARBLER.— Fairly common in the hammock lands.

72. *Dendroica vigosii*. PINE WARBLER.— Fairly common in the hammock lands and in the pine land areas.

73. *Dendroica palmarum palmarum*. PALM WARBLER.— Common both in the pine and stunted live oak areas and in the scrubby bushes on the sandy ridge at the East Goose Creek beach.

74. *Dendroica palmarum hypochrysea*. YELLOW PALM WARBLER.— Common in the pine and stunted live oak areas; usually found on and close to the ground.

75. *Geothlypis trichas ignota*. FLORIDA YELLOW-THROAT.— The only specimen taken was identified as one of this race. This handsome little warbler was common in the country immediately back of East Goose Creek where it frequented the damp areas grown up with rank weeds and grass. I also found it in the scrubby bushes and palmettos on the edge of the woodlands. A few were always seen in the saw grass around the pond

in one of the large hammocks. The rich yellow of its under-parts stood out in conspicuous contrast with the rich black of its head and cheeks as the bright rays of the sun enveloped it in the dark green maze of its haunts.

76. *Anthus rubescens*. PIPIT.—Quite common on the open sandy areas of the bulrush marshes adjacent to the waters of the bay and the Creek.

77. *Mimus polyglottos polyglottos*. MOCKINGBIRD.—Usually found in the open, sparsely timbered areas and in the brush on each side of the road. One was occasionally seen in the pines close to our house.

78. *Toxostoma rufum*. BROWN THRASHER.—Abundant in the more heavily timbered areas, especially in the hammocks.

79. *Thryothorus ludovicianus ludovicianus*. CAROLINA WREN.—Fairly abundant in the hammocks.

80. *Troglodytes aedon aedon*. HOUSE WREN.—A few were found in the brushy areas in the hammocks.

81. *Telmatodytes palustris iliacus*. PRAIRIE MARSH WREN.—Marsh Wrens were very abundant in all the bulrush marshes. Only two specimens were taken. One has been identified by Dr. Oberholser as of this subspecies and the other as of his subspecies, the Louisiana Marsh Wren (*T. p. thryophilus*), but as the A. O. U. Committee has not yet admitted the latter subspecies to the Check List, thereby leaving its validity in doubt, I have not assigned it a status in this list. The Marsh Wrens were as reluctant to emerge from the reclusive depths of their haunts as were the Seaside Sparrows, and I had some difficulty in procuring the two specimens.

82. *Certhia familiaris americana*. BROWN CREEPER.—Abundant in the hammocks, where they mingled freely with Kinglets, Titmice, Chickadees, and Downy Woodpeckers.

83. *Sitta pusilla*. BROWN-HEADED NUTHATCH.—Several found in the open, sparsely timbered, pine land areas.

84. *Bæolophus bicolor*. TUFTED TITMOUSE.—Fairly numerous in the more heavily timbered areas, especially in the hammocks.

85. *Penthestes carolinensis carolinensis*. CAROLINA CHICKADEE.—Fairly numerous in all the timbered areas, especially in the hammocks.

86. *Regulus satrapa satrapa*. GOLDEN-CROWNED KINGLET.—A few were seen, in the hammocks, but not elsewhere.

87. *Regulus calendula calendula*. RUBY-CROWNED KINGLET.—They were legion in the hammocks and some were found in the low bushes on the sandy ridge separating the bulrush marsh from ordinary high water mark on the beach.

88. *Hylocichla guttata pallasi*. HERMIT THRUSH.—Abundant in the hammocks, where they spend most of their time on and near the ground.

89. *Planesticus migratorius migratorius*. ROBIN.—I was surprised to find this bird so scarce. I saw it only once, when a small flock was discovered flying high near one of the hammocks.

90. *Sialia sialis sialis*. BLUEBIRD.—Quite abundant, in small flocks here and there throughout the sparsely timbered areas.

NOTES ON THE SUMMER BIRDS OF THE UPPER
YUKON REGION, ALASKA.

BY ELIOT BLACKWELDER.

IN the summer of 1915 I made a journey to that part of eastern Alaska lying south and southwest of the Yukon River, and northeast of the Tanana. Although the object of the trip was geological, the birds were given such attention as opportunity permitted. Not being properly equipped for collecting specimens, my chief reliance for identification was a ten power Terlux binocular glass. The route traversed was along the Yukon River from White Horse in Yukon territory to Circle, thence westward across the mountains to the White Mountain range near the head of Beaver Creek. We descended Beaver Creek to the Yukon Flats and emerged upon the Yukon itself near Beaver village—about seventy miles below Ft. Yukon. From that point we returned up the river as we came.

The region has been sufficiently described by previous explorers,¹ and especially by members of the U. S. Geological Survey. In addition, ornithological investigations have been made along the Yukon. No ornithologist, however, has visited the remote White Mountains.

Most of the region is mountainous, but the relief is less than 3000 feet, and the highest peaks but little over 5000. Along the rivers there are some spacious basins. Of these the largest is the so-called Yukon Flats between Circle and old Fort Hamlin, an area of more than 7000 square miles.

Timber-line is about 2500 feet above sea level, but varies according to the direction of the slope, the nature of the soil and some

¹ Dawson, G. M., Explorations in Yukon and northern British Columbia: Geol. Survey of Canada Rept. for 1887-1888. Report B.

Prindle, L. M., A geological reconnaissance of the Fairbanks Quadrangle, Alaska: U. S. Geol. Survey Bull. 525, 1913.

Russell, I. C., Notes on the surface geology of Alaska: Bull. G. S. A. Vol. 1, 1890, pp. 72-99; 154-155.

Spurr, J. E., Geology of the Yukon gold district, Alaska: U. S. Geol. Survey Ann. Rept. 18, pt. 3, pp. 87-392, 1897.

other factors. This ill-defined limit separates the two distinct life zones of the region,— the Arctic-Alpine above and the Hudsonian below. Of the two, the latter is the larger in area and comprises all of the principal valleys. It is characterized by a dense growth of spruce, in which the trees are usually of rather small size. Near timber-line they are also of low stature. Along some of the larger streams we found spruce trees more than two feet in diameter, but they are by no means common. Alders, aspens, and willows form dense thickets along the streams and even around hillside springs. The white birch grows along the bottoms of the larger valleys, such as that of Beaver Creek. Although grass and other forms of herbage spring up in many places on the south-facing slopes, the prevailing cover of the ground is a thick carpet of brownish moss and lichens, which is evidently a botanic complex of many distinct species. This moss complex prevails not only in the spruce forest, but almost everywhere that it can gain foothold. Over certain large areas, especially where the slopes are gentle or nearly flat, it forms what is locally known as “nigger-head tundra,” in which the tussocks apparently consist of certain coarse bunch-grasses, half smothered by the thick carpet of moss and lichens. Walking over this tundra is very fatiguing, owing to the insecurity of foothold and the soft yielding nature of the turf. Early in August dwarf blueberries are very abundant and characteristic of the tundra. A little later a small prostrate variety of cranberry ripens, especially in the more moist situations.

The characteristic summer birds of the spruce forests are the Hudsonian Chickadee, the Ruby-crowned Kinglet, the Robin, the Slate-colored Junco, and the Alaskan Jay. A species of rabbit is about the only mammal commonly seen, although there is evidence that the moose, black bear, lynx, and other large mammals are rather common.

At timber-line the spruce becomes scattered and stunted, through a narrow zone in which the dwarf birch and dwarf willow are abundant. The former generally grows in dense thickets, which are a serious obstacle to travel. Most of the alpine zone, however, is characterized by the usual covering of mosses and various kinds of grassy and flowering plants. In many places the gentler mountain slopes are veritable flower gardens during June and July.

In the summer this zone is inhabited by caribou, in roving groups or individuals, a few little bands of Dall's White Sheep, the Ptarmigans, Longspurs, Wheatears, Gray-crowned Rosy Finches, Pipits, and Duck Hawks. Neither reptiles nor amphibians were observed, and even insect life, with the exception of the ubiquitous mosquito, appears to be rather scarce.

The Yukon Flats are a plain covered with alternating swamps, lakes and forests, and permeated by meandering rivers tributary to the Yukon.

The luxuriant verdure of the Flats seems to pass through a definite ecologic cycle in which three stages are tolerably distinct. The newly abandoned gravel and sand bars are soon overgrown with dense willows, and the silt banks by horse-tail (*Equisetum*) reeds and tall grasses. When no longer subject to frequent overflow, the poplars, chiefly the Balm-of-Gilead and a species of aspen, grow up among the willows, smother them and form dense thickets. During the latter part of this stage, on fairly well drained land, the white paper-birch develops and may grow to a diameter of more than a foot. In the shade provided by the poplar and birch thickets, the spruce is slowly seeded and, eventually growing to a greater height, exterminates both of them by its deep shade. The permanent forest has then become a solid stand of spruce, in which the trees range up to about two feet in diameter. The characteristic small growth in its dark recesses consists of alders, the red currant, certain ferns, and a thin carpet of lichens and mosses. The bayous and swamps have a distinctive flora of reeds, grasses, and especially mosses, which apparently prevent the growth of trees even when the swamp has become solidly filled. The blueberries and the low-bush cranberries are locally plentiful on these moss-covered swamp flats and on such as have not been appropriated by the forests. The berries are, however, very much less characteristic of the Flats than of the hilly region to the south.

Although there is a definite tendency for the permanent spruce forest to spread over the entire area, actual observations show that it is decidedly patchy in its distribution, and in some areas covers only a small proportion of the ground, in comparison to the swamp, willow, and poplar floras. This is apparently due in part to forest fires, but chiefly to the annual inroads of the meandering streams.

After a spruce grove has once been mowed down by the gradual advance of a meander, it evidently requires several decades and probably more than a century for the spruce to regain its lost territory, which meanwhile has passed through the willow and poplar-birch stages.

During the short summer season the wilderness of the Flats is well stocked with birds. While drifting down Beaver and Birch Creeks we were frequently attended by solitary Loons (*Gavia stellata*) which now and then broke the general stillness with their weird and almost human cries. Several companies of Brown Cranes were seen stalking along the gravel bars, and hundreds of Geese were congregating in flocks preparatory to their southward flight. Large Horned Owls were so numerous along the willow-lined banks of Birch Creek that in one day we saw six of them in broad daylight. Probably the most common birds in the Flats are the various species of Ducks and Phalaropes which breed in countless numbers in the many scattered ponds and bayous.

The following detailed notes may have some value as coming from a remote and little known region:

Colymbus auritus(?). EARED GREBE.—Two seen August 12 on the sluggish lower course of Birch Creek in the Yukon Flats.

Gavia pacifica. PACIFIC LOON.—Several seen August 15 on the side channels of the Yukon, 50 miles below Ft. Yukon.

Gavia stellata. RED-NECKED LOON.—Common on Beaver Creek in August both in the mountains and on the flats. Often swam ahead of our raft for miles keeping at a distance of about 1000 feet and frequently voicing its weird wail.

Larus argentatus(?). HERRING GULL.—Common along the Yukon. Nests on the gravel bars of Beaver Creek, in mountains. Young able to fly were observed about August 1. This is the northwestern limit of its known breeding range.

Mergus serrator. RED-BREASTED MERGANSER.—Rather common on the larger creeks and on the Yukon. Young not yet able to fly, seen August 10. Last seen August 26 on the Lewes River near Lake Labarge.

Mareca americana. AMERICAN WIDGEON.—The most common duck on the marshy lakes of the Birch Creek flats.

Nettion carolinense(?). GREEN-WINGED TEAL.—A teal, apparently this species, rather common in the Beaver Creek flats early in August.

Dafila acuta. PINTAIL.—Two seen after being shot at Dawson, August 20.

Histrionicus histrionicus. HARLEQUIN DUCK.—A few, singly or

in pairs, were seen on the swift upper tributaries of Beaver Creek in July.

Branta canadensis hutchinsi (?) HUTCHINS' GOOSE.—Nests along Beaver creek from Willow Creek to the flats. Flocks were seen on the gravel bars in the middle of August and again on the Yukon flats. Some young still unable to fly were found about August 5.

Grus canadensis. LITTLE BROWN CRANE.—Common in August on Beaver creek at the edge of the flats. One that was shot had blueberries in its crop. At this time they go in small flocks of three to eight. When alarmed they give out a loud guttural croak or clatter that sounds like the rattling of a pebble in a tin can.

Gallinago delicata. WILSON'S SNIBE.—One seen at Dawson August 20. Common in the marshy flats of Birch Creek, July–August 15. Has a habit of flying overhead in the evening like a nighthawk, although more rapidly, meanwhile making a strange whistling sound.

Pisobia bairdi. BAIRD'S SANDPIPER.—Only four were seen.

Helodromas solitarius cinnamomeus. WESTERN SOLITARY SANDPIPER.—A few were seen along Beaver Creek in the flats.

Actitis macularia. SPOTTED SANDPIPER.—Widely scattered along the Yukon and its tributaries far back into the mountains.

Lagopus sp. PTARMIGAN.—A Ptarmigan, with much white on the wings and tail, is common on heather slopes above timber-line. Young learning to fly July 1–10.

Circus hudsonius. MARSH HAWK.—Common in the marshes of the Birch Creek flats.

Accipiter velox. SHARP-SHINNED HAWK.—Common on lower Birch Creek.

Buteo sp.—Large soaring hawks of unknown species from dark brown to light gray seen throughout the region.

Archibuteo lagopus sancti-johannis. AMERICAN ROUGH-LEGGED HAWK.—Several seen in the Birch Creek flats.

Aquila chrysaëtos. GOLDEN EAGLE.—Not uncommon in the mountains west of Circle. One pair with fledglings was found occupying a bulky nest of sticks in a high dolomite crag on the southeast slope of the White Mountains, July 17.

Haliaëetus leucocephalus alascanus. ALASKA BALD EAGLE.—Not very common. Two adults were seen in the White Mountains and three in the flats of Beaver Creek early in August.

Falco peregrinus anatum. DUCK HAWK.—Common wherever suitable nesting sites are available among high crags or rock spires in the Yukon canyon and especially in the White Mountains. It is very pugnacious, and often attempts to drive an intruding man out of its locality by diving at him repeatedly and with incessant screeching.

Scotiaptex nebulosa nebulosa. GREAT GRAY OWL.—The wings and head of a dead bird were seen in a cabin at Beaver. The bird had been killed nearby, but the date was not known. Another skin was nailed up on a house at Yukon Crossing, Y. T.

Bubo virginianus saturatus. DUSKY HORNED OWL.— A rather dark variety, with prominent sulphur patches on the sides. Fairly common everywhere but actually abundant (six seen in one day) along the Beaver and Birch Creek flats. Often hunts in daylight. The call of the male is shorter and of lower pitch than that of the female. A parent bird was seen teaching a full-grown young to hunt on August 13.

Surnia ulula caparoch. HAWK OWL.— Not uncommon in the tundra and scrub spruce areas on Beaver Creek. Seen hunting in daytime.

Ceryle alcyon alcyon. BELTED KINGFISHER.— Locally common, in the flats of Beaver and Birch Creeks, and on the Yukon only above White River. None were seen elsewhere. It requires clear water, presumably in order to see its prey.

Picoides americanus fasciatus. ALASKA THREE-TOED WOODPECKER.— Two seen late in July, in thick spruce forest in the bottom lands of Beaver Creek, below the mouth of Fossil Creek.

Colaptes auratus luteus. NORTHERN FLICKER.— Common in the Birch Creek flats and locally along the Yukon.

Chordeiles virginianus virginianus. NIGHT HAWK.— One seen in the upper Yukon valley, near the Hootalinqua (Teslin River), August 26.

Sayornis sayus. SAY'S PHOEBE.— A somber flycatcher apparently of this species was fairly common here and there over the region. A nest under the eaves of a road-house near Circle contained newly hatched young July 1. Several pairs were found nesting in dolomite crags above timber-line in the White Mountains.

Empidonax traillii alorum. ALDER FLYCATCHER.— A few seen in willow thickets along the Yukon in June.

Otocoris alpestris arcticola. PALLID HORNED LARK.— Frequents the drier summits and ridges above timber-line in the mountains around the head of Beaver Creek.

Pica pica hudsonia. MAGPIE.— A few were noted on the Yukon between Lake Labarge and Stewart River, but none below that.

Perisoreus canadensis fumifrons. ALASKA JAY.— Common everywhere in the timbered areas.

Corvus corax principalis. NORTHERN RAVEN.— Common wherever food was available. Abundant along the Yukon and Upper Beaver Creek.

Euphagus carolinus. RUSTY BLACKBIRD.— A few small flocks were seen in August on the flats of lower Birch Creek.

Leucosticte tephrocotis. GRAY-CROWNED ROSY FINCH.— Abundant in July on barren dry slopes of the White Mountains above timber-line. None seen elsewhere.

Acanthis sp. REDPOLL.— Both singly and in flocks. A common denizen of the mountain valleys, especially near timber-line.

Calcarius lapponicus alascensis. ALASKA LONGSPUR.— Two males in faded nuptial plumage were seen on a grassy ridge 4000 ft. above sea-level near the White Mountains on July 15.

Calcarius pictus. PAINTED LONGSPUR.— Same habitat as the Horned Lark. Not common.

Passerculus sandwichensis alaudinus. WESTERN SAVANNAH SPARROW.—Commonly associated with Pipits on the mountains twenty-five miles west of Circle about the middle of July. At this season it is always above timber-line.

Zonotrichia l. gambelli. GAMBEL'S SPARROW.—This is the most common bird along Yukon canyon and in the mountains west of Circle. It became scarce about July 10, and was last seen on August 8. It probably migrates early.

Spizella monticola ochracea. WESTERN TREE SPARROW.—Common near timber-line in the mountains west of Circle.

Junco hyemalis hyemalis. SLATE-COLORED JUNCO.—Common in the spruce and birch timber everywhere.

Passerella iliaca(?). FOX SPARROW.—Several were seen in the willow thickets in the Birch Creek flats on August 12.

Petrochelidon lunifrons lunifrons. CLIFF SWALLOW.—A small colony was found nesting on the limestone cliffs on the Yukon River below Thanksgiving Creek. None were seen elsewhere.

Tachycineta thalassina lepida. NORTHERN VIOLET-GREEN SWALLOW.—Abundant along the Yukon and locally in the mountains farther west. Normally it nests among the cliffs in chinks in the rocks, but it was also seen going in and out of the Bank Swallow's burrows in the silt terraces along the river and was also using old mud nests of the Cliff Swallows. It was last seen on August 11.

Riparia riparia. BANK SWALLOW.—Nests locally in silt banks along Yukon canyon. Not abundant.

Dendroeca aestiva rubiginosa. ALASKA YELLOW WARBLER.—A few were seen among the willows along the Yukon in June.

Dendroica coronata. MYRTLE WARBLER.—Rather common in the spruce woods along Beaver Creek in July and August. Last seen August 14.

Seiurus noveboracensis notabilis. GRINNELL'S WATER THRUSH.—A few were seen along the banks of the creeks in July and August.

Anthus rubescens. PIPIT.—Present everywhere on the mossy slopes above timber-line. Seen at Fort Yukon on the Flats August 17.

Penthestes hudsonicus hudsonicus. HUDSONIAN CHICKADEE.—Common in spruce forest near the White Mountains in July and in the Yukon Flats in August.

Regulus calendula calendula. RUBY-CROWNED KINGLET. Common in spruce forest around White Mountains in July. Last seen August 12.

Hylocichla aliciae aliciae(?). GRAY-CHEEKED THRUSH.—A thrush with the peculiar wiry buzzing note of the Veery was heard rather frequently along the flood plains of the Yukon River and Birch Creek, from June 10 to August 15.

Hylocichla ustulata swainsoni. OLIVE-BACKED THRUSH.—Very common along the Yukon in June, but much less so in the mountains in July. Last heard August 9.

Planesticus migratorius migratorius. ROBIN.—Rather scarce but

locally common, as in mountains between Miller House and the White Mountains. It became scarcer about July 20, and was seen last on August 14.

Ixoreus naevius meruloides. NORTHERN VARIED THRUSH.—A few were found nesting in the thick spruce forest along Fossil Creek in July at 2000 ft. elevation.

Saxicola œnanthe œnanthe. WHEATEAR.—The bird has the same habitat as the Pipit and, like it, flits from rock to rock on the mossy slopes above timber-line. Young just learning to fly, July 15. Not seen in flocks.

NOTES ON SOME BIRDS OF THE OKANAGAN VALLEY, BRITISH COLUMBIA.

BY J. A. MUNRO.

Æchmophorus occidentalis. WESTERN GREBE.—Migrant and scarce winter resident; April 23, 1911, is the earliest spring record. In the spring of 1914 they were very plentiful. May 12 was a warm still day, without a breath of wind or a ripple on the surface of the lake; from the shore near Okanagan Landing, one can see down the lake for five miles, to where a rocky point interrupts the view. Small bands of Western Grebe were scattered everywhere, the sun glittering on their white under-parts. I estimated that there were eight hundred, on this small portion of the lake. In the fall, they are less common and more regular in their appearance. The earliest record of arrival is September 5, and the latest, September 28.

Colymbus holbœlli. HOLBELL'S GREBE.—Abundant summer resident: a few winter on Okanagan Lake. During April, flocks of these birds congregate on Okanagan Lake, keeping well out from the shore, and engage in a noisy courtship, attended by much splashing and diving. For several weeks, their yelping call can be heard day and night. They breed in suitable places on all the marshy lakes of this district; frequently nests are found within thirty feet of each other, but I have never found them breeding in colonies. On May 15 and June 8, 1916, ten nests were found in the tules, fringing an alkaline lake. In every case there was a Coot's nest within a few yards.

Larus argentatus. HERRING GULL.—A common winter resident on Okanagan Lake; they make daily trips the length of the lake, following the steamer. Unlike the Herring Gulls of the Great Lakes or the sea-coast, these birds are quite wary; it is generally impossible to get within gunshot range. Several times I have watched them following a flock of

feeding Loons, swimming beside them and when left behind by the faster moving Loons, rising from the water and flying to the centre of the flock again. It seems hardly possible that they would be able to steal fish from such a strong, active bird as the Loon.

Larus philadelphia. BONAPARTE'S GULL.—Common migrant, much more numerous in the spring, when they arrive in a body and remain only two or three days. Stragglers during the spring migration are unusual. In 1912, 1913 and 1914, they arrived at Okanagan Landing on May 4; in 1915 on May 5, and in 1916, twenty appeared on April 29, and the large flock arrived again on May 4. May 12 is the latest spring record. The fall migration is more irregular; juvenals arriving about the middle of August and adults a little later. They are seen until the middle of September, September 20 being the latest record. There are occasional stragglers in the summer; an adult in breeding dress and two juvenals being noted on July 20, 1915, and on July 22, 1917, an adult in breeding dress was collected.

Usually they are quite fearless; and on a still spring day I paddled into a flock of about one hundred, on Okanagan Lake. They rode buoyantly on the surface, wing-tips and tail touching, and held high above the body. Their method of feeding suggested the Northern Phalarope, swimming in a jerky fashion from side to side and picking minute objects off the water. Their voices were soft and resonant, like a note struck with the fingers, on the muted string of a violin.

Grus mexicana. SANDHILL CRANE.—Common migrant, occasionally breeds. The large flocks seldom stop in the spring but sometimes do so in the fall. October 4, 1917 was a violently windy day and a large number of Cranes both *G. mexicana* and *canadensis* were forced to alight on some open range-land near Okanagan Landing, where they remained until shot at.

In the evening of May 20, 1915, a flock of fifty-seven flew north over Okanagan Lake. They moved for a time in a compact flock, and then strung out in single file. Sometimes they flew in the form of the letter U, a half circle, and again the flock took the form of the letter S.

Dendragopus obscurus richardsoni. RICHARDSON'S GROUSE.—Abundant resident in normal years. Their numbers were greatly reduced during the past two years, by cold, wet springs and the ravages of an intestinal parasite.

The Blue Grouse begin to mate about the end of March, when the snow has melted from the lower hills. The males are then quite fearless and one can walk to within a few feet of the hooting birds. While calling, the body is flattened and held close to the ground, the wings are dropped, the head is sunk between the shoulders and the widely spread tail is held at right angles to the body. When they are in this position the fan-like tail entirely conceals the body from one standing behind the bird. The feathers on the neck are folded back, showing the white underparts in vivid contrast to the naked, orange-red, palpitating skin of the air-sacs. The sacs can

be seen to rise and fall as the bird draws in air and then slowly lets it out. The combs are brilliant yellow and much swollen. While inflating the air-sacs the bill is held wide open. The mating call might be rendered as, whoo, "whooh whooh-oo, whooh whooh, whooh." Unlike the Blue Grouse of the coast region, this call is soft and has no great carrying power. There is also a single note, "hoop," that can be heard for a great distance. I have never been able to discover if it is the male or the female that uses the single hoot. After calling, the male may strut a few yards, in the same attitude as described, and with breast almost touching the ground. They then look more like a mammal than a bird. While mating, the males are utterly indifferent to danger and many are killed by coyotes and goshawks.

The eggs are laid early in May. The nests are usually shallow depressions in the ground, lined with pine-needles and a few feathers; some have little or no lining. A favorite site for the nest is on a bunch-grass bench, on a steep mountain side, close to pine or fir trees. Sometimes they build on the loose sand under a pine tree. One nest found on May 13, 1915, and containing nine partly incubated eggs, was under the "A" of a rail fence close to a wagon road, through open woods of yellow pine. The following year I found a nest with ten eggs, under the same fence, close to where the first one had been located.

May 31 is the earliest record for newly hatched young. There is considerable mortality in the young birds and several weeks after hatching the coveys have generally dwindled to six or eight. They grow fast and when the size of Meadowlarks will fly as straight and true as a Quail. When a covey of young is flushed the female will not rise until the young have alighted in the nearby trees. When in the trees they assume the characteristic attitude of the adult, standing parallel to the branch, with tail slightly raised.

The young are full grown by August 15. They leave the timbered country shortly before this to feed on grasshoppers along the margins of wooded draws and coulees, on the open range. During the middle of the day they can be seen, sunning themselves on some rock in a prominent place where they can watch for enemies. They are quite tame at this season and as one approaches a feeding covey, they will stiffen and remain in rigid postures until one is within a few yards, and then rise and fly into the nearest tree.

About September 1, the coveys begin to "pack" and are then found principally in the stands of yellow pine (*Pinus ponderosa*). They are then feeding chiefly on the large oily seeds of this tree, picking them off the ground underneath the trees. They still eat many grasshoppers, catching them in the open places, early in the morning while the insects are sluggish. When the supply of fallen pine seeds is exhausted, they eat rose hips, snowberries and red and black haws.

About the middle of October, the packs go into the thick stands of Douglas fir and remain there until the spring, eating fir needles exclusively. Their flesh becomes impregnated with the flavor of fir and is quite uneatable.

If not disturbed too much they will remain in the same clump of trees all winter, not coming to the ground for days at a time. They sit very close and often will not leave the trees until one throws stones or branches at them. The ground under one of these roosting trees, in the spring, resembles a poultry yard with accumulation of droppings.

During October, Blue Grouse become quite wild. When flushed they invariably fly down hill and alight in thickly foliaged firs or pines. Until one knows what to look for, they are very hard to find in these trees. They stand parallel with the branch, perfectly rigid, neck stretched, tail closed and slightly elevated—a strained and most ungraceful pose.

They are fond of sitting on rocky ledges or slide rock, on sunny days, and match the color of the rocks so perfectly that one seldom sees them until they flush. A Blue Grouse thundering down a steep mountain-side, through heavy timber, affords the most difficult sporting shot of any Canadian Grouse.

Circus hudsonius. MARSH HAWK.—Common summer resident; a few remain through the winter. Two nests were found in the tules on the shore of Swan Lake.

May 15, 1916. Five eggs, incubation advanced. Nest in a clearing in the tules, about four feet square, that had been trampled down by the bird; composed of a pile of grass and weed stalks on a foundation of sticks, that raised the nest above the wet ground. The grass was placed all the same way, a shallow depression at one end held the eggs.

May 18, 1916. Three fresh eggs, one a third larger than the others, nest similar to number one, but slightly smaller.

Several times I have seen a Marsh Hawk strike at a Sandpiper. A female shot in September, 1912, had the remains of two Solitary Sandpipers in her stomach. On a foggy September morning, I once saw a Marsh Hawk dash into a flock of Green-winged Teal and try, unsuccessfully, to lift one from the water.

Buteo borealis calurus. WESTERN RED-TAIL.—This is the characteristic hawk of the lower mountains. They are equally at home in the dense coniferous forests at the edge of cultivated land, in the open park country of the yellow pine (*Pinus ponderosa*) or in the midst of deep canyons and rock cliffs.

The Red-tail arrives in the Okanagan early in May and leaves in October. I have no winter records. Various small mammals, such as ground squirrels (*Citellus*), pine-squirrels (*Sciurus*), and pikas (*Ochotona*), afford an ample food supply and one would expect Buteos and raptores generally, to breed here in large numbers; but such is not the case. Red-tails are probably the most common of the larger hawks (except during the periodic invasions of Swainson's Buzzards in big grasshopper years) but they are not abundant, and one does not see the large migrations that are a feature of the coast-belt of British Columbia.

The same nests are used for several years, usually built in tall coniferous trees, forty to sixty feet above the ground. A site commanding a view of open range or valley is preferred. The following nests are typical.

May 22, 1917. A large, bulky nest of sticks lined with black tree-moss (*Alcatoria jubata*) and some down from the birds' breasts; forty feet from the ground in a tall Douglas fir, free of branches for the first twenty-five feet. This was in open woods of Douglas fir and yellow pine, overlooking a small creek and a wide area of hay land. The three partly incubated eggs were chalky-white, sparingly blotched with pale brown. Both birds alighted in nearby trees and did not fly over the nest or make any hostile swoops at the collector.

May 28, 1917. Nest twenty-two inches in diameter, made of spruce sticks and lined with spruce twigs and pale green tree-moss or lichen (*Evernia vulpina*). This was at the top of a spruce, broken off, sixty feet from the ground. The rather heavy spruce sticks composing it rested on the broken portion of the tree and on the thick limbs directly below. The spruce was a solitary one, at the edge of a cottonwood forest, bordering a stream and pasture land, in a deep, narrow valley. There were two eggs, in an advanced stage of incubation; one was nearly pure white and the other faintly blotched with light brown. The male had been shot two weeks before. While the tree was being climbed, the female sat in a cottonwood forty yards away and screamed repeatedly but did not come any closer to the nest.

The following notes refer to a pair of Red-tails that had their eyrie on the face of a sheer cliff, three hundred feet high. As well as I could see with binoculars, the nest was made entirely of sticks and was built, none too securely, on a small ledge, fifty feet from the top of the cliff. This cliff formed one side of a deep canyon, along the base of a steep, rugged mountain. Both sides of the canyon, below the cliffs, were piled high with slide-rock, the home of hundreds of Pikas (*Ochotona*). The top of the lowest side of the canyon was fringed with tall Douglas fir and Murray pine. On the other side, back of the three-hundred-foot cliff containing the eyrie, the mountain rose, almost sheer, for another six hundred feet.

June 8, 1915. On this date, when the eyrie was first discovered, there were two or three young, just emerging from the down — their heads could be seen above the rim of the nest. The female was kept under observation for several hours and did not fly to the nest. The male was heard in the distance but did not come into the canyon. The female was greatly excited, flying in short circles over my head and screaming constantly. She frequently alighted on the top of a dead, stunted fir, in the canyon, below the eyrie. A pair of Western Robins attacked her several times and drove her from the tree.

May 27, 1916. I was unable to visit the eyrie again until the following year. On May 27, there were two downy young. The old birds were more hostile than in the previous year. When I first entered the canyon, the male was flying about the face of the cliff, screaming fiercely, a long-drawn-out hissing scream, like the escape of exhaust steam from a locomotive. As I scrambled over the talus at the foot of the cliff, he swooped at me several times from a great height, slanting down at tremendous speed

on set wings, with a loud tearing noise; when close over my head, he would stop short, and then mount straight into the air, head first, in a "climbing" position. After rising in this fashion for twenty or thirty feet, he would assume a normal position and mount in a succession of spirals. The female appeared with a large snake twisting in her claws and flew straight to the nest, not having seen me. After a few minutes spent in the nest, she joined the male and they both flew into one of the firs on the top of the canyon. It was impossible to see what disposition she made of the snake.

Shortly after this, one of the young raised itself above the rim of the nest and after flapping its naked wings several times, raised itself over the nest rim and ejected a stream of excreta down the face of the cliff.

No refuse, which would have told of their food habits, was found below the nest, but it is probable that Pikas formed a large portion of their diet.

July 31, 1916. The two young were seen, soaring over the canyon.

Buteo swainsoni. SWAINSON'S HAWK.—Regular summer resident, arriving about the middle of April and leaving in August; the latest record is September 6, I have no winter records.

During the summers of 1913, 1914 and 1915, there was a serious local irruption of large crickets and grasshoppers. These were found in countless hordes on the open range, overlooking the city of Vernon, and ate every green thing on the hills. In the summer of 1915, I noticed that they were attacked by a reddish colored parasite that clustered on the head and thorax. This must have killed great numbers, as they were not so plentiful the following two years. During July and August when grasshoppers were most abundant, the Swainson's Buzzards gathered in unusual numbers, for this country, and fed exclusively on these insects. Juveniles were in the majority but there was a sprinkling of adults, some of them in the dark phase.

Three juveniles collected on July 15, 1915, were in the spotted plumage and were moulting the secondary feathers on the wings. Adults collected were in various stages of moult. Their stomachs were distended with crickets and grasshoppers. These insects, when they are available, seem to be preferred to any other food. Their abundance and the ease with which they are captured, is suitable to the rather sluggish temperament of this Buteo. They occasionally take birds, as Major Allan Brooks found seven downy Ruffed Grouse in the crop of a breeding female; but I think they catch fewer small mammals than does the Red-tail.

On July 16, 1914, I saw a flock of forty in all plumages, on the open range. Some were wheeling and circling close to the ground, others were standing, gorged, on fence posts, in the grass, and on the face of a small butte.

While hunting, they are often persecuted by Kingbirds, both *Tyrannus tyrannus* and *verrucalis*. In trying to escape from their tormentors, they sometimes turn completely over, sideways, in a "loop the loop" movement. I once saw two Swainson's Buzzards fly towards each other, fasten their claws together and drop several yards, rolling over and over.

Asio wilsonianus. LONG-EARED OWL.—On April 19, 1917, I found a female occupying a new crows' nest and sitting on one egg. Broken crow's eggs on the ground below the nest indicated that she had evicted the original owners. On April 30, the crows were again in possession and the nest contained four crow's eggs. The owl then laid four eggs in an old crow's nest, fifty yards from the first one. These eggs were collected on May 8, and the owl moved to a third crow's nest in the same patch of brush. On June 23, the nest contained two half-grown young.

Glaucidium gnoma gnoma. PYGMY OWL.—Common resident. This is the easiest of the owls to call. They will come readily at any time of the day, and from long distances to an imitation of their call. They approach the caller with short flights, from one tree-top, to another slightly nearer. When in a tree directly over the caller's head, a further call will bring them down to the lower branches, often within a few yards. Often two or more will come from different directions. On Vancouver Island I once called up four at one time. They are usually followed by an excited crowd of Chickadees, Nuthatches and other small birds, that keep darting at the owl as long as it is in the open. When answering the call, they usually sit in a conspicuous position, at the top of a tree or on a dead branch. The Pygmy Owl must be one of the greatest enemies of small birds, as an imitation of its call will excite every bird in the neighborhood, while they pay little attention to the call of a "Scops" owl or a Saw-whet.

The only nest I have found was in an old woodpecker's hole, thirty-five feet above the ground in a western larch. There were seven downy young in this nest. This was in a thick forest of Murray pine, Douglas fir, and western larch, where they are more plentiful than in the yellow pine stands at lower altitudes.

Picoides americanus fasciatus. ALASKA THREE-TOED WOODPECKER.—This species is resident and fairly common in Murray pine, Western larch, and spruce forests. I have never found them in yellow pine or Douglas fir country. They prefer the burnt areas of timber, and specimens collected are generally stained with charcoal on the under-parts. During the nesting season the males call with a rippling tattoo from the very top of the tallest dead tree, near the nesting tree. This calling is usually done in the early morning. On May 28, 1917, I found a nest that had just been finished, thirty feet from the ground in a dead Murray pine. The entrance was smaller than would be expected, slightly over one and a half inches, and the hole about fourteen inches deep. No eggs had been laid and as I had to leave the locality that day I was unable to revisit the nest. A half grown male collected on June 17, 1916, showed a few scattered yellow feathers on the crown.

Stellula calliope. CALLIOPE HUMMINGBIRD.—This hummer frequently nests in the same tree for several years in succession. A dead lichen covered branch of maple or birch is often chosen. The nests straddle the branch, and I have never seen one that was pensile. The two nests described were probably lower down than is usual.

June 6, 1911. Two eggs, incubation started. Nest twenty feet from the ground on a drooping branch of a dead maple, in a birch and maple draw in the mountains. Outside of nest composed of lichen and small shreds of moss, presenting a ragged appearance from below. The lining was of felted cottonwood down. This nest was discovered through the angry, excited actions of the female. She buzzed around my head, as I approached the tree, and would not leave the vicinity of the nest.

June 30, 1916. Found female sitting on two partly incubated eggs. Nest of lichen and plant down, and lined with plant down; saddled on a small dead twig of a Douglas fir, on the outside of the tree, seven feet above the ground. A few inches above the nest was a thick spray of live fir, effectually shielding the sitting bird from the hot sun. This was on a steep, rocky mountain side among thick timber.

A birch and maple draw is the favorite home of *Stellula calliope*, and one can often see six or eight, buzzing around a birch tree, which a Red-naped Sapsucker has girdled.

Tyrannus verticalis. WESTERN KINGBIRD.—Common summer resident. The earliest record during seven years is April 25, 1911, and the latest May 13, 1912. Their departure in the fall is more uniform; August 17, 1911, being the earliest and August 27 the latest. In five other years, there was a difference of only three days in their departure, August 20 being an average date.

They nest in most curious places. For two seasons, a pair built in the eaves-trough of my house, directly over the vent. Both years the eggs were destroyed by rain storms and washed into the rain barrel. A window ledge is a favorite nesting site. The residents along some of the country roads nail up small soap or starch boxes on their gate-posts for the reception of milk bottles, etc.; these are frequently used as nesting sites. I have known them to build on a ledge above the kitchen door of a farm house, which was opened and shut fifty times during the day. Frequently they use abandoned Flicker holes, or the roughened, decayed top of a fence post.

The nests are well made of roots, weed-stalks, string, etc., lined with plant down and horsehair or sheep's wool when it can be found. Four is the usual number of eggs laid.

Sayornis sayi. SAY'S PHOEBE.—Summer resident, much more common the past three years. A nest containing young, found on May 25, 1916, was built largely of dry, lace-like *Potamogeton*, that had been washed up on the beach and bleached white by the sun. The nest was inside a vacant tent, on a wooden cross-support, near the door.

Myiochanes richardsoni richardsoni. WESTERN WOOD PEWEE.—Common summer resident; the earliest record is May 9, 1916, and the latest departure September 13, 1915. They breed commonly along roadsides, preferably in aspens (*Populus tremuloides*). They are late in breeding. The earliest record for a full complement of eggs is June 22, 1916. The nests are usually rather flimsy, made of plant fibres, fine weed stalks, cobwebs and perhaps a few pieces of lichen. They are usually built

saddle fashion on a rather large limb, generally at a crotch, but I have found two that were built in upright forks like a Yellow Warbler's nest. These two nests were in half-dead peach trees in an orchard.

On June 20, 1911, a nest with four eggs was found in black cottonwood (*Populus trichocarpa*) on the lake shore. The eggs were eaten and the nest partly destroyed, probably by a White-footed Mouse. They built another nest in the same tree, and, on July 4, I collected the nest and three eggs. While climbing the tree, the female flew past my face several times, snapping her mandibles. This pair then built a third time in a poplar a few yards from the cottonwood and the nest was completed in three days. I was unable to follow the vicissitudes of this family any further.

Pica pica hudsonia. MAGPIE.—Abundant resident in the river bottoms and on the yellow-pine benches but are less common in the forests. Little good can be said of these birds; they are probably the worst egg thieves of all the Corvidæ. If one leaves any game cached in the woods they are sure to find it and eat the greater portion. In trapping small mammals in a Magpie country one must go over the trap line frequently or many specimens will be eaten. I received a reliable report of a small band of Magpies that had picked large holes in the backs of several young shoats. Their habit of raising a hue and cry, after any owl that makes its appearance, is sometimes of great use to the collector. As they raise large broods, laying six to eight eggs, and have few natural enemies they are increasing rapidly.

Except in the nesting season, they are exceedingly wary and well able to look after themselves. Frequently they are caught in traps set for mink and very often in coyote traps, set near a carcass. They are easily taken by poisoned baits.

In the spring, they have the Cowbird habit of walking over range horses' backs and picking off the fat wood-ticks.

They usually nest in colonies, in patches of nearly impenetrable Black Haw (*Crataegus douglasii*) or in brushy coulees, on open hillsides. The following nest can be taken as typical.

May 14, 1915. Seven fresh eggs; nest of mud and sticks lined with grass and fine roots, eight feet from the ground and near the top of a Black Haw. The outer covering of the nest, about three and one half feet in height, made of thorny Black Haw branches, with an entrance at each side, six inches above the nest proper.

The birds return to the same locality every year and repair the old nests, if they are not too dilapidated. April 22 is the earliest record for a full set of eggs.

When the young are nearly full grown, they gather in large flocks on the bare hillsides and feed on grasshoppers and crickets. This of course is in their favor but cannot balance their evil deeds.

Nucifraga columbiana. CLARK'S NUTCRACKER.—Resident; their abundance depending on the seed crop of the Yellow Pine (*Pinus ponderosa*). Like all corvine birds, they are exceedingly curious and a passing deer or coyote will attract their attention so that the position of game can

often be located by their excited cries. They come readily to an imitation of the call of the Pygmy Owl or the Horned Owl and will investigate the caller at close range.

Their food is largely the seed of the Yellow Pine during the fall and winter but they are omnivorous at other seasons. I once saw a single bird feeding on the carcass of a Bushy-tailed Wood Rat (*Neotoma columbiana*), Mr. C. De B. Green tells me they have the corvine habit of eating birds' eggs. Several nests of Hermit Thrushes, Horned Larks and Pipits, that were under observation, above timber line on Apex Mountain, were destroyed by a pair of Clarke's Nutterackers.

Three nests were found on March 9, 1912, by Major Allan Brooks, assisted by the writer. This was in Yellow Pine country; a series of wooded benches overlooking Okanagan Lake. There was some snow on the ground, the days were warm, with bright sunshine and the nights were frosty.

Number one. Nest loose and bulky, of rotten wood and desiccated pine grass on a platform of stout pine twigs; fifty feet from the ground and eight feet from the trunk, in a Yellow Pine. The female was sitting on two fresh eggs.

Number two. Nest of the same materials as number one. Forty feet above the ground in a Yellow Pine. Female sitting on two fresh eggs.

Number three. Twenty-five feet from the ground and twelve feet from the trunk of a Douglas Fir. This nest was found by watching one of the birds gathering sheep's wool that had caught on a barbed wire fence, and carrying it to the nest. The three partly incubated eggs were collected ten days later. The young are faintly spotted with white on the underparts.

Pipilo maculatus montanus. SPURRED TOWHEE.—Common summer resident. I have a report from a reliable observer, of a single bird, wintering at Sunnywold, fifteen miles south of Okanagan Landing; and a bird seen here on February 17, 1917, had probably been in the vicinity all winter. March 20 is the average date of their arrival and October 10 of their departure. They raise two and possibly three broods; the earliest date for a full set of eggs is May 3, 1916. A nest found on July 22, 1913, containing newly hatched young was possibly a third brood.

Juveniles in various stages of moult swarm in all the patches of brush, along the lower hills from the last of May until September. The irides of the young are first bluish, practically without color, then hazel and later dull orange.

The alarm note of the adults is similar to the Catbird's "meow."

The situation and material of the following nest is typical.

May 19, 1917. Four eggs; incubation started; nest on the ground near shore of lake and thicket of hawthorns; made of the inner bark of cottonwood, wild sunflower and other weed stalks and lined with dry grass.

Myadestes townsendi. TOWNSEND'S SOLITAIRE.—Common resident nesting on the ledges and crevices of rock bluffs. On June 11, 1917, while motoring along a narrow road above the Tulameen River, past a rock

cutting, a Solitaire flew off her nest and passed in front of the car. Her nest was in a small crevice in the rock cutting, five feet above the road, and would have been on the level of a man's eye, walking along the ground. The nest was built of dry grass, twigs, fine roots and moss, lined with fine grass and contained four partly incubated eggs.

The young are slim handsome birds conspicuously spotted with silvery buff on the lower parts, head and back.

The alarm note is similar to the "chuck chuck" of the Hermit Thrush. In a recent number of the Condor,¹ Mr. Forrest S. Hanford states, that during thirteen years, he has heard the Solitaire sing only five times. In this district, they sing quite freely, during the nesting season; generally perched on the very top of a Douglas fir or Murray pine. I have frequently heard them singing in the winter.

In the winter months their food is largely the acrid berries of the dwarf juniper (*Juniperus occidentalis*).

DESCRIPTION OF A NEW SUBSPECIES OF *PIRANGA HEPATICA* SWAINSON.

BY HARRY C. OBERHOLSER.

THE geographic range of *Piranga hepatica hepatica*, as now understood, extends from Arizona to southern Mexico. Examination of a series of 115 specimens of this species in the United States National Museum, including the Biological Survey collection, reveals the existence of an additional and undescribed subspecies from the southwestern United States. This we venture to name

***Piranga hepatica oreophasma*, subsp. nov.**

Chars. subsp.— In general, similar to *Piranga hepatica hepatica*, from central and southern Mexico, but larger, with a relatively somewhat smaller bill; male with upper-parts darker, the back also more reddish, and ventral surface more deeply colored; female with upper and lower parts rather darker, the back averaging also somewhat more grayish (less greenish).

¹ Vol. XIX. January–February, 1917, page 13.

Description.—Type, adult male, No. 168397, U. S. Nat. Mus.; Pine Canyon, at 6000 ft. altitude, Chisos Mountains, central western Texas, June 3, 1901; Harry C. Oberholser; original number, 290. Forehead and anterior portion of crown, dark scarlet; occiput rather light Brazil red; cervix light brick red; back and scapulars, between ochre red and brick red, somewhat mixed with neutral gray; rump neutral gray washed with the reddish of back; upper tail-coverts light brick red; tail Natal brown, the rectrices edged externally with dragon's-blood red; wings fuscous, the superior coverts rather paler, the primaries, secondaries, median and lesser coverts, edged with dragon's-blood red, the greater coverts and outer webs of the tertials, with dull coral red or dull light coral red; supraloral streak scarlet; lores and maxilla brownish gray, a little mixed with buffy white; suborbital region grayish white somewhat mingled with grayish; auriculars dull neutral gray, washed with light Brazil red; a broad stripe down the sides of the neck back of the auriculars, of the same color as the cervix; a broad stripe behind this, like the back; extreme anterior point of chin creamy white; sides and flanks between dragon's-blood red and scarlet; thighs dragon's-blood red; remainder of under parts scarlet, paling on the anal region and lower tail-coverts to peach red (a patch of primuline yellow on the middle of the abdomen is doubtless adventitious); edge of wing light scarlet; lining of wing dark shrimp pink.

Measurements.—Male:¹ wing, 103–106 (average, 104.5) mm.; tail, 81.5–86.5 (84.6); exposed culmen, 16–17.8 (17.1); tarsus, 21–23 (22.1); middle toe without claw, 15–16.5 (16.).

Female:² wing, 98–101 (average, 99.3) mm.; tail, 79.5–84.5 (82.7); exposed culmen, 16.2–19 (17.5); tarsus, 21.5–23.3 (22.3); middle toe without claw, 14.5–16 (15.4).

Geographic distribution.—Southwestern United States to central Mexico. Breeds in the Transition Zone of the mountains, north to north central New Mexico and Beaverdam, northwestern Arizona; west to western Arizona, Sonora, Sinaloa, and Tepic; south to central western Jalisco; east to western Jalisco and southeastern Coahuila, Santa Catarina in central western Nuevo Leon, central western Texas, and east central New Mexico. Winters north to southern Sonora, and south to Michoacan and the State of Mexico.

Remarks.—The race of *Piranga hepatica* here newly distinguished is not so dark above or below as *Piranga hepatica dextra*³ from eastern Mexico, and, furthermore, is considerably larger; while the female is lighter and less greenish above. Specimens from Texas, New Mexico, and Arizona are largest; those from

¹ Five specimens, from Texas, New Mexico, and Arizona.

² Five specimens, from Texas and Arizona.

³ Bangs, Proc. Biol. Soc. Wash., XX, March 27, 1907, p. 30.

Batopilas, Chihuahua, and Alamos, Sonora, are slightly smaller, though in color not different. Birds from the Sierra Guadalupe in Coahuila are of the same size as those from Arizona, but are somewhat darker, thus indicating their vergence toward *Piranga hepatica dextra*. A single adult male from Santa Catarina, Nuevo Leon, although not very far east of the Cerro de la Silla, where *Piranga hepatica dextra* occurs, is of the same color as the Arizona form, but is of rather smaller size, inclining, as would be expected, toward *Piranga hepatica dextra*, although apparently, so far as it is possible to judge from a single example, nearer *Piranga hepatica orcophasma*. Examples from Atenguillo and San Sebastian, Jalisco, together with those from Santa Teresa, Tepic, are just about half way between the present race and *Piranga hepatica hepatica*, the males being perfectly intermediate in size, though in color like Arizona birds; while the female is of the size of *Piranga hepatica hepatica*, but in color nearer the Arizona race. As a whole, however, these birds are probably best referable to *Piranga hepatica orcophasma*.

The Hepatic Tanager was originally described ¹ from a specimen taken at Real del Monte, Hidalgo, Mexico; and, therefore, the birds from central and southern Mexico must be regarded as typical. Mr. Outram Bangs has already described ² the small, dark form from eastern Mexico as *Piranga hepatica dextra*; but in so doing, made the statement, through a misunderstanding, on the ostensible authority of Mr. E. W. Nelson, that Real del Monte, the type locality of *Piranga hepatica hepatica*, was the same as Temascaltepec, likewise one of Swainson's localities. This, of course, is not the case, since Real del Monte is in southern Hidalgo, not far northeast of the city of Pachuca; while Temascaltepec is situated at some distance southwest of the city of Mexico, and in the state of Mexico.

There are thus apparently three recognizable subspecies of *Piranga hepatica*. The range of the new one here described has been given above, but since the distribution of the others has been altered by the present separation, their ranges with the necessary corrections are added below.

¹ *Piranga hepatica* Swainson, *Philos. Mag.*, new series, I, No. 6, June, 1827, p. 438 (Real del Monte, Hidalgo, Mexico).

² *Proc. Biol. Soc. Wash.*, XX, March 27, 1907, p. 30.

Piranga hepatica hepatica.—Central and southern Mexico, north to San Luis Potosi; west to central Jalisco (Guadalajara) and western Michoacan; south to Guerrero and Oaxaca; and east to Oaxaca, Tlaxcala, and Hidalgo.

Piranga hepatica dextra.—Eastern Mexico, north to Cerro de la Silla in Nuevo Leon; west to the same locality, Huauchinango in northwestern Puebla, southeastern Puebla, and the eastern border of Oaxaca; south to Chiapas and Guatemala; and east to Guatemala, Chiapas, and Vera Cruz.

The localities from which specimens of *Piranga hepatica oreo-phasma* have been examined are listed below:

Arizona.—Hualapai Mountains, 6300 feet (July 8, 1902); Fort Whipple, (June 21, 1892 [nestling]); Fort Huachuca (May 7 and 11, 1892); 25 miles northeast of Rice, Nantan Plateau (May 11 and 12, 1916); Young's Ranch, Mingus Mountain, at 7500 feet, 6 miles southeast of Jerome (August 21, 1916); Ash Creek, Graham Mountains, 6100 feet (May 16, 1914); Graham Mountains, 6400 feet (May 13, 1914); Dragoon Mountains (May 4, 1895); Flagstaff (May 27, 1888; June 21, 1886); Mud Tanks (October 3, 1884); Rock Canyon (July 12 and 20, 1874); San Francisco Mountain (September 4 and 7, 1889; August 31, 1889; June 3, 1887); 20 miles south of Apache (September 8, 1873); Crittenden (August 26 and 27, 1874); Fort Verde (August 5, 1887); Huachuca Mountains (July 27, 1893; August 2, 1893; September 10 and 16, 1893); Gardner's River, Santa Rita Mountains (June 18, 1884); Santa Rita Mountains (June 7, 10, and 28, 1884; July 5, 1884).

New Mexico.—Animas Peak, Animas Mountains, 8000 feet (August 3, 1908); southeast slope of Capitan Mountains (July 22, 1903) Burro Mountains (September 16, 1908); east side of San Luis Mountains (June 23, 24, and 26, 1892); west side of San Luis Mountains (July 13, 1892); San Luis Mountains (September 4, 1893); Big Hatchet Mountains (May 19 and 21, 1892); Dog Spring, Grant Co. (May 31, 1892); Grafton; Zuni Mountains (August 31, 1857).

Texas.—Pine Canyon, 6000 feet, Chisos Mountains (June 3, 1901) [type]; June 7, 1901); Limpia Canyon, Davis Mountains (July 12, 1901).

Chihuahua.—San Luis Mountains (August 12, 1908); near Batopilas (October 4, 1898).

Coahuila.—Sierra Guadalupe (April 24, 25, and 27, 1902).

Jalisco.—Atenguillo (March 5, 1897); Ocotlan (January 4, 1903); †San Sebastian (March 21 and 22, 1897).

Mexico.—Amecameca (February 18, 1893).

Michoacan.—Mt. Tancitaro (February 24, 1903).

Nucro Leon.—Santa Catarina (April 13, 1902).

Sinaloa.—Culiacan (March 17, 1899); Mazatlan.

Sonora.—Near Alamos (January 6, 1899).

Tepic.—Santa Teresa (August 8 and 12, 1897).

Comparable detailed measurements of *Piranga hepatica oreo-
phasma* and *Piranga hepatica hepatica* are as follows:

MEASUREMENTS OF SPECIMENS OF *Piranga hepatica oreophasma*.

U. S. Nat. Mus. No.	Sex.	Locality.	Date.	Collector.	Wing.	Tail.	Exposed Culmen.	Tarsus.	Middle toe with-out claw.
168379	♂	Pine Canyon, 6000 ft., Chisos Mts., Texas. ¹	June 3, 1901.	H. C. Oberholser.	103	81.5	16.8	22	16.5
205566	♂	Burro Mts., New Mex.	Sept. 16, 1908.	E. A. Goldman.	103	86.5	17.8	21.5	15.
186889	♂	Southeast slope Capitan Mts., New Mexico.	July 22, 1903.	J. H. Gaut.	105.5	85	17.5	23	16.5
137972	♂	Fort Huachuca, Ariz.	May 7, 1892.	A. K. Fisher.	106	85	16	21	16
137973	♂	"	May 11, 1892.	"	105	85	17.5	22.8	16
Average of five males									
168477	♀	Limpia Canyon, Davis Mountains, Texas.	July 12, 1901.	H. C. Oberholser.	98	84	19	22.2	14.5
168332	♀	Pine Canyon, 6000 ft., Chisos Mts., Tex.	June 7, 1901.	"	101	84	18.5	23.3	15.8
258666	♀	Ash Creek, 6100 ft., Graham Mts., Ariz.	May 16, 1914.	E. G. Holt.	99.5	79.5	16.8	22.3	16.
258444	♀	25 miles northeast of Rice, 5800 ft., Nantan Plateau, Arizona.	May 12, 1916.	W. P. Taylor.	100.	84.5	16.?	21.5	14.8
241319	♀	"	May 11, 1916.	E. A. Goldman.	98	81.5	17	22	16
Average of five females									
					99.3	82.7	17.5	22.3	15.4

¹Type.

MEASUREMENTS OF SPECIMENS OF *Piranga hepatica hepatica.*

U. S. Nat. Mus. No.	Sex.	Locality.	Date.	Collector.	Wing.	Tail.	Exposed Culmen.	Tarsus.	Middle toe without claw.
143640	♂	Near Totontepec, Oaxaca, Mexico.	July 22, 1894.	E. W. Nelson and E. A. Goldman.	97	77	18	22.5	16
186480	♂	Omitleme, Guerrero, Mexico.	May 25, 1903.	"	100.5	83	17.8	23.5	15
143638	♂	Reyes, Oaxaca, Mexico.	Oct. 19, 1894.	"	97	84	17.5	23	17
143650	♂	Tetela del Volcan, Morelos, Mexico.	Feb. 12, 1893.	"	97	78	18	22	16
143647	♂	Cuernavaca, Morelos, Mexico	Jan. 6, 1893.	"	100	81.5	17	22.5	16.2
Average of five males									
143639	♀ im.	La Parada, Oaxaca, Mexico.	Aug. 19, 1894.	E. W. Nelson and E. A. Goldman.	92	76.5	16.8	23.	15
143648	♀ im.	Querendaro, Michoacan, Mexico.	Aug. 7, 1892	"	96	82	16.2	22.5	—
143651	♀	Cuernavaca, Morelos, Mexico.	Jan. 4, 1893.	"	98	83	17.8	21	16
Average of three females									
					95.3	80.5	16.9	22.2	15.5

NOTES ON NORTH AMERICAN BIRDS.

VII.

BY HARRY C. OBERHOLSER.

IN continuation of previous papers¹ on North American birds, notes on six species are here offered. These belong to the following families: *Anatidæ*, *Aquilidæ*, *Laridæ*, *Corvidæ*, and *Mniotiltidæ*.

Nettion carolinense (Gmelin).

This well-known Teal has recently been treated as a subspecies of the common Teal of Europe (*Nettion crecca*).² Our American *Nettion carolinense* in many respects very much resembles the European Teal, and, so far as we are able to determine, is, in the female, practically indistinguishable. The male of *Nettion carolinense*, however, differs from the same sex of *Nettion crecca* in the possession of a distinct, usually broad, bar on the side of the breast, and by the entire lack of white on the scapulars, both inner and outer webs. The barring of the back and flanks is much finer and less conspicuous, but this, although diagnostic, is not so trenchant as the two other characters just mentioned. In all the large series of these two birds that we have examined we have not seen a male which showed any intergradation in the white bar on the side of the breast or in the white of the scapulars. While it is, of course, true that the great similarity of color pattern and of coloration, to say nothing of osteological resemblances, indicates clearly that both these birds descended from a common ancestor, and that at no very remote period were probably connected by either individual variation or geographic intermediates, and thus

¹ For the other papers in this series, cf. 'The Auk,' XXXIV, April, 1917, pp. 191-196; XXXIV, July, 1917, pp. 321-329; XXXIV, October, 1917, pp. 465-470; XXXV, January, 1918, pp. 62-65; XXXV, April, 1918, pp. 185-187; and XXXV, October, 1918, pp. 463-467.

² Committee British Ornithologists' Union, List British Birds, ed. 2, 1915, p. 171.

from a modern standpoint subspecies, they are now, in the male at least, separated by two absolutely constant characters, on account of which they should, of course, stand as distinct species.

***Circus cyaneus hudsonius* (Linnaeus).**

Dr. Hartert, in a recent publication,¹ treated the American Marsh Hawk, *Circus hudsonius* (Linnaeus), as a subspecies of the European Harrier, *Circus cyaneus* (Linnaeus). An examination of a large series of both these birds has been made with the object of determining the desirability of this change, with the following result.

The male of the American bird, *Circus hudsonius*, differs from the same sex of *Circus cyaneus* in its less uniform, darker, and more distinctly barred tail; its usually darker, less bluish (more brownish) upper surface; darker, less clearly bluish gray color throughout; and more or less barred and spotted posterior lower parts. The female is also darker, but the differences in this sex are not so distinctive. All the characters that separate *Circus hudsonius* from *Circus cyaneus* are clearly but *average*, with the exception of the spots on the posterior under surface, which appear to be nearly, if not quite, always present to a greater or less extent in the former bird. There are, however, occasional specimens of *Circus hudsonius*, which in this respect so closely approach the unspotted condition of *Circus cyaneus*, and some of *Circus cyaneus* so much like *Circus hudsonius*, that a trinomial designation best serves to express the relationship now existing between the two birds. This is apparently one of those cases of a subspecies which is in about the last stages of complete specific segregation, and which in the course of time will be entirely distinct. At present, however, our Marsh Hawk should probably stand as *Circus cyaneus hudsonius* (Linnaeus).

***Haliaeetus albicilla brooksi* Hume.**

Dr. Louis B. Bishop, a number of years ago, recorded the Gray Sea Eagle (*Haliaeetus albicilla*) from Unalaska, in the Aleutian Islands, Alaska.² Subsequently, Mr. A. H. Clark referred the

¹ Vögel paläarkt. Fauna, Heft IX (Band II, Heft 3), October, 1914, p. 1142.

² North American Fauna, No. 19, 1900, p. 73.

birds of this species from northeastern Asia and from Alaska to *Haliaetus albicilla brooksi* Hume.¹ The present writer, in the course of other investigations, incidentally had occasion to verify the status of this Asiatic subspecies. The result serves to substantiate Mr. Clark's statement that the Gray Sea Eagles from eastern Asia, the Commander Islands, and northern India are all so much smaller than European birds that their subspecific separation is necessary. The earliest name available for this form seems to be *Haliaetus brooksi* Hume,² described from "upper India." The Gray Sea Eagles occurring on the Aleutian Islands, or, in fact, anywhere else in Alaska, belong, of course, to this race, and their reference to *Haliaetus albicilla brooksi* Hume confirms its addition to the North American list.

Larus canus brachyrhynchus Richardson.

The American bird now called *Larus brachyrhynchus* is evidently very closely allied to the Old World *Larus canus* Linnæus. Study of a series of specimens of these two birds shows that about the only characters separating *Larus brachyrhynchus* from *Larus canus* are the average smaller size of the former, the usually greater amount of gray on the basal portion of the second and third primaries (counting from the outermost), and that this gray terminates distally in a small white or whitish spot. The difference in size and of the extent of the gray on the basal portion of these two primaries is at once seen to be merely of average character, so that the main distinction between the two supposed species is the white area on the third primary of *Larus brachyrhynchus*; and upon this rests the claim of *Larus brachyrhynchus* to specific distinctness from *Larus canus*. When sufficient material is examined, however, it becomes evident that even this character is not entirely constant, for individuals occur that quite bridge over the difference between the two forms. For example, a specimen in the Biological Survey collection, No. 193531, U. S. Nat. Mus., from Slave River, Mackenzie, collected on June 16, 1903, is, so far as its quill characters are concerned, almost perfectly typical *Larus canus*, yet it

¹ Proc. U. S. Nat. Mus., XXXVIII, April 30, 1910, p. 57.

² Ibis, series 2, VI, No. XXIII, July, 1870, p. 438.

is undoubtedly an individual variant of *Larus brachyrhynchus*. Likewise in some specimens of Old World *Larus canus* the whitish terminal area of the gray wedge on the third primary is indicated; and a specimen of *Larus canus* from Bering Island, No. 92894, U. S. Nat. Mus., has this gray wedge almost white at its distal end. These individual differences may to some degree account for some of the records of *Larus canus* in North America, though doubtless the latter does occasionally reach our coast. In view of the above facts it seems necessary to consider *Larus brachyrhynchus* a subspecies of *Larus canus*, and its name will therefore become *Larus canus brachyrhynchus* Richardson.

***Corvus brachyrhynchos caurinus* Baird.**

The Crow described by Prof. S. F. Baird as *Corvus caurinus*¹ has been commonly considered a distinct species, although recently reduced by Mr. Ridgway² to the rank of a subspecies. Study of a large series of the Northwestern Crow, in conjunction with *Corvus brachyrhynchos hesperis*, shows that there is apparently nothing in either size or color to warrant the status of *Corvus caurinus* Baird as a distinct species. There is absolutely no difference in color between this bird and *Corvus brachyrhynchos hesperis*. The very tangible differences which separate *Corvus ossifragus* Wilson from *Corvus brachyrhynchos*, in the glossiness of the upper and lower surfaces and the lack of squamate effect of the feathers on the back, are entirely absent in *Corvus caurinus*. In fact, the only visible character to distinguish the latter from *Corvus brachyrhynchos hesperis* is its smaller size, and even this is at most only average. There is consequently no legitimate excuse for considering *Corvus caurinus* anything but a subspecies of *Corvus brachyrhynchos*, despite its somewhat different voice. It should, therefore, hereafter be called *Corvus brachyrhynchos caurinus* Baird. This, it may be noted, is in entire accord with the results of the exhaustive study of this problem made by Mr. Samuel N. Rhoads,³ and also with the subsequent conclusions of Mr. H. S. Swarth.⁴

¹ Rep. Expl. & Surv. R. R. Pac., IX, 1858, p. 569 (Fort Steilacoom, Washington).

² Bull. U. S. Nat. Mus., No. 50, part III, 1904, p. 272.

³ The Auk, X, No. 1, January, 1893, pp. 18-21.

⁴ Univ. Calif. Publ. Zool., X, No. 1, February 13, 1912, p. 50.

***Dendroica erithachorides castaneiceps* Ridgway.**

The Golden Warbler commonly known as *Dendroica bryanti castaneiceps* is apparently confined to the Pacific coast of Mexico and Central America from Lower California to Costa Rica. Mr. Ridgway, in his most recent review of the group,¹ treated this bird as a subspecies of *Dendroica bryanti* Ridgway, from the Gulf coast of Mexico and the Caribbean coast of Central America; and in this opinion most subsequent writers have followed him. Examination of available material in various museums, including much recently collected, particularly from Panama and Costa Rica, the latter partly by Mr. Ridgway himself, shows now that *Dendroica bryanti* is a subspecies of *Dendroica erithachorides* Baird, from northern Colombia and Panama, which Mr. Ridgway regarded as a distinct species. The difference between these two birds consists chiefly in the less heavily streaked breast and sides, and the thus more abruptly defined exterior margin of the rufous of the throat in *Dendroica bryanti*, together with the somewhat smaller size of the latter. Intergradation takes place both in size and in the character of the streaks on the lower parts; and there are specimens which it is difficult to assign to one race or the other. Since, therefore, *Dendroica bryanti castaneiceps* Ridgway² is but subspecifically separable from *Dendroica bryanti* Ridgway,³ and as the latter, as above shown, is but a subspecies of *Dendroica erithachorides* Baird, it seems necessary to call the Mangrove Warbler of the Pacific coast of Mexico *Dendroica erithachorides castaneiceps* Ridgway.

¹ Bull. U. S. Nat. Mus., No. 50, part II, 1902, p. 530.

² Proc. U. S. Nat. Mus., VIII, Sept. 2, 1885, p. 350, footnote (La Paz, Lower California).

³ *Dendroica viellottii* var. *bryanti*, Ridgway, Amer. Nat., VII, October, 1873, p. 605 (Belize, British Honduras).

DESCRIPTION OF A NEW SEASIDE SPARROW FROM FLORIDA.

BY ARTHUR H. HOWELL.

ONE of the surprising results of a short collecting trip made by the writer to Cape Sable, Florida, in February, 1918, was the discovery of a distinct new species of Seaside Sparrow. This may be described as follows:

***Thryospiza*¹ *mirabilis* sp. nov.**

Cape Sable Seaside Sparrow.

Type, No. 261,542, U. S. National Museum, Biological Survey Collection; ♂ adult, Cape Sable, Florida, February 18, 1918; collected by A. H. Howell; original number, 1599.

Specific characters.—Most like *Thryospiza maritima sennetti*, but smaller, the upper-parts brighter and more greenish, the edgings on the tertials and scapulars more whitish; under-parts much more extensively whitish and the streaks much darker and more sharply defined.

Description of type.—Pileum mouse gray, streaked (chiefly in two lateral stripes) with chætura black, washed on occiput with yellowish olive; hind neck pale yellowish olive, this color forming a rather conspicuous, broad, transverse band; interscapular region and rump olive (slightly paler than deep olive of Ridgway), streaked with fuscous, the scapulars broadly edged with white; upper tail coverts olive, with a broad median streak of fuscous and tipped with pale grayish; rectrices fuscous along vanes, mouse gray on inner webs, indistinctly barred with fuscous; outer webs citrine drab; tips margined with white. Supraloral region empire yellow; superciliary stripe pyrite yellow, bordered above with grayish and shading posteriorly to cream buff; lores, suborbital region, and auriculars neutral gray, mixed with whitish; postocular streak and short streaks on side of neck chætura black; submalar stripe buffy white, bordered above and below with chætura black. Primaries and secondaries fuscous, edged with olive; tertials dark fuscous, margined with buffy white; edge of wing empire yellow; lesser coverts pyrite yellow; middle coverts fuscous-black, edged with grayish olive; greater coverts fuscous, shaded with olive, and bordered on outer

¹ For the use of this name in place of *Passerherbulus* for the Seaside Sparrows see Oberholser, Auk, April, 1918, p. 210.

web with cinnamon, the terminal portion darker and margined with buffy white; under-parts white, heavily streaked on chest, sides, and flanks with dark fuscous, the same areas faintly washed with cinnamon; under tail coverts white, tinged with cinnamon and streaked with fuscous; thighs drab; lining of wings dull white, mottled with hair brown; upper mandible blackish, lower mandible dark mouse gray.

Measurements.—Type (adult male): wing, 57; tail, 51; exposed culmen, 12; depth of bill at base, 6.5; tarsus, 22; middle toe, 17. Average of five adult males: Wing, 58.2 (57–60); tail, 51.4 (50–53); exposed culmen, 12.1 (12–12.5); depth of bill at base, 6.6 (6.5–7); tarsus, 21.9 (21.5–22); middle toe, 16.8 (16–17). One adult female: 53; 47.5; 12.5; 7; 22; 16.

Remarks.—This species differs so strikingly from all the other Seaside Sparrows that intergradation with any of the forms seems very improbable. From its nearest geographical neighbor, *Thryospiza maritima peninsula*, occupying the west coast of Florida from Tarpon Springs northward, *mirabilis* differs more than from other races of that species. Its closest affinities are with *Thryospiza maritima sennetti*, which inhabits the coast of Texas; it differs from this and from all other races of *maritima* in its more extensively white under-parts, with more sharply defined streaking, and more greenish upper-parts. In size, and in the white under-parts with sharply defined streaks, it approaches *Thryospiza nigrescens* of the east coast of Florida, but differs widely from that species in the color of the upper-parts.

Individual variation is not extensive; in some specimens the streaks on the under-parts are mouse gray instead of fuscous; the tail feathers vary from mouse gray to hair brown, and in all specimens except the type the white tips are nearly or quite obsolete (probably worn off); the single female examined is washed beneath with olive-buff.

The limits of the range of this species are at present unknown, but probably it is confined to the coastal marshes in the vicinity of Cape Sable, where doubtless it is a permanent resident. It is known from six specimens taken there by the writer between February 13 and 18, 1918. The species appeared to be only moderately numerous in the area traversed.

DESCRIPTIONS OF NEW BIRDS FROM SOUTH
AMERICA.

CHARLES B. CORY.

Taraba major approximans subsp. nov.

Type from Serra Baturite, Ceara, Brazil. Adult male, No. 49017, Field Museum of Natural History. Collected by R. H. Becker, July 19, 1913.

Description.—Similar to *T. major major* from southern Brazil, Paraguay, etc., but with more white on the tail, bands on tail more complete and larger, and all the tail feathers with some white markings, the middle feathers with borders marked with small white spots; white edgings of the primaries and wing coverts broader and more conspicuous.

Measurements.—Wing, 91; tail, 102; bill, 25; tarsus, 33 mm.

Remarks.—Seventeen specimens examined. The females have the upper parts brighter and more rufous than in females of either *T. major major* or *T. major semifasciatus*. Specimens from Macaco Secco, near Andarahy, Bahia, appear to be intermediate.

Erionotus cearensis sp. nov.

Type from Serra Baturite, Ceara, Brazil. Adult male, No. 47674, Field Museum of Natural History. Collected by R. H. Becker, July 15, 1913.

Description.—Similar to *Erionotus carulscens* (Vieill.) from Paraguay (and agreeing with that species in having the tertials with grayish white edges, the whitish belly, and elongated marginal spot, 12 mm., on outer tail feather), but differs in having the white markings on the wing coverts decidedly broader; terminal third of under tail coverts pure white and bill heavier and slightly longer.

Measurements.—Wing, 71; tail, 69; culmen, 16 mm.

Drymophila richmondi nom. nov.

Dr. Hellmayr (Abh. Ak. Wiss., Munchen, XXII, 1906, p. 663) proposed *Fornicivora ochropyga* as a new name for *Fornicivora striata* (nec *Thamnophilus striatus* Spix) Selater, Cat. Bds. Brit. Mus., XV, 1890, p. 252, but Dr. C. W. Richmond has called my attention to the fact that *ochropyga* is also preoccupied by *Fornicivora ochropyga* Pelzeln. I, therefore, take pleasure in proposing that it shall be called *Drymophila richmondi*.

Furnarius agnatus endoecus subsp. nov.

Type from Encontrados, Zulia, northwestern Venezuela (in heavily forested region southwest of Lake Maracaibo). Adult female, No. 50546, Field Museum of Natural History. Collected by M. P. Anderson, November 27, 1913.

Description.— Similar to *F. agnatus agnatus*, but upper-parts, wings and tail darker (more chestnut rufous), and crown very much darker (not so brown as in *leucopus* from Guiana), but color approaching nearer to *leucopus* than it does to that of *agnatus agnatus* from Santa Marta; abdomen paler, more whitish.

Remarks.— *F. a. endoecus* differs from *F. a. venezuelensis* (from the arid coast region east of Lake Maracaibo) in much darker and more brownish crown, much darker more chestnut-rufous upper parts, wings and tail, and darker and more rufous breast.

Cinclodes neglectus sp. nov.

Type from Mountains near Otuzco, (alt. about 11,000 ft.) western Peru. Male, No. 50559, Field Museum of Natural History. Collected by W. H. Osgood and M. P. Anderson, March 19, 1912.

Description.— Ground color of crown dark brown (near Dresden brown) approaching that of *C. fuscus*, but feathers of anterior crown and forehead with small tawny shaft spots; eyelids and superciliary stripe whitish; back dull reddish brown becoming strongly rufous brown on rump and upper tail coverts; tail rufous brown, the three outer tail feathers entirely bright rufous; throat dull whitish, the feathers bordered with dusky; breast feathers tawny white bordered with dusky; rest of under-parts grayish brown becoming slightly rufous brown on the flanks and under tail coverts; nearly all of the feathers of the breast, abdomen and sides with narrow, pale (whitish or tawny white) shaft streaks; exposed portion of quills rufous; under wing coverts tawny, more or less marked with dusky; band near base of inner quills rufous; legs and feet pale brown (in dried skin).

Measurements.— Wing, 84; tail, 70; bill (upper mandible broken) about 18; tarsus, 27 mm.

Remarks.— Although but one specimen was taken, this seems to be a well marked species distinguished by its rufous tail, strongly marked under-parts, pale legs and feet, etc.

THIRTY-SIXTH STATED MEETING OF THE
AMERICAN ORNITHOLOGISTS' UNION.

BY T. S. PALMER.

THE Thirty-sixth Stated Meeting of the American Ornithologists' Union convened in New York City, on Monday, November 11, 1918. Owing to the epidemic of influenza which had prevailed for some weeks it was necessary, for the first time in the history of the Union, to omit the public sessions and confine the sessions to business meetings of the Council, Fellows and Members. The meetings were held on the historic occasion of the signing of the armistice and amid the noisy celebration of the end of the great world war. The attendance included 14 Fellows and several members. Among those present were two Founders of the Union, Dr. J. A. Allen and Dr. A. K. Fisher, and three Fellows originally elected in 1883, William Dutcher, Dr. Geo. Bird Grinnell and John H. Sage.

At the meeting of the Fellows called to order in the American Museum of Natural History at 8.05 P. M. by the President, John H. Sage, 12 Fellows were present. The amendment to the By-Laws proposed at the last Stated Meeting, making the fee of Patrons one thousand dollars, was formally adopted.

At the meeting of the Fellows and Members called to order by the President at 8.20 P. M., 13 Fellows and 4 Members were present. Following the calling of the roll the list of members in military and naval service was read (see last pages). The report of the Secretary giving the status of the membership was then presented. This report showed a net gain of 62 members during the year. In November, 1917, the total number of members was 891 while the present membership was 953 distributed as follows: Fellows, 50; Retired Fellows, 2; Honorary Fellows, 15; Corresponding Fellows, 56; Members, 80; and Associates, 750. During the year the Union lost 14 members by death, 13 by resignation and 20 by delinquency. The deaths (including two in the previous

year, news of which was delayed) comprised those of one Retired Fellow, one Honorary Fellow, one Corresponding Fellow, and 11 Associates, three of whom were killed in action in France. The deceased members are as follows:

- Lyman Belding,¹ Retired Fellow, aged 88½, died at Stockton, Calif.,
 Nov. 22, 1917
- Dr. Friedrich Hermann Otto Finsch,² Honorary Fellow, of Brunswick,
 Germany, died in his 78th year, Jan. 31, 1917
- Col. William Vincent Legge,³ Corresponding Fellow, died in his 75th year
 at St. Mary's, Tasmania, Mar. 25, 1918
- Eric Brooke Dunlop,⁴ of Winnipeg, Man., aged 30, killed in action.
 May 19, 1917
- Miss Martha Burr Banks, of Westport, Conn., Dec. 13, 1917
- Rowland Gibson Hazard,⁵ aged 63, died at Santa Barbara, Calif.
 Jan. 23, 1918
- George Batten,⁶ aged 64, died at Montclair, N. J. Feb. 16, 1918
- Prof. Jonathan Young Stanton,⁷ died in his 84th year at Lewiston, Me.,
 Feb. 17, 1918
- Henry Justice,⁸ died in his 74th year at Philadelphia, Pa., Mar. 1, 1918
- Mrs. Sara Anderson Hubbard, died in her 86th year, at Brooklyn, N. Y.,
 July 31, 1918
- Walter Freeman McMahon⁹ of New York City, aged 29, killed in action,
 Aug. 28, 1918
- Prof. David Ernest Lantz,¹⁰ died in his 64th year at Washington, D. C.,
 Oct. 7, 1918
- Douglas Clifford Mabbott¹¹ of Washington, D. C., aged 25, killed in action,
 Sept. 15, 1918
- Mrs. S. W. Powell of West Beckett, Mass., died 1918

The Secretary reported that notices of the last annual meeting had been published in 'Bird-Lore,' 'Cassinia,' 'The Condor,' 'Guide to Nature,' and 'Science.' In an effort to secure greater publicity of the work of the Union brief notices had been sent to

¹ For obituary notice, see Auk, XXXV, p. 106.
² " " " see Auk, XXXV, p. 381.
³ " " " see Auk, XXXV, p. 510.
⁴ " " " see Auk, XXXV, p. 266.
⁵ " " " see Auk, XXXV, p. 264.
⁶ " " " see Auk, XXXV, p. 264.
⁷ " " " see Auk, XXXV, p. 511.
⁸ " " " see Auk, XXXV, p. 266.
⁹ " " " see Auk, XXXVI, No. 1.
¹⁰ " " " see Auk, XXXVI, No. 1.
¹¹ " " " see Auk, XXXVI, No. 1.

'The Emu,' 'Ibis,' and 'Nature,' and an account of the Union had been published in the 'American Museum Journal' for October, 1918.

In order to provide as far as possible for the dues of members in military service, requests for subscriptions to a memorial fund were sent to a selected list of members during the campaign for the Third Liberty Loan. This fund was to form part of the permanent funds of the Union and was to be invested in Liberty Bonds. The interest during the period of the war would be used to meet the dues of members in service and later for publications. The responses to this appeal were very generous and resulted in the acquisition of a fund of nearly \$1700. By vote of the Council those contributors who subscribed an amount equal to the life membership fee will hereafter be carried on the rolls as life members. By this action one Fellow, two Members and three Associates will be exempt in future from the payment of annual dues.

In April cards were sent to 100 libraries known to have 'The Auk' inquiring as to whether the sets were complete and whether the two general Indexes and the last Check List were available for reference. The correspondence which ensued resulted in the sale by the Treasurer of a number of volumes of 'The Auk' and also of 'Indexes' and 'Check Lists.'

Some progress was made during the year in an intensive study of the membership of the Union. A geographical list of the members arranged by states was prepared and small maps showing the geographical distribution of members in 1888 and 1918 were exhibited. A consolidated index containing the names of all persons who had ever been connected with the Union was also begun. In accordance with the vote taken at the last meeting lists of the members 'Called to the Colors' were published in each number of 'The Auk' and copies of these lists were forwarded to such of the members in service as could be reached. Copies of the report of the last meeting and of the discussion on 'Ornithological Work in 1918' were also distributed to the Corresponding Fellows.

The report of the treasurer showed the finances of the Union to be in a highly satisfactory condition with a substantial balance of \$2463.89 in receipts over current expenses and a total

surplus including subscriptions to the special memorial fund and income from life memberships and other invested funds, of more than \$6000.

The result of the election of officers for the ensuing year was as follows: President, John H. Sage; Vice Presidents, Witmer Stone and Geo. Bird Grinnell; Secretary, T. S. Palmer; Treasurer, Jonathan Dwight; Members of the Council, Ruthven Deane, William Dutcher, Joseph Grinnell, Frederic A. Lucas, Harry C. Oberholser, Charles W. Richmond, and Thomas S. Roberts.

On recommendation of the Council the following five Honorary and fourteen Corresponding Fellows were duly elected.

HONORARY FELLOWS:

- Dr. Roberto Dabbene, Buenos Aires, Argentina.
- Alwyn Karl Haagner, Pretoria, Transvaal.
- Dr. Einar Lönnberg, Stockholm, Sweden.
- Dr. Auguste Ménégaux, Paris, France.
- Dr. Peter Suschkin, Kharkov, Russia.

CORRESPONDING FELLOWS:

- Edwin Ashby, Wittauga, Blackwood, South Australia.
- E. C. Stuart Baker, Secretary B. O. U., London, England.
- Dr. Louis Brasil, Caen, France.
- Dr. Walter E. Collinge, St. Andrews, Scotland.
- Nils Gyldenstolpe, Stockholm, Sweden.
- Tom Iredale, Ealing, England.
- Rev. Francis Charles Robert Jourdain, Abingdon, England.
- Cecil Boden Kloss, Kuala Lumpur, Federated Malay States.
- Nagamichi Kuroda, Tokio, Japan.
- Enrique Lynch Arribálzaga, Resistencia, Argentina.
- Dr. Charles Theodore Ramsden, Guantanamo, Cuba.
- Herbert C. Robinson, Kuala Lumpur, Federated Malay States.
- Charles Francis Massy Swynnerton, Gungunyava, South Rhodesia.
- Norman Frederic Ticehurst, St. Leonards-on-Sea, England.

Dr. Harold C. Bryant, Berkeley, Calif.; George K. Cherrie, Newfane, Vt.; Lieut. Ludlow Griscom, New York City; Lieut. James L. Peters, Harvard, Mass.; and Robert W. Williams, Washington, D. C., were elected to the class of Members, and the

following one hundred and forty-seven persons were elected Associates:

- Miss Harriet Abbott, Box 125, Fryeburg, Maine.
 Joseph Moody Akerman, High St., Newburyport, Mass.
 Ransom Perry Allaman, R. D. 4, Bedford, Penn.
 Lucius Armitage, 282 E. 162d St., New York City.
 Ralph Arnold, 825 Union Oil Building, Los Angeles, Calif.
 Mrs. Benjamin Bachrach, 1437 West Main St., Decatur, Ill.
 John Leonard Bagg, 70 Fairfield Ave., Holyoke, Mass.
 Alfred M. Bailey, Louisiana State Museum, New Orleans, La.
 Miss Katharine Bruce Baird, 815 Webster St., N. W., Washington,
 D. C.
 Edward M. Ball, Falls Church, Va.
 Miss Helen Barker, Sandusky, O.
 Rev. John Mallery Bates, St. Paul, Nebr.
 Dr. James Baxter, Chatham, New Brunswick.
 Miss Clara Kern Bayliss, 6059 Harper Ave., Chicago, Ill.
 Mrs. Willard Bayliss, Eveleth, Minn.
 Ernest Harold Baynes, Meriden, N. H.
 Miss Frances Bigelow, Elkhart, Ind.
 Miss Marion Bole, Waterbury, Conn.
 Frederick Gilmer Bonfils, 1500 East 10th Ave., Denver, Colo.
 Miss Bertha Louise Brown, 53 Court St., Bangor, Me.
 Mrs. Herbert Brown, 434 E. 2d St., Tucson, Ariz.
 Rollin E. Buchanan, Excelsior, Minn.
 Frank Seiler Butterworth, Madison, Conn.
 Mrs. James C. Buzzell, 11 Henderson St., Bangor, Maine.
 Mrs. Hiram Byrd, Winter Park, Fla.
 Miss Ethel B. Capling, Wiseton, Sask.
 Mrs. Olivia Garnsey Carroll, Rutland, Mass.
 Clifford Mills Case, 16 Burton St., Hartford, Conn.
 Robert Carsen Caskey, Morristown, N. J.
 Mrs. Arthur E. Caswell, 241 Union St., Athol, Mass.
 Charles William Clagett, Upper Marlboro, Prince George Co., Md.
 C. Irvin Clay, Box 353, Eureka, Calif.
 P. Sidney Conger, Prairie du Sac, Wis.
 Blair Coursen, 64th & University Avenues, Chicago, Ill.
 Dr. Henry H. Covell, 1600 East Ave., Rochester, N. Y.
 Norman Criddle, Treesbank, Man.
 Albert Ashley Cross, Huntington, Hampshire Co., Mass.
 Miss Joann Olivia Crowell, Dennis, Mass.
 Prof. Byron Cummings, Univ. Arizona, Tucson, Ariz.
 Lee Raymond Dice, Biological Survey, Washington, D. C.
 Alexander Dawes DuBois, Dutton, Mont.

- Miss Lulu Dunbar, R. D. 1, Elkhorn, Wis.
 Howard Eaton, Wolf, Wyo.
 Miss Katharine May Edwards, Wellesley College, Wellesley, Mass.
 Sidney E. Ekblaw, R. F. D. 23, Rantoul, Ill.
 Willard Ayres Eliot, 1011 Thurman St., Portland, Ore.
 Henry Lane Eno, Princeton, N. J.
 George A. Eyer, Short Hills, N. J.
 Mrs. William Falger, Modesto, Calif.
 Francis Apthorp Foster, Edgartown, Mass.
 Leonard Freeman Jr., 1374 Elizabeth St., Denver, Colo.
 Miss Edna Gainsforth, Smithfield, Nebr.
 Mrs. Frank Bemis Goode, Billings St., Sharon, Mass.
 A. Lignori Gormley, Arnprior, Ont.
 E. W. Graves, Spring Hill, Ala.
 Walter G. Guth, 3929 Greenview Ave., Chicago, Ill.
 Arthur Henry Hardisty, 2326 First St., N. W., Washington, D. C.
 Harold Ira Hartshorn, 53 South 12th St., Newark, N. J.
 Mrs. C. F. Harvey, Vernon Hall, Kinston, N. C.
 G. S. Hauxhurst, The Cadillac, 17th and Walnut Ave., Cleveland, O.
 Miss Hester Heacock, Sec. Wyncote Bird Club, Wyncote, Pa.
 John Brooks Henderson, 16th St. & Florida Ave., N. W., Washington,
 D. C.
 Mrs. Elizabeth Adams Herrick, Topsfield, Mass.
 Dr. C. Gordon Hewitt, Dept. Agriculture, Ottawa, Canada.
 Andrew Whitman Higgins, Sandwich, Mass.
 Mrs. G. B. Hoag, Elko, Nev.
 Richard Montague Hunt, Mus. Vertebrate Zool., Berkeley, Calif.
 Mrs. Gertrude H. Husher, 821 S. Hope St., Los Angeles, Calif.
 Mrs. Silkman Elting Hyde, Mayfield, Idaho.
 Ralph Waldo Jackson, R. D. 1, Cambridge, Md.
 Dr. George Herman Jennings, Jewett City, Conn.
 Wm. Frost Jones, Norway, Maine.
 George L. Kaeding, Battle Mountain, Nev.
 George L. Kirk, Rutland, Vt.
 Albert J. Kirn, Solomon, Kans.
 Roy M. Langdon, Sec. Maywood Bird Club, Maywood, Ill.
 Prof. Austin P. Larrabee, Yankton College, Yankton, S. D.
 George Augustus Lawyer, 1931 17th St., N. W., Washington, D. C.
 Ernest G. Liebold, 94 Rhode Island Ave., Highland Park, Mich.
 Clarence M. Lindsay, 213 Congress St., Brooklyn, N. Y.
 Charles Irving Long, 130 Fifth Ave., Roselle, N. J.
 Richard D. Lusk, Winkelman, Ariz.
 Otto McCreary, Geneva, N. Y.
 Myles Standish McGeever, 60 Keene St., Lowell, Mass.
 Thomas Arthur McHarg, 725 Highland Ave., Boulder, Colo.
 George Marvin Marekres, Sharon, Conn.

- H. H. Mitchell, Provincial Museum, Normal School, Regina, Sask.
 Miss Carrie Ella Miller, 36 Cottage St., Lewiston, Me.
 Dr. Loye Holmes Miller, State Normal School, Los Angeles, Calif.
 Adelbert John Moody, Aetna Life Ins. Co., Hartford, Conn.
 Dr. Wm. Ladd Moody, Newport, R. I.
 William Henry Moore, Mouth Keswick, R. M. D. 1, N. B.
 Charles B. Morss, 35 Greenleaf St., Bradford, Mass.
 Edwin Lincoln Moseley, Bowling Green, O.
 E. D. Nauman, Box 606, Sigourney, Ia.
 Donald J. Nicholson, Orlando, Fla.
 Mrs. Carrie Morse Norton, Faulkton, S. D.
 Mrs. Edith Hollick Oliver, Authors' League of America, 34 W 42d St.,
 New York, N. Y.
 Henry W. Osgood, 16 Elm St., Pittsfield, N. H.
 Mrs. Bertha Ellis Palmer, 1939 Biltmore St., N. W., Washington, D. C.
 Miss Elizabeth Day Palmer, 1741 S. Harvard Blvd., Los Angeles, Calif.
 Miss Jennie S. Parks, 128 Crafts Road, Chestnut Hill, Mass.
 John Roy Pemberton, 71 Clarendon Ave., San Francisco, Calif.
 Miss Elizabeth Alice Simpson Pennell, 252 Maine St., Brunswick, Me.
 E. H. Perkins, Kingston, R. I.
 Wright McEwen Pierce, Box 343, Claremont, Calif.
 Mrs. F. A. Pritchard, 203 N. Court St., Medina, O.
 Emmet Augustus Quarles, 40 Davenport Drive, Stamford, Conn.
 Miss Mary Estelle Raker, 1484 E. Sherman St., Portland, Ore.
 Walter S. Ratliff, Richmond, Ind.
 Henry Cushier Raven, Bay Shore, L. I., N. Y.
 Mrs. Bruce Reid, Port Arthur, Tex.
 Henry J. Rust, Box 683, Coeur d'Alene, Idaho.
 Miss Myra M. Sampson, 8 Paradise Road, Northampton, Mass.
 Remi H. Santens, Carnegie Museum, Pittsburgh, Pa.
 J. J. Schafer, Port Byron, Ill.
 Julien Eliot Schonnegel, 92 Morningside Ave., 122d St., New York.
 Will Scott, Bloomington, Ind.
 James W. Sewell Jr., 2218 Patterson St., Nashville, Tenn.
 Foster L. Shelley, Waukegan, Ill.
 John A. Silver, Darlington, Md.
 Miss Ethel M. Smith, 57 N. Pleasant St., Amherst, Mass.
 Joseph Dewey Soper, R. D. 2, Preston, Ont.
 Paul Haynes Steele, 1429 Cherokee St., Denver, Colo.
 Mrs. Jesse Stephenson, Monte Vista, Colo.
 Rev. Alfred Luther Struthers, Townsend, Mass.
 Dana W. Sweet, Phillips, Me.
 Loren E. Taylor, R. D. 2, Reno, Nev.
 Miss Mabel Thurston Tilton, Vineyard Haven, Mass.
 Miss Annie Florence Towne, Topsfield, Mass.
 J. F. Truesdell, Equitable Bldg., Denver, Colo.

- Mrs. George M. Turner, Riverside, Calif.
Asam H. Twitchell, Flat, Alaska.
Dr. Eugene U. Ufford, Central St., Auburndale, Mass.
Miss Katie Vallandingham, 811 Highland Ave., Carrollton, Ky.
Samuel Henry Vandergrift, 311 Riggs Building, Washington, D. C.
Prof. Charles Taylor Vorhies, University of Arizona, Tucson, Ariz.
Ernest Pillsbury Walker, Wrangell, Alaska.
C. G. Watson, London, Ont.
Rev. Le Roy Titus Weeks, Emmetsburg, Ia.
Mrs. J. W. Wheeler, R. D. 1, Tucson, Ariz.
Miss Lena Catharine Wileye, Buckland, Mass.
Enrique R. Williams, Camoa, Province of Habana, Cuba.
H. V. Williams, Grafton, N. D.
Todd Albert Wingard, care Dr. C. W. Richmond, 1929 Park Road,
Washington, D. C.
Prof. Lyman Child Wooster, Ft. Hays Normal School, Hays, Kans.
Rev. Charles John Young, Brighton, Ont.

The Committee on Biography and Bibliography, through its chairman, Dr. Palmer, submitted a brief verbal report showing progress in several of the projects mentioned in previous reports. Dr. Glover M. Allen, who has been appointed a member of the Committee, has been devoting his attention mainly to the preparation of an index of papers relating to types and special collections of birds and has already brought together about 200 titles. Work has been continued on the 'Index of Portraits of Ornithologists' and the entries have been increased from 700 to about 770, of which nearly 50 per cent are those of present or past members of the Union. In addition to new entries a number of new portraits of individuals already in the list have been indexed. Progress has also been made on the 'Bibliography of Bibliographies.' Much time has been devoted to the study already mentioned of the membership of the Union and to securing full names of the members to complete the records. In the matter of manuscripts it is interesting to mention that the valuable set of diaries of the late Prof. F. E. L. Beal, comprising more than 50 volumes and extending over a period of nearly 40 years, has recently been deposited in the library of the U. S. Department of Agriculture; and that an interesting manuscript of Titian R. Peale, relating to the history of the Wilkes Exploring Expedition, has been acquired by the Smithsonian Institution.

In accordance with the recommendation of the Council the invitation extended by the British Ornithologists' Union to the A. O. U. to join in a coöperative enterprise for the preparation of a series of Check Lists of the birds of the principal zoölogical regions of the world, arranged on a uniform plan, to be known as the 'Systema Avium' (see 'The Auk,' XXXV, p. 509), received favorable consideration and was referred to the committee on Classification and Nomenclature with power to act.

Resolutions were adopted expressing the thanks of the Union to the President and Trustees of the American Museum of Natural History for the courtesies extended during the 36th meeting of the Union, and also requesting the states of Oregon and California through their respective Legislative and Executive branches to take action to cede to the United States jurisdiction over such portions of the Malheur and Klamath Lake Bird Reservations as may be necessary to insure the permanent preservation of these refuges by the Federal Government.

On Tuesday afternoon, some of the officers of the Union under the guidance of Dr. Grinnell visited Audubon Park in the vicinity of 157th St. and Broadway and inspected the three houses where Audubon and his sons, Victor and John Woodhouse Audubon, lived during their later years. A visit was also paid to Trinity Cemetery, only a few blocks away, where Audubon and George N. Lawrence are buried.

On the following day the Treasurer and Secretary spent several hours in the library of the New York Historical Society (on 77th Street, opposite the southeast corner of the American Museum), examining the original drawings of Audubon's great work on the 'Birds of America.' This wonderful collection of drawings, preserved in five large portfolios, was purchased direct from Mrs. J. J. Audubon, nearly half a century ago. Apparently its existence is not generally known and it seems to have been seen by comparatively few ornithologists. An examination of it either superficially or with a reading glass will well repay any one who visits the library.

Although the omission of the public meetings with the opportunities for the presentation of papers and the usual social intercourse proved a great disappointment to many of the members,

it is gratifying to know that the Union has passed through the trying ordeals of war times without increasing its dues or cutting down its journal and without decrease either in its membership or income. In fact the past year has proved one of the most prosperous in its whole history.

The next meeting will be held in New York City, in 1919, at a date to be determined by the local committee.

GENERAL NOTES.

Further Notes on the "Fishy" Flavor of Birds.— Since publishing on this subject in the last issue of 'The Auk' (October 1918, pp. 474-6), the writer has been favored by correspondents with various valuable items. These are presented under appropriate headings selected from the conclusions of the former paper.

1. Certain individual birds of species not habitual fish eaters have their flesh tainted by a flavor which popularly is called "fishy." Mr. C. H. Young, of the Canadian Geological Survey, reports according to Mr. P. A. Taverner, that last spring at Shoal Lake, Manitoba, he shot two Golden Plover, which upon trial proved to be so "fishy" as to be almost uneatable. The two persons who ate them both became ill afterwards, while four or five others participating in other parts of the same meal were unaffected. Mr. Taverner states that a stew made from two Canada Geese killed on Red Deer River July 1917 was strongly fishy. Mr. Taverner again, "A batch of Semipalmated Sandpipers killed on the tidal mud flats on Miscou Island, in spring of 1914 were so fishy as to be edible only when other meat was lacking." Also "Juvenile Harlequin ducks raised on and never off from a small fishless lake in Jasper Park were so fishy as to be inedible." (This point is mentioned in (The Canadian Alpine Journal), Vol. IX, 1918, p. 63).

2. Habitual fish-eating birds do not necessarily taste fishy.

Loon. Average proportion of fish in diet 80%. Summer 1918. Tried an old bird, found it tough and not attractive in flavor but without trace of fishiness. (Taverner.)

Herring Gull.— Fish in diet, 54%. The fishermen of Nova Scotia eat a great many. (Dr. L. C. Jones.) An immature Herring Gull taken at Miscou Island in May was strongly fishy, but the inhabitants of the shores of the Gulf of St. Lawrence regard young summer and fall birds as great delicacies. (Taverner.)

Double-crested Cormorant.— Fish in diet, almost 100%. Dr. C. W. Townsend says: "The last time I was in Labrador I ate a Double-crested Cormorant, whose stomach was filled with fish, and found it delicious without a trace of fishy flavor. . . . The Cormorant almost melted in one's mouth, and although I could not induce the two sailors to touch it, the Captain, much to his surprise, found it good."

Hooded Merganser.— Fish in diet, 25%. Ned Hollister states that these birds are regularly shot and eaten at Delavan Lake, Wisconsin, being as well flavored as any of the ducks killed there. In his family they were preferred to Bluebills.

Bittern.— Fish in diet, 15%. Both adult and young are very delicate and tasty. Not as hearty as the larger Herons, almost equal to Partridge (Ruffed Grouse) but less dry. (Taverner.)

Great Blue Heron.—Fish in diet, 55%. J. Josselyn in his 'Two Voyages to New England' states that the finest game the colonists found was the Great Blue Heron. I have tried it and in flavor it is much like the Scoters, but the meat is much finer grained and very rich in fat. (Jones.) Adult is rather tough but of very fine flavor, a hearty meat more like beef than that of a bird. Juvenile, tender and more delicate. I regard this bird as the finest wild bird I have ever eaten under camp conditions. Tried it fried, broiled, and stewed. (Taverner.) Have found the young bird in the first autumn delicious eating. (Witmer Stone.)

Green Heron. Fish in diet, 40%. Very good, a little more delicate than the Night Heron. (Taverner.)

Black-crowned Night Heron.—Fish in diet, 40%. Very good, not quite as hearty as the Great Blue Heron. (Taverner.)

Mr. Taverner also reports that at Perce in 1914 and 1915 he tested Puffins, Murres and Razor-billed Auks, birds which make fish about 60% of their diet, and found all of them delicious.

In considering evidence on this subject it is necessary to distinguish clearly between a true fishy taste and the much more common merely strong or rank flavor. They are commonly confused. It has been suggested that fishy flavor may be due to a diet of mollusks rather than of fish, but in the writer's opinion this theory will no more bear searching analysis than the other. For instance Scoters and Eiders, almost exclusive mollusk feeders along the New England coast, are not fishy in flavor, and may easily be made into good dishes as the writer knows from experience. Robin Snipe collected on Wallops Island, Virginia, in spring and found to be feeding exclusively on small mussels, were not at all fishy, in fact were as good as any of the other shorebirds. In considering the effect of food upon flavor it is necessary also to recognize a certain specificity in flavor. For instance, in the corn belt hogs and cattle are kept under identical conditions and have with only minor exceptions the same foods; yet there is no chance of confusing the pork and beef they yield. Somewhat the same case is that of guinea fowl and chickens reared upon the same diet, but in flavor very easy to distinguish.

The writer does not wish to be understood to believe that food does not influence flavor. Remarks by correspondents indicate that they got an impression to this effect from the previous contribution, just what an effort was made to avoid. The Spruce Grouse and the Sage Hen, for instance, are two striking examples among American birds of food controlling flavor. The points chiefly emphasized are that fish-eating does not necessarily cause fishy flavor, and that the latter does exist in individual birds that in all probability have not acquired it by eating fish. In the light of the evidence the writer holds neither of these points is subject to dispute.—
W. L. McATEE.

Egrets (*Herodias egretta*) in Northern New Jersey.—On August 4, 1918, two Egrets (*Herodias egretta*) were seen by the writer at a small

artificial lake near Branchville, New Jersey. These, together with the three that stayed several weeks during late summer and early autumn of 1916 in the vicinity of Van Cortlandt Park, New York City (Chubb, S. H., Auk, Oct., 1916, p. 433), one of which returned in the summer of 1917 to the same place (Rogers, Charles H., Bird-Lore, Sept.-Oct., 1917, p. 276), the one reported from Setauket, L. I., in the summer of 1916 (Nichols, Murphy, and Griseom, Auk, Oct., 1917, p. 440), and other recent records, would seem to indicate that the laws for the protection of this beautiful bird are bearing fruit.—G. CLYDE FISHER, *American Museum of Natural History, New York City.*

Brooding Habit of the American Coot.—Two nests of the American Coot (*Fulica americana*) were hatched in the North American waterfowl lake in the National Zoological Park during the summer of 1918, and one curious habit of the bird, which I do not recall having seen noted, attracted my attention. Until the young birds are about twenty days old, almost as large as small quails, and have lost the reddish markings on the head, they return to the nest each evening and are brooded by a parent bird, presumably the female. I had never supposed before that these birds returned to the nest once the young had left it, almost immediately after they were hatched. In one case the nest was placed on the dry ground, under the overhanging branches of a low tree, about two feet from the bank, and in an excellent position for observation from the shore. I repeatedly saw the Coots between sundown and dark, one parent on the nest, the young under her wings or nestling about her after the manner of the domestic fowl. The other parent at these times patrolled the nearby shore and savagely attacked any ducks that wandered into the immediate vicinity.—N. HOLLISTER, *Washington, D. C.*

Stilt Sandpiper (*Micropalama himantopus*) in Wyoming.—The occurrence of the Stilt Sandpiper (*Micropalama himantopus*) in Wyoming seems to be rare enough to render it advisable to place on record the existence of four specimens even if the records are decidedly old. In recently working over the series of this species contained in the collection of the United States National Museum, I found that four specimens, all males, were secured at Fort Laramie, Laramie County, Wyoming, May 15, 1875, by Dr. J. S. Newberry. Of these, Number 69918 was sent to Mr. E. E. T. Seton. The existence of these birds has evidently been unknown to Wyoming ornithologists as neither Knight (*Birds of Wyoming*, 1902, Bull. 55, Univ. of Wyoming, p. 47) nor Grave and Walker (*Birds of Wyoming*, 1913, Univ. of Wyoming, p. 35) make any reference to them.—B. H. SWALES, *U. S. National Museum, Washington, D. C.*

Notes on Migratory *Anatinæ* and *Limicolæ* from Western New York.—Realizing that most ornithologists are interested in obtaining

data regarding the effects of the present ban on spring shooting, the writer has decided to place on record a series of observations made during the past two seasons in the township of Hamburg. The species noted were all seen on the wet meadows which lie between the highway and Lake Erie, directly north of the village of Woodlawn. The area, according to the map, is about a quarter of a mile wide and half a mile deep, and is the property of the Lackawanna Steel Company, whose immense plant is situated only a short distance away to the north. Interurban cars pass to and fro at frequent intervals on the tracks along the highway, and the highway itself carries a heavy traffic. Moreover, a railroad track runs along the north and west sides of the region, and here a switch engine is almost continually at work.

Mr. James Savage of Buffalo, a well-known western New York observer, was the first to discover that the meadows were used as feeding grounds by migratory water fowl and shore birds. On Sunday, May 13, 1917, he was returning by automobile to his home in the city after an early morning excursion in the woods of East Hamburg with the writer. As he stopped his car on the turnpike to scan the flooded fields, he was very much surprised to note two beautiful Mallard drakes and a duck, and also sixteen pairs of Pintails. It was clearly evident that the latter species had already mated, for the birds were feeding or resting two and two. The individuals of both species had probably been on the meadows for some time, as no attention was paid to passing traffic or to the switch engine working on the lake side of them. Four Greater Yellow-legs, two Lesser Yellow-legs, and one Pectoral Sandpiper were also seen, besides some smaller species which could not be identified on account of the great distance, as Mr. Savage made all of the observations without getting out of his automobile.

The writer was unable to visit the locality until the following Saturday, May 19. There were only two pairs of Pintails left at that time; these were very tame and permitted him to approach within about thirty feet before they finally flew off toward Lake Erie. Although the Mallards and Yellow-legs were not found, two Pectoral Sandpipers, four Red-backed Sandpipers and four Semipalmated Plovers were noted near the highway. The occurrence of *Pelidna alpina sakhalina* at this season is somewhat noteworthy, as spring records for western New York are scarce. Two of the specimens were in full plumage and showed the characteristic red backs and black bellies; the slightly curved bills of all four were easily visible. The Red-backs were especially sluggish; they waded slowly around and leisurely probed for food, allowing one to approach within fifteen or twenty feet.

During the following spring four visits were paid to the area; these were begun in late April in order to list some of the earlier Anatinae. On April 21, 1918, there were feeding on the meadows one pair of Blue-winged Teals, one Pintail drake, and a single Coot. On April 22, however, the number

of birds had greatly increased. A pair of Baldpates and a female Shoveller had appeared; there were now two pairs of Blue-winged Teals, and no less than forty Pintails, the males and females occurring in about equal numbers; the Coot was also noted.

On April 25 the number of Baldpates had increased to eight, and one small flock of eight Green-winged Teals was flushed near the railroad track. The two pairs of Blue-winged Teals and the female Shoveller were again found; twenty pairs of Pintails were noted, and the number of Coots had increased to three. On Sunday, May 5, a final visit was paid to the area, and twenty pairs of Pintails were noted; the remaining birds had evidently passed on.

Inasmuch as the birds were easily observable from the highway, many persons in this vicinity have commented both upon their numbers and their tameness. The Pintail appeared to be the most unsuspecting species, and the Green-winged Teal the most wary; the Baldpate, Blue-winged Teal and Shoveller were somewhat more difficult to observe than the Pintail, probably because they were usually feeding among the grasses. In no case, however, was it necessary to guard against the danger of exposing one's self in order to make an identification; apparently none of the Anatinae paid any attention to the observer, providing, of course, he did not get too near them. Most of the ducks, and especially the Pintails, seemed somewhat stupid, as though their excess vitality had been entirely used up by a series of hard flights or an exceptionally severe winter. Instead of their being continually on the alert for danger, they fed or rested leisurely, apparently quite oblivious of their somewhat unfavorable environment.

Although numbers of foreign laborers live near the region, no attempts were made to molest the birds, probably on account of the Lackawanna policemen who regularly patrol the outskirts of the area. It might be added that the Coots recorded here are the first the writer has ever seen at this season in this vicinity; they are included because of this fact and also because they were on the meadows with the Anatinae.—THOMAS L. BOURNE, *Hamburg, N. Y.*

Spring Shore-birds in Connecticut.—An unusually heavy flight of shore-birds appeared in Connecticut in the spring of 1918. Not only were the common spring species in unusually large numbers, but a number of species usually rare at this season appeared. The main part of the flight as I observed it at Norwalk was between May 25 and June 1. The following species, rare or unusual at this season, were recorded.

Macrorhamphus griseus griseus. DOWITCHER.—Four of these birds were observed clearly on May 25. They were seen from a distance of about 150 feet, in a very clear light, and with seven diameter binoculars. On May 27 more birds believed to be this species were seen, but on account of fog nothing but their outlines was visible. On May 28 several more

were again certainly seen. This species has not been previously recorded from Connecticut in spring.

Tringa canutus. KNOT.—Two birds of this species were seen May 25 in company with the Dowitchers seen on that date. They were observed clearly and were in the beautiful rosy-breasted and gray-backed spring plumage. This species has been recorded but once previously in spring from Connecticut (Gabrielson, Auk XXXIV, 462-3) and then from nearly the same locality as this record.

Totanus flavipes. YELLOWLEGS.—Two birds of this species were observed at Norwalk, May 11. They were in company with the larger species, so that comparisons in size were easily made to identify them. There are but two previous spring records from Connecticut.

Squatarola squatarola. BLACK-BELLIED PLOVER.—This species was first noted on May 18, and was abundant from May 25 to June 1. During that time a good many in apparently full adult plumage were noted.

Arenaria interpres morinella. RUDDY TURNSTONE.—This species was very abundant from May 25 until June 1, flocks numbering from a dozen to fifty or more being seen. In fact, this species, usually rare in spring, was equally abundant with such common species as the Least Sandpiper and Semipalmated Plover.—ARETAS A. SAUNDERS, *Norwalk, Conn.*

Killdeer (*Oxyechus vociferus*) Nesting in West Haven, Conn.—For the past two seasons word has been sent to me that Snipe were nesting on a certain farm near West Haven, but I did not pay any attention to it, as I at once thought they were Spotted Sandpipers.

About the middle of June of the past season a farmer said to me that there was a Snipe's nest in one of his corn fields, and that it contained four eggs. I at once questioned him in regard to the size of the birds and, he said they were as big as Robins, and that they had black collars on their necks.

On July 7 I paid a visit to the farm and as I was passing a pasture lot I heard the call of a Killdeer and looking over the lot I saw a pair of the birds.

When I reached the house the man took me into a corn field back of the barn, and, there in the center of the field was the nest with three eggs, one having been broken accidentally while cultivating. The nest was simply a depression in the ground with a few small pebbles on which the eggs lay. The old bird made her appearance and moved about the field, dragging her wing and feigning lameness.

The eggs at this date were heavily incubated so I took two exposures of the nest and left it hoping they would return in 1919 as the farmer said they had nested on his place for three years. A few days later I had an interview with the son of a farmer who had previously told me about Snipe nesting on his place, and, he said that they had nested there this

season and in the season of 1917, while in the spring of 1916, sixteen Killdeers were on his place, but a pair of bird dogs from a nearby house were continually hunting them so that only two pairs remained to nest.

This is the first time I ever knew of Killdeers nesting in West Haven.—
NELSON E. WILMOT, *West Haven, Conn.*

Mourning Doves Sharing a Robin Roost.— On the evening of September 10, 1918, shortly after sunset in a country place outside of St. Louis, I saw fourteen Mourning Doves (*Zenaidura macroura carolinensis*) flying low through the gathering dusk. Others followed along the same course in small groups or singly, so that I was convinced that there was a general movement toward a roosting place. The next evening I posted myself near the point where the birds had been observed the night before, and discovered that several hundred Doves were going for the night to a piece of low ground only a few rods away. At the same time many Robins were also noted dropping into the same tangle in the manner characteristic of this species when flying to a "roost." For several evenings a count was made of both species as they came to the roost. On September 14, three observers at different points counted five hundred and twenty-five Robins and four hundred and ninety-seven Doves. On September 28 only fifty Doves were noted, and on October 10, none.

The thicket in which both species roosted covered several acres and was made up of wild plum, wild crab, small oaks and elms, many of which were draped with wild grape vines. Through a part of the thicket ran a piece of low ground in which grew taller elms, willows and buttonwood. The thicket was surrounded on all sides by open fields.

The Doves came chiefly to the northwest corner of the thicket, the Robins chiefly to the north and east sides, but a few individuals of each species came along the route used chiefly by the other. A possible explanation of the marked difference in routes lies in the fact that the region to the northwest, from which the Doves apparently came, contained large corn and wheat fields and had fewer trees, while that to the north and east, from which the Robins came, included more small yards and groves of trees.

The first Doves usually appeared later than the first Robins, and their whole flight was spread over a shorter period of time. Many individuals came singly, but loose flocks of as many as thirty-four were noted. They never flew as high as the Robins that came in early, but no lower than the Robins that came late, when it was getting dark. Like the Robins, they occasionally lit on telephone wires before going into the thicket. To the northwest, about a quarter of a mile away, were two small cattle ponds; here, one evening, I observed Doves stopping to drink, apparently on their way to the roost.

The Doves, unlike the Robins, were invariably silent on their way to the roost and after entering it. The Robins very often gave their sibilant note when flying over, and in the roost kept up a considerable interchange of

"pip" notes. For an evening or two a peculiar note, which might be described as a cross between a purring and a mewling note, coming from many points in the thicket, puzzled me until I discovered that it proceeded from Brown Thrashers. There must have been very many of these birds scattered in all parts of the thicket, but I never saw any fly in and conclude, therefore, that they remained in the thicket during the day.

In looking up the literature on the Mourning Dove, I find that very little has been published on the roosting habit above described. Neither Wilson, Coues nor Bendire mentions it. Audubon has the following statement, which is copied by Nuttall and Baird, Brewer and Ridgway:

"The roosting places which the Carolina Turtles prefer are among the long grasses found growing in abandoned fields, at the foot of dry stalks of maize, or on the edges of meadows, although they occasionally resort to the dead foliage of trees, as well as that of different species of evergreens. But in all these places they rise and fly at the approach of man, however dark the night may be, which proves that the power of sight which they possess is very great. They seldom place themselves very near each other when roosting on the ground, but sometimes the individuals of a flock appear diffused pretty equally over a whole field. In this particular they greatly differ from our Common Wild Pigeon, which settles in compact masses on the limbs of trees during the night. The Doves, however, like the Pigeons, are fond of returning to the same roosting grounds from considerable distances. A few individuals sometimes mix with the Wild Pigeons, as do the latter with the Doves."

S. N. Rhoads mentions "several dozen Doves" roosting with Robins, near Haddonfield, N. J. (Cassinia, 1913) but I have found only one writer who seems to have observed them roosting in the same manner and abundance that I have above described. In 'The Auk,' (Vol. 22, p. 150) Stockard in an article on the Nesting Habits of Mississippi Birds, writes as follows:

"This species is extremely common and in fall and winter they are seen collecting in large numbers. Late in summer they begin roosting in company and many hundred come about sunset to their chosen places for the night. During this season they are shot in large numbers while flying to the hedge or small wood that has been selected as a roosting place."

It seems from the dearth of published material on the roosting of the Mourning Dove, as if the habit could by no means be as universal as in the case of the Robin. It would be interesting, however, to hear from other observers, and particularly to get further data on the time of year during which Doves roost in common. Is it only after the young are fledged, or do the males roost while the young are being reared? Were the large numbers in the St. Louis roost due to the presence of migrants? Is the roosting habit continued further south by wintering birds? How often do Doves share a roost with Robins? When roosting in thickets, do the Doves spend the night on the trees, or on the ground in the manner described by Audubon?—RALPH HOFFMANN, *St. Louis, Mo.*

Duck Hawks Wintering in the Center of Philadelphia.— On January 29, 1918, two Duck Hawks (*Falco peregrinus anatum*) were observed circling about the tower of the Philadelphia city hall (517 feet in height) situated in the midst of the business center of the city. My office window on the sixteenth floor of the Widener Building about opposite to the tower clock (361 feet from the ground) gave me an excellent opportunity to observe them. How long they had been present before my attention was attracted to them I cannot say. They undoubtedly took up winter quarters on the tower on account of the large number of pigeons which live about the building and upon which they fed. The exceptionally cold winter also had its effect in reducing their normal food supply and forcing them in from wilder regions.

When first observed they were engaged in aerial evolutions apparently purely for the joy of flying, now rapidly, now slowly, now chasing one another and then a rapid swoop to one of the tower ledges, the leading bird alighting and the other wheeling about the tower or out into mid-air. These evolutions continued until dusk.

During these flights they seemed to pay no attention whatever to the many pigeons which darted here and there at terrific speed and in great confusion.

On three different occasions, however, hawks were observed eating a pigeon on the lower ledge at the base of the clock, apparently standing on it with both feet and tearing off the feathers which floated away on the air. This seemed to be a regular preliminary to the beginning of each meal. On one occasion a hawk flew across directly in front of the window from which my observations were made carrying a large pigeon in its talons. Its flight was perceptibly slow and labored as compared with its usual grace and agility. On February 5 a hawk flew to the northeast tower ledge with a pigeon which it proceeded to devour; hitherto the southeast ledge had always been the place to which the quarry was carried. During the early afternoon both hawks were noticed in flight about the tower when they suddenly dived downward at terrific speed almost to the house-tops and began a rapid darting flight among the chimneys, travelling northeast over the city apparently on a pigeon hunt.

Often they were seen to fly directly toward one another with a very rapid flapping of the wings but in a labored manner so that they made very slow progress, and then when almost breast to breast they would turn suddenly and dive down vertically. On February 6 I saw a hawk dive vertically from the clock ledge in pursuit of a pigeon which passed on the wing at least 300 feet below but failed to secure it. Usually these failures seemed to be due to the fact that two or more pigeons were pursued in an apparently haphazard manner instead of the more logical method of singling out one bird. When pursued en masse the pigeons invariably separated, scattering in all directions and leaving the pursuer in a rather confused and puzzled condition and in doubt as to which individual to attack, resulting in his return

to mid-air unsuccessful. The birds remained about the tower until the first week of March, when I suppose they departed for the north.—DELOS E. CULVER, *Addingham, Pa.*

A Note of the Long-eared Owl (*Asio wilsonianus*).—On the evening of August 3, 1918, near the village of Branchville in northern New Jersey, some friends appealed to me to identify a supposed bird-note which for several nights previous had been heard in a grove back of the hotel, "The Pines." The note had always been heard after dark, and with such regularity and frequency that the diurnal birds were eliminated. The descriptions of this voice of the night varied widely. One said it resembled the mew of a cat, another likened it to the noise of a squeaking pulley, while other comparisons were less suggestive. But after hearing it, I would describe the note as a softly whistled *whee-you*, the two syllables slurred together. Although scarcely as long as the ordinary note of the Phoebe, in quality it suggested that of the Screech Owl—being, however, much shorter and more frequently uttered than the latter. I now suspected that it was an owl, but felt sure that it could not be a Screech Owl, a Barred Owl, or a Great Horned Owl, for I am familiar with the notes of these. So, after securing an electric flash-lamp and while holding it over my head, I tried to get as close as I could to the bird, to see it if possible. At least I thought I might "shine its eyes" as several years ago I had done in Florida with the Chuck-Will's-Widow. The wood was composed partly of native white pines and hemlocks with an undergrowth of sprouts of American yew. I first located the bird in a tall hemlock, but I could not see it in the dense foliage. In searching for it with my bright light, I flushed it several times, but I could never hear it fly from one tree to another. Its silent flight strengthened my suspicion that it was an owl, and its habitat made me think it was a Long-eared Owl. Although I failed to see the bird that night, the next morning, August 4, I walked out into the grove, and under one of the hemlocks in which I had first heard the note the night before, I noted some droppings and also a few owl pellets. Upon looking up into the tree, I was surprised to see a Long-eared Owl with its ear-tufts elevated, gazing down at me. It was perched upon a branch not more than twenty feet up, and remained there until I had examined it to my entire satisfaction and then walked away and left it. While the evidence is circumstantial, it seems to me pretty sure that the unknown note came from this bird or one of the same species. By a little further search in the trees near by, a second bird was located.

Since I have never read a description which I am sure applies to this note of the Long-eared Owl, I thought it worth recording.—G. CLYDE FISHER, *American Museum of Natural History, New York City.*

The Short-eared Owl in Massachusetts in Summer.—As the present status of the Short-eared Owl (*Asio flammeus*) as a breeding bird

in Massachusetts seems to be somewhat doubtful, it may be worth while to record the fact that I saw one at Wauwinet on the island of Nantucket, August 6 and 7, 1918. The species formerly bred on Muskeget Island at the opposite end of Nantucket, where the killing of a family of six in order to protect the Tern colony from their depredations led to a discussion as to the probability that they belonged to an undescribed insular race (see Auk, 1897, 388; 1898, 75-77, 210-213). Mr. George H. Mackay writes me that he has been well satisfied that in the past the species "bred quite regularly (say one or two pairs) in the vicinity of Siasconset on Nantucket and more rarely on Muskeget Island." Siasconset is a little south of Wauwinet, on the eastern shore of the island.—FRANCIS H. ALLEN, *West Roxbury, Mass.*

On *Brotogeris ferrugineifrons* Lawrence.—In 'The Ibis' for 1880 (page 238) Mr. George N. Lawrence described a new Parakeet from Bogotá, Colombia, under the name of *Brotogerys ferrugineifrons*. This is evidently a very rare bird in collections. In fact, so far as I know, the type, which is now in the American Museum of Natural History (No. 44744), is the only known specimen.

This species is well marked and can be confused with no other. It does not, however, belong to the genus *Brotogeris*, but to *Bolborhynchus*. This is shown by the form of the bill and by the presence of the oil-gland which bears a large tuft. In *Brotogeris* the oil-gland is wholly absent.

Bolborhynchus ferrugineifrons is most nearly allied to *B. audicola*, with which it agrees in its uniform green plumage, the tail two-thirds as long as the wing, and the tenth primary shorter than the ninth. It differs from that species, as well as from *B. lincola*, in its decidedly greater size, darker green coloration, and in the rusty forehead and face.

The skin is not of native Bogotá make, and the name "Wallace" on Lawrence's label indicates that the specimen was obtained from the New York taxidermist, John Wallace. The measurements, in millimeters, of the type specimen are as follows: Wings, 116 and 118; tail, 77.5; culmen, 14; tarsus, 15. The tail is graduated for 24 mm.—W. DEW. MILLER, *American Museum of Natural History, New York City.*

Arctic Three-toed Woodpecker (*Picoides arcticus*) at Belmont, Mass.—I am able to furnish one more record of this species rare in eastern Massachusetts. On October 17, 1918, in a ramble over the Belmont Hill pasture and wooded lands, I came upon an adult male bird working assiduously for grubs upon a dead pitch pine tree. The yellow crown was a conspicuous feature. He allowed as near an approach as fifty feet and permitted me an exhaustive survey of him. After a time he dropped to a prostrate trunk of pitch pine close by and was then but thirty-five feet from the rock on which I had seated myself, thus indicating an absence of shyness.

My only earlier record of an Arctic Three-toed Woodpecker in this state was of an adult male bird also, seen in Pine Banks Park, Malden-Melrose, on October 22, 1904,¹ and recorded there from time to time through the season up to April 21, 1905, thereby completing a six months' residence.

On my next trip over the Belmont lands on November 2 I did not find this Woodpecker.—HORACE W. WRIGHT, *Boston, Mass.*

The Song of the Blue Jay.—Possibly many who read the above title will think that they glimpse in it a lurking sarcasm, as they recall the notes which usually announce the presence of the "screaming jay," for comparatively few bird students or writers upon bird song seem to be aware of the Blue Jay's best musical performance.

Blue Jays are numerous in Florida and during my last two winters there I met a number of bird students in different localities who spoke to me of the Blue Jay song to which I refer, describing it as sweet, tender and quite lovely; delivered, they asserted, with a retiring modesty not perceptible in the Blue Jay's deportment on other occasions.

One friend, who is a keen observer of birds and their music, told me that when she spoke to him, some years ago, about this particular melody he said he had never heard any such song from the Blue Jay, but at a more recent period when meeting her again he referred to the song in question and said, "I have heard it since talking with you."

Though these reports occasionally came to me I did not hear the Blue Jay sing until last July in Winter Park, Florida. While a friend and I were seated near a window, dining, we heard a song unlike that of any of the common birds with which we were familiar; it was not loud nor ringing, nor at all like whistling, but the notes were formed into a sweet and somewhat complex bird melody. All paused to listen and it required from us only a lifting of the eyes to discover the singer, a Blue Jay, perching outside of the window on the lowest branch of a pine tree.

A search through books on birds and their notes yielded interesting quotations from the following authors:—in his 'Fieldbook of Wild Birds and their Music,' Mr. F. Schuyler Mathews says of the Blue Jay, "He attempts nothing that we can call a song." In the 'Color Key to North American Birds' by Dr. Frank M. Chapman and Chester A. Reed, turning to the description of the Blue Jay we read, "Notes: varied; commonly a loud harsh jay, jay; often whistling calls and imitations of the notes of other birds, particularly of common hawks." There is a similar estimate of the Blue Jay's musical powers in Chester A. Reed's "Bird Guide."

From Mabel Osgood Wright we have:—"A whistling bell-note in the breeding season; the usual cry a screaming jay, jay, jay." Nor do Bradford Torrey, Florence Merriam Bailey, Simeon Pease Cheney, and many others allude to a song from the Blue Jay.

¹ Auk, vol. XXII, Jan. 1905, p. 80.

However, in the 'History of North American Birds,' (Vol. II) by Baird, Brewer and Ridgway, we read: "The Blue Jay is conspicuous as a musician. He exhibits a variety in his notes and occasionally a beauty and a harmony in his song for which few give him credit." Although I am quite confident that Mr. John Burroughs does not mention this Blue Jay song in his earlier books, in 'The Ways of Nature' he quotes from Mr. Leander Keyser "the sweet gurgling roulade of the wild jays"; and Wilson alludes to the Blue Jay's occasional warbling with all the softness of tone of a bluebird. Mr. Nehrling also speaks of the Blue Jay melody in his 'Birds of Song and Beauty,' and Mrs. Olive Thorne Miller says in writing about a pet Blue Jay, "and occasionally uttering a sweet though not loud song." A bird student in central Georgia claims to have heard this Blue Jay music very often, quite early in the morning.

Do the Blue Jay's crude efforts at mimicry indicate a craving for more power in the realm of sound and melody, and is Nature evolving an original song for him through desire, or are we becoming aware that a bird singer has been modestly hiding his talent throughout the centuries behind a camouflage of swagger airs and teasing screams, or at best poorly executed mocking notes and a few whistles? — ISABEL GOODHUE, *Washington, D. C.*

The Aesthetic Sense in Birds as illustrated by the Crow.—The Crow (*Corvus brachyrhynchos brachyrhynchos*) is not generally recognized as a songster, but it has one note which has always seemed to me to serve for a love-song since it is heard chiefly in the spring and is delivered in a different fashion from the various caws in the bird's repertoire. This is the hoarse rattle which is familiar to all of us. It is uttered with the bill pointed vertically downward and opened rather wide. It is accompanied by no marked movement of the head and whole body as when the caws are delivered, but the note seems to issue of itself, as it were, being very suggestive of eructation. There is, however, an accompanying display of wings opened slightly at the bend and shoulder feathers ruffled such as is common in the courtship of birds. This love-song doubtless serves its purpose in the reproductive cycle, and it is conceivable that it may give pleasure to the singer's mate and to the singer himself, but on the other hand it would be hard to prove that it was anything more than a mere reflex, the mechanical performance of an automaton devoid of even the rudiments of æsthetic sense.

The Crow has another vocal accomplishment, however, of a radically different character and of a much higher order, one which, it seems to me, can be accounted for only by postulating a well-developed æsthetic sense. There is no melody in his vocal utterances and, of course, no harmony, but in time rhythm, he is a master. The only other bird that occurs to me as conspicuous for rhythm with or without melody is the Barred Owl, and his four-footed line of blank verse with the curious cæsural pause in the middle is so unvarying that it may well be purely mechanical, whereas the Crow's is remarkable for its variety.

Every one has noticed how commonly the Crow caws in triplets — *caw, caw, caw*. Several years ago I found that a Crow near my house had a habit of giving four short caws in groups of two — *caw-caw, caw-caw*— and before long I discovered that other Crows in various localities many miles apart cawed in the same way. I came to call this, after the fashion of the fire-alarm, the 22 call. My attention being directed to this habit, I learned that this was by no means the only number in the Crows' fire-alarm system. My notes for August 19, 1915, read as follows: "Heard a Crow near the house this morning that cawed the number 21 (*caw caw (rest) caw*) a large number of times in succession — perhaps twenty or twenty-five times. The caws were short. This was followed by five short caws delivered two or three times, then two or three groups of three long caws, two or three groups of four long caws, and the 22 call delivered a few times. (I am not sure that I remember these various calls in the exact order.)" And for October 22, 1916: "A Crow near our house this morning gave over and over again many times a group of caws like the number 211 on the fire-alarm, occupying two or three seconds. The time was so regular that I could detect no variation. The length of the several notes was uniform, I think, and so were the pitch and the quality, the rhythm being all that differentiated the phrase from other performances of the Crow." And for March 14, 1917: "A Crow this morning cawed 211 several times very rapidly; i. e., each phrase was rapidly delivered."

Now, intelligent as the Crow is reputed to be, I do not believe that he has invented a Morse code of signals to convey information to his companions. Nor, on the other hand, does it seem reasonable to suppose that these performances are purely mechanical and involuntary. How can we escape the belief that the bird takes a delight, not only in the exercise of his vocal organs but also in the rhythm and the variety of his utterances? Is he not, in a limited way, a true artist, a composer as well as a performer? I ask it in all seriousness.

I have long believed with Mr. Henry Oldys that birds take an æsthetic pleasure in their own songs, and the case of the Crow seems to support this view so strongly that I have ventured to call attention to it. In support of the mechanistic view of bird-song the case of birds with cracked voices and similar imperfections has been cited. It is pointed out that such birds sing as vociferously as the good singers of their respective species, and it is argued that if they possessed any æsthetic sense shame would keep them silent. This argument would carry more weight with me if I had not heard so many shameless human singers, whistlers, and cornetists whose performances gave pleasure only to themselves and positive pain to most of their hearers! — FRANCIS H. ALLEN, *West Roxbury, Mass.*

Magpie (*Pica pica hudsonia*) in Northeastern Illinois.— The only actual capture of a Black-billed Magpie in Illinois that has come to my

notice, is an adult male in perfect plumage, which has recently been mounted by R. A. Turtle, the Chicago taxidermist.

This specimen was taken November 10, 1918, by Mr. J. Cropley, who saw two strange birds in a ravine at Lake Forest, one of which seemed to be crippled. He caught it and kept it alive for two or three days, when it died. About half the upper mandible was missing, evidently from an old wound; its stomach was empty.

Its mate flew off and was not seen again.—HENRY K. COALE, *Highland Park, Illinois.*

Proper Name of the Tree Sparrow.—The correct name of the Tree Sparrow must still be determined. We are not specialists in the American avifauna but herewith adduce facts that *Spizella monticola* (Gmelin) cannot be maintained. In 'The Austral Avian Record' (Vol. iii, No. 2, p. 41, Nov. 19, 1915) we wrote as follows: "*Fringilla canadensis* (Boddaert). This name, given on p. 13 to pl. 223 f. 2 was not admitted in the 'Catalogue of Birds,' and does not seem to have since been recognized. Consequently the name used for the bird there figured, viz., *Spizella monticola* Gmelin, still persists in the Amer. Ornith. Union Check-List 3rd edition p. 263, 1910. As Gmelin's name (Syst. Nat., p. 912, 1789) is absolutely equivalent and later than Boddaert's, the bird must be known as *Spizella canadensis* Boddaert."

Oberholser (Proc. Biol. Soc. Wash., Vol. 31, p. 98, June 29, 1918) rejects Boddaert's name, concluding that without doubt the figures and description apply to *Zonotrichia leucophrys* but stating that Gmelin's name is still correct for the Tree Sparrow.

Gmelin cites 1st *Passer canadensis* Briss; 2 Soulciet Buff; 3 Moineau de Canada Buff.; 4 Mountain Finch Lath.; 5 Tree Finch, Arct. Zoöl. The first three references are the basis of Boddaert's name and must also be accepted as the foundation of Gmelin's species so that when it is concluded that Boddaert's name is inapplicable, so also must Gmelin's be. There does not seem to be any word in Gmelin's description controverting the above references, and Oberholser's continued acceptance of Gmelin's name is inexplicable. We do not question for a moment the accuracy of his determination of Boddaert's species, but the conclusion is that the figures have never before been critically examined.—G. M. MATHEWS AND TOM IREDALE, *England.*

The Rose-breasted Grosbeak in Connecticut in November.—On November 4, 1918, I observed a Rose-breasted Grosbeak (*Zamelodia ludoviciana*) at Norwalk, Conn. The bird was in the plumage of an adult female, and was so tame that it was observed clearly from a distance of less than ten feet. However it was at a time when I was not equipped for collecting, and in a place where collecting would have been impossible. There are two other November records of this species from Connecticut.—ARETAS A. SAUNDERS, *Norwalk, Conn.*

Zamelodia versus Hedymeles.—The generic name *Zamelodia* Coues has been, during recent years, in general use for our North American Rose-breasted and Black-headed Grosbeaks. This generic term was originally proposed by Dr. Elliott Coues (Bull. Nuttall Ornith. Club, V, No. 2, April, 1880, p. 98) for *Loxia ludoviciana* Linnæus and *Guiraca melanocephala* Swainson, because *Hedymeles* Cabanis (Mus. Hein., I, June, 1851, p. 152; type by subsequent designation [Gray, Cat. Gen. and Subgen. Birds Brit. Mus., 1855, p. 71], *Loxia ludoviciana* Linnæus) was supposedly invalidated by *Hedymela* Sundevall (Öfvers. Kongl. Vetensk.-Akad. Förhandl. Stockholm, 1846 (1847, p. 225) for a genus of *Muscicapidæ*. Although *Habia* Reichenbach nec Blyth was for a considerable period used by American ornithologists for this group, *Zamelodia* was restored by Dr. Coues (The Auk, XIV, No. 1, January, 1897, pp. 39–42) when *Habia* was found to be preoccupied. The generic name *Hedymeles* Cabanis is not, however, according to either the International Code or to Canon XXX of the revised American Ornithologists' Union Code of Nomenclature, to be rejected on account of *Hedymela*, since it is a word with a different classical termination other than grammatical gender. In fact, it is a case exactly parallel to that of *Hydrobata* and *Hydrobates* (cf. Hartert, Hand-List British Birds, 1912, p. 149). It should, therefore, displace *Zamelodia*, and the two species of the group stand as

Hedymeles ludoviciana (Linnæus).

Hedymeles melanocephalus (Swainson).

HARRY C. OBERHOLSER, *Washington, D. C.*

Rough-winged Swallow, Unusual Nesting Sites.—A number of years ago a concrete retaining wall was built along the bank of Grand River, midway between the top and bottom, to protect the street above from the annual spring slipping. Three-inch iron drainage pipes were placed at intervals of a few feet and these pipes projected some two or three feet out of the face of the wall. The Rough-winged Swallows used these pipes yearly as nesting sites, continuing the practice until the wall itself slipped into the river below.

At least half a dozen pipes were occupied each year by the birds, although a few hundred feet up the river was a long extent of high shale bank with many cracks and fissures, the natural site of the species, and which is used at the present time as a nesting community for a number of pairs. This is the only instance I have seen, nor have I yet found in print any record of the Rough-wing departing from its usual nesting custom.—E. A. DOOLITTLE, *Painesville, Ohio.*

Late Nesting of the Red-eyed Vireo in Detroit, Mich.—While hunting birds, with field glasses, on Belle Isle on the morning of September 25, I was startled by the appearance of a Red-eyed Vireo followed closely by a young bird. The youngster flipped its wings and begged persistently

for food and the parent bird after finding a hairy worm would slap it about until it was shorn of its spines when it would thrust it down the yawning maw of the young beggar apparently without appeasing its hunger in the least as it would immediately demand more. The two were wandering about in short second growth saplings and I had ample opportunity to watch them without the aid of my glasses for some little time as they were within easy vision. There was no possible question of their identity. Has any one a later date for the nesting of this well-known bird?—ETTA S. WILSON *Detroit, Mich.*

Local Decrease of Warblers in 1917.— In the spring of 1917 very wet weather with cold spells prevailed through the western peninsula of Ontario and a good deal of the country to the north of it, the result being that many of the small birds failed to raise the usual number of young, and when the time for the autumn migrations arrived the birds usually seen in large numbers did not appear, or were in such small numbers as to be negligible.

Opposite my house in the city of London lies a small park of about three acres planted with the usual variety of shade trees, and in that park it is a usual thing to see in the autumn migrations quite large numbers of warblers and the species that usually associate with them, but in the autumn of 1917, the total number of warblers seen by all the observers who frequent the park, was not half a dozen, while in previous years it was a frequent thing to find half a dozen species in the course of a fifteen minutes' hunt.

So far as I could learn conditions throughout the western peninsula of Ontario were nearly uniform. At Point Pelee warblers were in extremely small numbers and every observer with whom I spoke or corresponded remarked on the great scarcity of these birds in that season. Fortunately, this state of affairs does not seem to have been universal and from many parts of the continent come different reports. The present breeding of 1918 was not altogether favorable and the number of migrating birds up to the time of writing (September 13), is small though there are more than were noted the previous year.—W. E. SAUNDERS, *London, Ont.*

The Name "erythrogastrer," and Others.— A nomenclatural, or rather etymological, question has recently been raised which illustrates how great a tempest in a teapot may be stirred up over a point already settled by existing rules of nomenclature, and a brief statement of the case seems desirable.

In a paper on "The Birds of the Anamba Islands" (U. S. Nat. Mus. Bull. 98, p. 31, 1917) Dr. H. C. Oberholser designates the American Barn Swallow as *Hirundo rustica erythrogastris*, explaining in a foot-note that "the subspecific term *erythrogastrer* as here used is a Latin adjective of the third declension and therefore has for its proper feminine nominative *erythrogastris*, not *erythrogastra* as commonly written."

In 'The Condor,' 1918, p. 92, Dr. Joseph Grinnell takes up the matter and among other things says: "In the spelling of the subspecific name of the American form however, I believe Oberholser to be wrong and *erythrogaster* should be the proper spelling, not *erythrogastris*. The term *erythrogaster* cannot be considered an adjective. It is a Greek noun retaining its own gender and case when Latinized."

Dr. W. Stone (Auk, 1918, p. 491) contributes further discussion and says: — "He [i. e. Grinnell] seems to be absolutely right and the action of the original A. O. U. Committee should be upheld."

The only wonder is that Dr. Oberholser should have disregarded the adopted rules of nomenclature and declared the word to be an adjective. Canon VIII of the A. O. U. Code long ago defined the sort of words that may be used as specific or subspecific names and more recently the International Rules of Zoölogical Nomenclature, Article 14, defined them still more explicitly as; (a) adjectives which must agree grammatically with the generic name, (b) substantives in the nominative in apposition with the generic name, and (c) substantives in the genitive.

Section (b) is applicable to this case for not only Boddaert, who in 1783 used *Hirundo erythrogaster*, but many other early writers on zoölogy evidently considered the word *erythrogaster* as a noun Latinized from the Greek after compounding the adjective *ἐρυθρός* (*erythros*, red) with the noun *γαστήρ* (*gaster*, the belly). Therefore its ending should remain unchanged no matter whether the genus be masculine, feminine or neuter, and as long as we have nomenclatural rules designed for the purpose of settling such questions, nothing whatever is gained by breaking away from them, and consequently the endings *-tra* and *-tris* are quite superfluous attempts to convert a noun into an adjective.

Unless existing rules are cancelled or considerably modified we are at the mercy of all etymological atrocities and must accept the burden of inconsistencies that confront us at every turn. If an author has obviously constructed a noun we may not turn it into an adjective, however convenient such procedure might be; and more than this I believe that Latin grammar and the law of priority must necessarily prevail in cases of doubt.

The converse of this is true and we may not turn an obvious adjective into a noun as Dr. Grinnell would do in the case of *Guiraca caerulea salicaria* (Condor, 1918, p. 92). By no wish of the describer can the good Latin, adjectival suffix *-arius*, convert *salicarius* (*salix*, *salicis*, the willow + *-arius* belonging to) into a noun!

The termination *-venter* should, by analogy, be the ending for all compounds of this Latin noun and the endeavors to convert such nouns into non-classical or rather nomenclatural adjectives are responsible for the various endings with which we are troubled. There is now no way of securing uniformity except by a ruling of the International Zoölogical Commission.

A great deal more might be said regarding many other nouns and ad-

jectives that have been sadly distorted through ignorant or careless handling, but for the present let it suffice to call attention to the above cases which are clearly defined and capable of definite settlement.— JONATHAN DWIGHT, *New York City*.

Waterton on Bird Song.— When the October 'Auk' reached me it so happened that I was reading Waterton's 'Essays' (1838-1855). There I found in his essay on "The Wren, The Hedge Sparrow and The Robin" a passage which is peculiarly interesting in connection with Mr. Hawkins' paper on bird song. It is this: "When we are informed that incubation is the main inducement to melody in the feathered tribe, we have only to step out after sunrise into the surrounding evergreens, and there we are sure to hear either the wren, the hedge sparrow, or the robin, in fine song, although not a single twig has been laid, or a piece of moss produced in furtherance of a nest, wherein to raise their future young. Certainly, in this case, neither love nor warmth could have had any hand in tuning the winter lyre of these little sons of Orpheus."— CORNELIUS WEYGANDT, *German-town, Philadelphia*.

Correction.— A regrettable error occurs in the first line of Mr. Arthur T. Wayne's article in the October 'Auk.' While his manuscript read: "Since my 'Birds of South Carolina,' " etc., it appeared in print "Since 'My Birds of South Carolina,' " etc. For this unfortunate misquotation of the title of his well known book Mr. Wayne is of course in no way responsible.— EDITOR.

RECENT LITERATURE.

Beebe's Monograph of the Pheasants.¹—Birds, from their gorgeous plumage, pleasing song and varied habits, possess an interest quite apart from the purely technical consideration of their structure and systematic relationship, subjects which in the lower orders of the animal kingdom cover practically the whole range of possibility in their study; and ornithology, fortunate in having such beings as its especial province, possesses in consequence a far broader literature than many of the other branches of zoölogical science can boast.

From the earliest days bird study has attracted, in addition to the technical ornithologist, men gifted with both literary and artistic talents, with the result that we are able to point with pride to a long series of splendid works of art and narratives of surpassing interest as a part of the literature of our favorite science. To those who have handled the great monographs of Gould, Elliot, Sharpe and others or the earlier classics of Catesby, Wilson and Audubon, there is the inevitable feeling that this phase of ornithological activity should not be allowed to perish, and hence we hail with especial delight any present-day contribution to this field.

Probably no other work of this sort has been looked forward to with greater anticipation than Capt. William Beebe's 'Monograph of the Pheasants,' the first volume of which is now before us, and to say that it fully meets our most sanguine expectations is but inadequate praise. A sumptuous royal quarto, 12 x 16 in., beautifully printed on special rag paper, with splendid colored plates by six of the leading bird artists of the world — reproduced with wonderful beauty and accuracy, photogravures of the haunts of the various species and a text of exceptionally high quality — all go to form a work of art and a literary production well worthy of the twentieth century. Beside the illustrations already referred to we must mention the colored plates which show the successive plumages, of one species in nearly every genus, from the natal down to the adult, and others depicting the eggs.

Much as we are indebted to Capt. Beebe and his corps of artists, through whose ability and talents this splendid work has been produced, back of it all our thanks are due to the generosity of Col. Anthony R. Kuser, of

¹ A Monograph of the Pheasants | By | William Beebe | Curator of Birds of the New York Zoölogical Park; Fellow of the New York Zoölogical | Society and Director of the Tropical Research Station in British Guiana; Fellow | of the American Ornithologists' Union and of the New York Academy | of Sciences; Member of the British Ornithologists' Union; | Corresponding Member of the Zoölogical | Society of London, etc. | In four Volumes | Volume I Published under the auspices of the | New York Zoölogical Society by | Witherby & Co. 326 High Holborn, London, England | 1918 | Royal Quarto (12 x 16 in.) pp. i-xlix - 1-198, 19 colored plates, 16 photogravures and 5 maps. Edition limited to 600 copies; price of each volume \$62.50.

Bernardsville, N. J., one of the Board of Managers of the New York Zoölogical Society, who suggested the undertaking and who has liberally supported both the necessary explorations and the subsequent publication, and his hope, as set forth in the preface by Dr. Henry Fairfield Osborn, of producing "a work which, from the standpoint of truth, of beauty and of thoroughness, should be worthy of the important place which the pheasants occupy in the science of ornithology," has been abundantly realized.

Many of the members of the American Ornithologists' Union remember hearing Capt. Beebe discuss his proposed Asiatic journey for the study of pheasants, at the meeting in New York, in the autumn of 1909, and two years later, at the Philadelphia meeting, they enjoyed his splendid photographs of the various countries through which he had travelled in the meantime — Ceylon, India, Burma, China, Japan, the Malay States, Borneo and Java — visiting the haunts of one or more species of each of the nineteen recognized genera of Pheasants. Now it is our privilege to share the knowledge that he has gained of these wonderful birds and to read and discuss the conclusions to which his studies of the group have led.

The present volume, the first of four, comprises the Blood Partridges (*Ithaginis*) of which six species and two additional subspecies are recognized; the Tragopans (*Tragopan*) with five species and one subspecies; the Impeyan Pheasants (*Lophophorus*) and the Eared Pheasants (*Crossoptilon*) each with three species. All of the species are figured in colors with the exception of two of the Blood Partridges which are very close to other figured forms. Under each genus there is a generic diagnosis with synonymy and a key to the species and subspecies, as well as a map showing their distribution. Under the species there is, whenever possible, an account of the bird from the author's personal experience with it in the field, written in Capt. Beebe's well known attractive style. This is followed by sections headed 'General Distribution'; 'General Account' (of habits, etc.); 'Early History'; 'Captivity' and 'Detailed Description.' Under one or other of these headings the author has collected all the available published information on the species, together with a vast amount of original matter derived not only from his explorations in the native haunts of the birds, but from his long experience with many of them in captivity and his studies of the material preserved in all the important museums of the world. The beautiful photogravures of the haunts of the various species, from photographs by the author, are so arranged as to exhibit on one plate a general view of the habitat, together with a near view showing the details of the environment. There is also an admirable device of printing on the thin interleaf of each plate a couple of terse paragraphs explaining just what it represents, calling attention to some peculiar pose or action of the bird, or some important feature of the landscape, which adds greatly to the value of the illustration and to the reader's appreciation of it. We do not mean to intimate that the plates do not

"speak for themselves," for they do to a remarkable degree; but there are in all pictures features quite apart from the artistic quality, which we do not appreciate until our attention is called to them, and some previous knowledge of the subject always adds to our interest.

At the end of each general account is a list of references, technical names of animals and plants mentioned in the text, etc., correlated by page and line, and printed all together in this way to avoid the use of footnotes. This plan while it no doubt adds to the beauty of the text is rather inconvenient for ready reference. Of the colored plates in the present volume, eight are by G. E. Lodge; six by Archibald Thorburn; four by H. Gronvold and one by Charles R. Knight. The two other artists who will contribute to the later volumes are Louis Agassiz Fuertes and H. Jones. The original of Mr. Knight's plate was an oil while all the others were water-colors; and the reproductions are by several different processes, some printed upon smooth paper others on "egg-shell" — thus giving us the benefit of a variety of methods, some better suited to one painting, some to another, but all of such excellence that there is little choice except such as individual preference may dictate.

The vexatious question of how to treat subspecies in a work of this sort has evidently caused the author no little trouble, as it has all who have had to deal with it, and the method adopted will we fear prove a little confusing to those not conversant with the difficulties involved. The specific aggregate called the "Himalayan Blood Partridge" and the two races (or subspecies) into which it is divided — the "Nepal Himalayan Blood Partridge" and the "Sikhim Himalayan Blood Partridge" — are all considered under separate headings printed in exactly the same-sized type; the first contains the general information common to the two races while the last two contain only special information relative to the particular race under consideration. In spite of text explanations, however, we fear that the uninitiated reader will think that three different kinds of birds are being treated of instead of two. While well aware that this is the method adopted in the A. O. U. 'Check-List,' the reviewer has reached the opinion that it is far clearer, either to consider the two subspecies only without reference to the specific aggregate, putting the general account of habits, etc., under the first; or to consider only the species, so far as headings go, and mention inconspicuously at the end of the account, the geographic races (subspecies) into which it may be divided. This is a problem of such general interest today that it cannot be passed without comment. We notice also some good-natured sarcasm here and there directed against nomenclature as such. "What's in a name?" says Capt. Beebe; "let us pass from discussion of the artificial handle applied by man during the last few years of the Tragopan's existence to the real vital study of the birds themselves." Nevertheless he has occasion to make use of quite a number of these artificial handles and to choose between the several that have in many cases been given to the same species or genus. While it is gratifying to find him saying of one

name, that it has "the profound merit of priority, and, hoping it may make toward the long-desired goal of stability in nomenclature, I have chosen to adopt it," we regret to find in another instance that he deliberately violates the rules of the International Commission by choosing to emend the spelling of the genus *Ithagenis*. If everyone chooses for himself in matters of names we shall certainly not arrive very soon at the desired goal. However, these are but technical matters, which the reviewer may perhaps be pardoned for mentioning, since they are constantly coming to his attention in all sorts of exasperating forms in the varied literature of the day, but we now cheerfully adopt Capt. Beebe's suggestion and pass on to things worth while.

Immediately preceding the systematic part of the work is an admirable introduction of thirty-one pages, giving a résumé of many subjects which are treated more in detail under the various species. This contribution is one of the most important portions of the text and is deserving of careful study by all interested in the general problems of ornithology as well as in the pheasants in particular.

In its perusal we notice that Capt. Beebe follows Sharpe in the general classification of the pheasants, and omits the Turkeys and Guineafowl which figured in Elliott's monograph, but which are now considered to represent quite independent families. While omitting most of the subfamily *Perdicinae*, which are not popularly regarded as pheasants, and were not included in the family in Elliot's day, he retains in his work two genera, the Blood Partridges and the Tragopans, which Elliot considered members of the family and which are generally considered as pheasants. Thus we see that the word pheasant and the family Phasianidæ are by no means coextensive terms. While adopting Sharpe's four subfamilies Capt. Beebe does not do so blindly, and has the satisfaction of citing an excellent character for their separation which we do not think has been previously used, i. e. the order of molt of the tail feathers — a character of particular interest to the reviewer, as he called attention to it in another connection in 1896. Another character which he makes use of is geographic distribution, and "by refusing to include in any single genus species whose ranges coincided or overlapped" he effected "a breaking up or coalescing of certain genera whose status had been in dispute." While strict adherence to this rule in genera of more numerous species would not be practicable the principle involved is one that deserves more consideration than has usually been accorded to it. External modifications of structure, especially in such wonderfully plumaged birds as the pheasants, often obscure their true relationships and these are often revealed by a study of their geographic distribution. Considering this subject further and entirely apart from the systematic relationship of the species, Capt. Beebe concludes that the pheasants are of northern origin and that the farther south we go the greater is their specialization. In this investigation he would we think have been justified in including the twenty-nine genera of Perdi-

cine which, not being regarded as "pheasants," have no place in the systematic part of the monograph, but are none the less Phasianidæ, and his conclusions would thereby have been still further strengthened. Under 'Comparative Abundance' we learn that pheasants fall into three groups according to their gregariousness. The Argus and its allies live a solitary life, associated with none of their kind except for a brief period in the mating season; others, like the Kaleege, are eminently gregarious; while still others, like the Tragopans and Jungle Fowl, are usually found in pairs.

Protective coloration comes in for some very intelligent discussion. Capt. Beebe suggests a rather novel test to determine whether a given bird is really protectively colored or not. The wild pheasants which have no experience with man act exactly the same upon his approach as they do in the presence of their natural enemies, and his plan is to observe the bird's realization of its own degree of protection as shown by its actions. Dull colored hen-pheasants almost invariably squatted on the approach of an intruder, thus showing their reliance on their ability to escape observation, while the brilliantly colored cocks immediately took wing, a tacit admission of their lack of protection so far as coloration is concerned. Capt. Beebe is, however, pessimistic as to the possibility of any sort of compromise on the part of those who hold that all animals are protectively colored. As an illustration he humorously states that on one trip he saw some 600 peafowl, each one of which took wing immediately and sought the tops of the highest trees in the neighborhood which commanded the widest outlook — an action that proved to his mind that the bird was not protectively colored. When this was related to a friend who was an advocate of the universal protection idea, he replied, "but think of the 6000 birds concealed by their plumage that you did not see." The author states that he knew from his intimate acquaintance with peafowl that he could not have overlooked any of them, but no conclusive proof could be offered satisfactory to his friend!

There is also some interesting discussion of sexual selection and its part in developing the wonderful plumes of the cock pheasants, this family being notorious for the part that it has played in the elaboration of this and allied theories.

"The thought of the little brown hens picking and choosing among their suitors is charming," says Capt. Beebe, "one would like to think of the hens playing off one cock against another in conscious mental comparison, of appraising this ruff with that patch of gold," etc., etc.; but he adds, "However much I should like to do so I can credit pheasants with no appreciation of the beauties with which they are so generously endowed."

His conclusions are that the whole kaleidoscopic display of the male produces a mental effect upon the hens "not æsthetic, not distinctly critical or attentional, but a slow indirect influence upon the nerves, the arousing of a soothing, pleasing emotion which stimulates the wonderful sequence of instincts which will result in nest-making, egg-laying, the weeks of patient

brooding and the subsequent care of the young." . . . Furthermore, "the male who, either by vanquishing his rivals or who by strength and persistency most frequently and effectively displayed, will win the hen, regardless of whether the actual process be by aesthetic appreciation or by some subconscious hypnotic-like influence."

While we must admit the hypnotic power of the wonderful display of the gorgeous cock-pheasants of many species, we must also, it would seem, admit that all things have a beginning, and how the crude one-wing display of our familiar barnyard cock could have any such hypnotic influence and prove so successful as to start the evolution of the splendid plumage of the Argus and other pheasants we cannot conceive. At the same time we fully admit the strength of Capt. Beebe's contention that we cannot view these things through the bird's eyes nor they through ours. Furthermore we might suggest that the remarkable regularity of the date of migration in transient birds as well as that of the date of nesting would seem to point to the fact that the various instinctive impulses to which our author refers are physiological and are started with a regularity so remarkable that it would hardly seem susceptible of being stimulated by display on the part of the male or by any other external factor. It is not commendable to offer only destructive criticism, but the reviewer must confess himself without any alternative suggestion and is entirely in accord with Capt. Beebe's opening sentence, that "It is staggering to the student of evolution to attempt to explain the origin and development of such a structure as the orange and black ruff of the Golden Pheasant."

It is impossible in the short space of a review to consider the systematic portion of this splendid work in detail. We have already referred to the accounts of the birds in their native haunts. In these Capt. Beebe has managed to incorporate to a remarkable degree the environment of the wild bird, so that we can almost see the scene for ourselves. The sketches are full of what Dr. Spencer Trotter has called the ornithological background. As an example we quote from the account of the Blood Pheasant which our author sought on the 'arctic' meadows of the high Himalayas: "Without warning, the sun dropped behind a distant ridge. It was as if someone had turned out some enormous lamp. Luminous clouds appeared in the air that before had been so clear, and the first whisper of the cold night wind echoed softly in the crags. The insects vanished, and one by one the icicles and rivulets were silenced at the touch of the coming twilight. From a high ravine came the plaintive call of a white-capped redstart, and a gray fox barked from somewhere far off. Then in the rich afterglow, reflected from the mountains of snow, seven birds appeared over the crest of the ridge. They came slowly, one after another, and I knew them at once for the Blood Partridges I had come so far to find. Through my glasses every feather was distinct, every movement clear, as the birds straggled down the slope. Now and then several of them would loiter and pick at the abundant red berries. . . . I watched them eagerly, cau-

tiously — watched them until they vanished among the uppermost ranks of the dwarf rhododendrons. I stood up stiffened with cold and my long waiting. In the west I saw the last pink tinge die out upon the clouds which now hid the snows. As I turned toward camp a single snowflake melted on my face, and I realized anew how grimly winter fights for supremacy far up on the world's roof."

We must make one more quotation, reflecting another side of pheasant history: Capt. Beebe says: "My survey of their haunts made me pessimistic in regard to their future. In India there seemed a slight lessening among the natives of the religious regard for wild life which has been such a boon to the birds in this densely populated part of the world. In the Malay States great rubber plantings threaten the whole fauna of some places. In Nepal and Yunnan the plume hunter is working havoc. In China the changing diet from rice to meat and the demand in Europe for ship-loads of frozen pheasants has swept whole districts clear of these birds." The great war has checked many activities that have made for the destruction of the pheasants, but this, he adds, is perhaps "the last pause in the slow, certain kismet, which from the ultimate increase and spread of mankind, must result in the total extinction of these splendid birds."

After reading this we are more than ever grateful to all who have contributed to make this beautiful work possible. While Capt. Beebe may be the only man who has studied all the types of these wonderful birds in their native haunts,— perhaps the only one who will enjoy that privilege,— his facile pen and ability as a photographer combined with the talents of his corps of artists and the generous support of Col. Kuser, have made it possible for thousands of others to enjoy the reproduction of that which it was given to him to see in reality.— W. S.

Leo Miller's 'In the Wilds of South America.'¹— When Dr. Frank M. Chapman began his investigations of South American bird life in 1911 he took with him to Colombia Leo E. Miller, a young man then quite unknown in the field of zoological exploration. So readily did Mr. Miller adapt himself to the explorer's life and such an adept field collector did he become that he was kept in South America, in the interests of the American Museum, almost continuously from that time until America entered the war. During these six years he practically circled the coast of the southern continent north of Buenos Ayres and visited every one of the republics, carrying on active collecting and exploration in eight of them.

While the technical results of at least a part of Mr. Miller's work have been published by Dr. Chapman and others, mainly in the 'Bulletin' of the American Museum, he has himself prepared the account of his travels,

¹ *In the Wilds of South America, Six Years of Exploration in Columbia, Venezuela, British Guiana, Peru, Bolivia, Paraguay and Brazil.* By Leo E. Miller of the American Museum of Natural History, with over 70 illustrations and a map. New York, Charles Scribners' Sons, 1918. Svo. pp. 1-424.

elaborated from his journals, with side lights on the natural history, physical characteristics and the varied peoples of the countries which he visited and has embodied them in the attractive volume before us.

The narrative is written in a clear, unassuming manner, which holds one's attention from chapter to chapter, while excellent photographic illustrations by the author add to the interest of the text. Before we reach the bottom of the first page we encounter a description of the Brown Pelicans of Buenaventura Bay, Colombia, and scarcely a page is passed that we do not find reference to one or more representatives of the wonderful neotropical avifauna, or the less known mammals of the South American continent.

Long museum experience may give one a reasonable familiarity with South American birds, so far as the plumage of the species is concerned, but we know nothing in this way of their habits — how they occur and where; whether conspicuous or not; their relative abundance; the character of their calls, their songs, etc., and Mr. Miller's book gives us just this knowledge of the most striking species. We read his narrative and encounter one after another the birds which attract the attention of the traveller just as we do the striking features of the scenery, the plant life and the towns and villages, and can almost imagine that we are on the trail ourselves.

The opening chapters treat of some of the Colombian explorations which formed the basis of Dr. Chapman's 'Distribution of Bird Life in Colombia,' reviewed in 'The Auk' for April, 1918. Then follows a trip up the Orinoco to the mysterious Mt. Duida, and a short sojourn in British Guiana. We then pass to the Roosevelt expedition, to which Mr. Miller was attached as one of the field naturalists, and read of hunting and collecting experiences in Paraguay and Brazil and the descent of the Rio Gy-Parana, which one part of the expedition explored while Col. Roosevelt and the rest of the party descended the Rio da Duvida (now the Rio Teodoro). Mr. Miller's next expedition was down the west coast of Peru, across to central Bolivia and down into Argentina.

Besides the constant incidental mention of birds throughout the text, two chapters are devoted almost entirely to ornithological matter. One of these is entitled 'In Quest of the Cock-of-the-Rock,' a search which resulted in the discovery of the nest eggs and young of this curious, crested, scarlet Cotinga, an inhabitant of the subtropical zone of the Colombian Andes, its nesting site being the wet cliffs adjoining mountain waterfalls in the densest forest. 'Bird-nesting in Northwestern Argentina' is another chapter dealing largely with birds, including an account of a search for an obscure species of Tapacola (*Scytalopus*). Incidentally there is considerable discussion of the nesting habits of the Cowbird of the region, *Molothrus bonariensis*, and of its most frequent victim, the Ovenbird (*Furnarius rufus*). Not infrequently the Cowbird lays several eggs in the same nest and in the case of one Mockingbird's nest Mr. Miller found no less than fourteen eggs

of the intruder. Another Cowbird *M. badius* makes a nest of its own and rears its own young.

Members of the Audubon Society will be pleased to know that in Argentina there are game laws and closed seasons, and that a permit is necessary in order to collect specimens, while the collector will rejoice to learn that officials are most courteous and obliging, and that the necessary permit was secured in a few hours which included a railway journey to the nearest city.

Mr. Miller's book is one that we can heartily recommend to the general reader who wishes to know something of South America, from the everyday experience of the traveller, both in the long settled districts and in the wilderness, while it should be in the library of every ornithologist and mammalogist. The day is past when the student of this or that branch of natural science can limit his reading to technical monographs. He must know something of the animal in its natural surroundings in order to appreciate the relationship between color and background, adaptation and environment; and to enable him to extend his studies beyond the mere description of a new species based on a museum specimen. And as a contribution to this field of literature Mr. Miller's book holds an important place.

We regret that there is no index, as it is difficult to find again some paragraph that deals with a certain species in which we may be interested, and the utility of the volume is impaired to that extent. It is also regrettable that the author has seen fit to make use of the names of certain familiar North American birds — such as Red-headed Woodpecker and White-throated Sparrow — for South American species which are only remotely related to them, as in spite of the citation of the correct technical names many popular readers will imagine that these familiar birds occur in South America as migrants. In the 'Contents' there seems to be an error of some kind in dividing the book into parts. Part one, headed "Colombia," includes nine chapters all devoted to that country, but part two, headed "Venezuela," contains seventeen chapters only two of which have anything to do with this republic. This however is a trifling matter. The typography and general appearance of the volume from the standpoint of the bookmaker are excellent.— W. S.

Van Oort's Birds of the Netherlands.¹— We are in receipt of parts I and II of an important illustrated work on the birds of Holland by the well known ornithologist, Dr. E. D. Van Oort, Director of the Natural History Museum at Leiden. From a prospectus by the author and the publisher,

¹ Ornithologica Neerlandica [de Vogels van Nederland] door [Dr. E. D. Van Oort] Directeur van 's Rijks Museum van Natuurlijke Historie | te Leiden | Met ongeveer vierhonderd gekleurde Platen | 's Gravenhage | Martinus Nijhoff. [Lange Voorhout, The Hague, Holland.] Royal quarto, Part I, pp. 1-24, plates 1-10; part II, pp. 25-56, plates 11-20. [1918]. Price, 12.50 Gld. per part.

Martinus Nijhoff, we learn that the complete work is to consist of five volumes, two of eight parts, two of seven and one of ten. Each part will contain ten plates and four or five parts will be issued annually so that there will be in all 400 plates while the undertaking will require from eight to ten years for completion.

The two parts already issued give promise of a work that will be the standard authority on the birds of the Netherlands and a fitting companion to Mr. Van Pelt Lechner's 'Oologica Neerlandica' published a few years ago by Mr. Nijhoff, and reviewed in these columns. The text of the present work consists of sections dealing with each order, family and genus, covering structural characters and matters of nomenclature and distribution, as well as keys to the genera and species. Under each species are given the original reference and a full synonymy of references to the bird in the Netherlands; then follows a list of the Dutch vernacular names and the most familiar English, French and German names. The various plumages are described with more than ordinary detail, with measurements of specimens, and there are full accounts of the distribution of the species, dates of occurrence in the Netherlands and manner of nesting, with descriptions and measurements of the eggs.

The colored plates, from paintings by Mr. M. A. Koekkoek, are excellent of their kind, and fully up to the standard of most works of this sort; the coloring is accurate and all matters of detail are worked out with the greatest care. Of course they are not to be compared with the work of Thorborn, Fuertes and some of the other leaders in bird portraiture, who present to the life the characteristic actions and postures of the birds as well as colors and proportions, but they are nevertheless admirable illustrations, well above the average. There is some range of variation in the execution too, and the plates of the Little Grebe, Fulmar and Storm Petrel are worthy of especial mention. A particularly praiseworthy feature of the illustrations is the large number of figures that are given of the same species in order to show the variations due to season, sex and age, which is a great help to a proper understanding of the plumages.

The text is, of course, wholly in Dutch but nevertheless Dr. Van Oort's work is one which should be in all reference libraries, in this country as well as in Europe.

In matters of nomenclature the author seems to be quite up to date so far as can be judged from the two parts of the work before us. The name *Colymbus* is, however, used for the Loons and *Podiceps* for the Grebes, apparently on the basis of Gray's designation of *arcticus* as the type of the former (in 1855); this, however, we fear cannot hold as Gray was not dealing with the tenth edition of Linnæus' 'Systema,' when the designation was made, but with that of 1735.

The typography, paper and general makeup of the book are excellent and fully up to the publisher's high standards. We congratulate both author and publisher upon the first parts of this notable work and wish them all success in completing their task.—W. S.

Mathews' 'The Birds of Australia.'¹—The last part of Mr. Mathews' work that we have received covers the families Caprimulgidæ and Micropodidæ and begins the Cuculidæ. There are nine plates and while most of them are up to the standard of the previous parts that of the Swiftlets appears particularly crude in comparison with the present-day standard of ornithological illustrations.

In the treatment of the Nightjars we note two new genera, *Rassornis* (p. 234), type *Caprimulgus macrurus* Horsf., and *Eximiornis* (p. 235), type, *C. cximius* Temm., and three new races: *Rassornis macrurus coincidens* (p. 241), Cairns, Queensland; *R. m. rogersi* (p. 242), Melville Island; and *R. m. aruensis* (p. 242), Aru Islands. The views of various recent students of the geographic races of this species as quoted by Mr. Mathews seem so irreconcilable that we question whether when subdivisions are carried to the present limits, where individual opinion is in many cases the most important factor in the discussion, we shall ever have any generally recognized results.

In connection with his treatment of the Swifts he goes at length into the systematic arrangement of the *Chaturina*, concluding that the presence of spines on the tail feathers of two genera is not necessarily evidence of close relationship, but that caudal spines may develop independently in genera not closely connected phylogenetically while a single genus may show them in various stages of development. His scheme, with the new genera which he proposes, is as follows:

LARGER FORMS.

Hirundapus Hodgs. Pallenia Bon. Streptoprocne Oberh.

SMALLER FORMS.

American. *Chætura* Stephens.
West African. *Telacanthura* gen. nov. (p. 264), type *Chætura ussheri* Sharpe.
 Neafrapus gen. nov. (p. 264), type *C. cassini* Sclater.
 Alterapus nov. gen. (p. 264), type *C. sabini* Gray.
Indo-Malayan. *Rhaphidura* Oates.
 Indicapus nov. gen. (p. 265), type *Acanthylis sylvatica* Tickell.
Madagascar. *Zoönavena* gen nov. (p. 265), type *C. grandidieri*.
Philippines. *Mearnsia* Ridgw.
New Guinea. *Papuanapus* gen. nov. (p. 266), type *C. nova-guinææ* D'Alb. and Salvad.

Cypseloides Streubel.
Nephœcetes Baird.
Aerornis Bertoni.
Chæturellus gen. nov. (p. 267), type *Hirundo rutila* Vieill.

¹The Birds of Australia. By Gregory M. Mathews. Vol. VII, Part III., August 26, 1918.

We notice but one new swift, *Zoönava francica oberholseri* (p. 253), for which no type specimen is cited though we infer that the type locality is the Fiji Islands.

In connection with the name *Nephæctes* which Mr. Mathews changes to *Nephocates* he has perhaps overlooked the article in 'The Auk' 1899 (pp. 20-23), by the late Dr. Gill in which it is shown that the former spelling is the one which occurs first in the volume. While its use on p. xviii (Baird, Cassin and Lawrence, Birds of North America) may be regarded as a *nomen nudum* that on p. xxix, where it is definitely connected with the species *niger* Gmelin, cannot be disregarded.

Under the Cuckoos we note as new: *Vidgenia* (p. 311) type, *Cacomantis castaneiventris* and a race *C. rubricatus eyeri* (p. 320), from Eyer's Peninsula, S. Australia.

While the text as usual is largely devoted to nomenclature and classification, there are many notes of importance on the habits of the various species, and a vast amount of data on the parasitism of the Cuckoos.

There is a typographical error to which attention might be called on p. 247, where Mr. DeWitt Miller's name is cited as "Delbitt" Miller.

Mr. Mathews has now covered 404 species of the Australian avifauna and by consulting his 'Reference List' we should judge that he had his gigantic task more than half completed. He certainly is to be congratulated upon the persistence with which it has been carried on in spite of the war and its resultant hindrances, and we wish him all speed and success with the succeeding parts.—W. S.

Beebe's 'Jungle Peace.'¹—In 'The Auk' for 1917 we had the pleasure of reviewing Capt. Beebe's 'Tropical Wild Life in British Guiana,' the report of the first season's work at the tropical research laboratory of the New York Zoölogical Society. This was of necessity a record of scientific achievement and was written in that spirit. In 'Jungle Peace' however, the author tells the same story in a way that appeals more directly to the layman. But be he scientist or layman, the reader who is fond of nature or of travel, and who picks up Capt. Beebe's little volume, will not be likely to lay it aside until he has read it through. To use his own words, the author has in this volume stolen "quietly up the side aisle of the great green wonderland, looking at all things obliquely, observing them as actors and companions rather than as species and varieties, softening facts with quiet meditation, leavening science with thoughts of the sheer joy of existence."

There is much the same charm in his writing that one finds in John Burroughs' books, but his field is much broader and he opens up a new world to his readers. The wild life of which he writes is far beyond the

¹ Jungle Peace. By William Beebe, Curator of Birds, New York Zoölogical Park, and Director of Tropical Research Station. Illustrated from Photographs, New York. Henry Holt and Company, 1918, pp. 1-297, price, \$1.75.

experience of most of us, but we have long desired just such a vivid and intimate picture of this wonderful tropic country as Capt. Beebe has given us.

The title of the little book is explained in the first chapter. The author had played his part in the great struggle that has just come to a close in Europe and after the horrors of war he says "the mind seeks amelioration — some symbol of worthy content and peace — and for my part I turn with all desire to the jungles of the tropics. . . . The peace of the jungle is beyond all telling."

The chapters entitled, 'Sea-wrack' and 'Islands,' cover the voyage to British Guiana with visits to the Lesser Antilles and Barbados; while the others: 'The Pomeroun Trail,' 'A Hunt for Hoatzins'; 'Hoatzins at Home'; 'A Wilderness Laboratory'; 'The Convict Trail'; 'With an Army of Ants "Somewhere" in the Jungle', and 'Jungle Night,' treat of the Bartica District, British Guiana, and that on 'A Yard of Jungle' relates to Para at the mouth of the Amazon. All but three of the chapters have appeared in 'The Atlantic Monthly' and the many who enjoyed reading them there will be glad to have them brought together in the handy volume.— W. S.

Riley on a Collection of Birds from Northeastern Siberia.¹— Mr. Copley Amory, Jr., accompanied the Koren Expedition to the Kolyma River region of northeastern Siberia in 1914 and obtained 228 specimens of birds and a few eggs which were all presented to the National Museum and are here reported upon by Mr. Riley. As Thayer and Bangs had already described a collection made by Mr. Koren on a previous expedition to the same region it was not to be expected that any new forms would be included in the present material, but many notes of interest on plumage and relationship are presented as well as some field notes by Mr. Amory. Seventy-six species are listed and of all but one of these specimens were obtained.— W. S.

Shufeldt on the Skeleton of the Kea Parrot.²— Dr. Shufeldt has had the opportunity of studying the skeleton of a specimen of *Nestor notabilis* recently received at the National Zoölogical Park, in a shipment of nine individuals presented by the New Zealand Government, this individual having died en route. He has prepared ten admirable photographs showing all the portions of the skeleton, and these have been excellently reproduced. There is also a detailed description of the bones, covering thirteen pages, in which there is occasional comparison with *Ara chloroptera* and *Amazona* and with Mivart's figure of the tongue of *Lorius flavopalliatius*.

¹ Annotated Catalogue of a Collection of Birds made by Mr. Copley Amory, Jr., in Northeastern Siberia. By J. H. Riley. Proc. U. S. Nat. Mus., Vol. 54, pp. 607-626. (Issued October 28, 1918.)

² The Skeleton of the "Kea Parrot" of New Zealand (*Nestor notabilis*). The Emu, XVIII, Part I, July 1, 1918, pp. 25-43.

There is a preliminary review of the arrangement of *Nestor* in relation to other parrots in the classifications of various authors, and we were in hopes that Dr. Shufeldt, with the material at his disposal, would shed some further light on the subject, but upon turning to the conclusions we are disappointed to find only that "the family Nestoridae may now be considered an established fact, in so far as the morphology of *Nestor notabilis* is concerned." However, the plates and detailed description should aid others to make fuller comparisons with skeletons of the supposed allies of *Nestor* when opportunity offers.—W. S.

Murphy's Photographs of South Georgia Birds.—In the American Museum Journal for October, 1918, Mr. Robert C. Murphy has a number of photographs of the birds of South Georgia Island accompanied by explanatory descriptions. Full accounts of these species have appeared in his several papers in 'The Auk' and six of the photographs were previously published in connection with them. Several of those now published have been enlarged and are printed with more extended backgrounds adding much to their appearance.—W. S.

Taverner's Recent Papers on Canadian Birds.¹—In the 'Canadian Alpine Journal,' Mr. P. A. Taverner has published a list of birds secured or observed by the Canadian Geological Survey Expedition, mainly by Mr. Wm. Spreadborough, in Jasper Park, Alberta, during the summer of 1917. Most of the notes deal with species supplementary to Mr. J. H. Riley's list for the same region, published in the Journal for 1912, and they are numbered continuously with it, from 79 to 108. The few notes on species listed by Riley are entered without numbers. There are some interesting remarks on the southward movement of Horned Owls and Goshawks and their destruction of the Grouse, and also some systematic conclusions of interest. The two Song Sparrows obtained on the expedition, topotypes of Riley's *Melospiza m. inexpectata*, are regarded as closest to a series of *merrilli* identified by Oberholser and Mr. Taverner fails to find "the characters described by Riley as characteristic of his new form." The Canada Jays he regards as nearest to *Perisoreus c. fumifrons* if that is a tenable subspecies, certainly nearer to *canadensis* than to *capitalis*. The Flickers were none of them pure, with the *cafer* tendency stronger than the *auratus*.

Another important paper by the same author is on 'The Hawks of the Canadian Prairie Provinces in their Relation to Agriculture.'² This corroborates the results obtained by the investigations of the U. S. Dept. of Agriculture, in that the majority of hawks, with the exception of the Accipiters, are beneficial. The damage done by Gophers both as destroyers

¹ Addenda to the Birds of Jasper Park, Alberta. Canadian Alpine Journal, Vol. IX, 1918, pp. 62-69.

² Museum Bulletin No. 28, Canadian Department of Mines. Biol. Series, No. 7, August, 1918.

of crops and as carriers of cattle disease is emphasized, as well as the importance of conserving the Buteonine hawks as a natural check upon them when their chief enemy the Coyote disappears. The plea that has recently been advanced in Pennsylvania in defense of removing protection from these birds — i. e. that the farmer cannot distinguish one hawk from another and therefore does not know when he can kill a hawk, if some are protected and others not, is disposed of in the following words: "With so much at stake a farmer or sportsman is no more justified in advancing ignorance as an excuse than he is in proclaiming his inability to distinguish between crops and weeds. . . discrimination is a part of his business and as such should be studied." Eight colored figures of hawks from clever paintings mainly by F. C. Hennessey illustrate the paper.— W. S.

'Aves' in the Zoological Record.¹— Mr. W. L. Slater has again ably catalogued the ornithological literature of the world, for the year 1916. Titles to the number of 942 are listed and systematically catalogued, an increase of eight over 1915. We notice that the German ornithological journals were accessible in England for at least a part of 1916, while none have reached 'The Auk' or any of the American libraries, so far as we are aware, since the issues for July or August, 1915! Evidently the British ornithologists are not inclined to adopt Lord Walsingham's suggestion (cf. *Nature*, Sept. 5, 1918) that for the next twenty years at least scientific men shall by common consent ignore all papers published in the German language. Dr. W. J. Holland's reply to Lord Walsingham's proposition (*Science*, Nov. 8, 1918) should be read by all interested in this matter, and we think all fair-minded persons will agree with him that there are plenty of ways to secure justice against the Germans without disrupting the whole underlying framework of scientific nomenclature, which we have been at such pains to build up. Such arbitrary action is, as he says, only an attempt "to beat the Prussians by Prussianizing ourselves." We are therefore very glad to find the last installment of 'Aves' as complete as its predecessors with the contributions from the central powers included, no matter how strictly we may hold them accountable for the crimes of the war. The value of Mr. Slater's compilation to the working ornithologist we have emphasized on a former occasion and we can only endorse what was said then and again commend the Zoological Society for maintaining this record for us during the strenuous years that have just passed.— W. S.

Proceedings of the Linnæan Society of New York.²— Besides the usual numerous notes dealing mainly with the vicinity of New York City

¹ *Zoological Record*, Vol. LIII, 1916. *Aves*. By W. L. Slater, M. A., pp. 1-72. August, 1918. Printed for the Zoological Society of London, sold at their House in Regent's Park, London, N. W. Price six shillings.

² Abstract of the Proceedings of the Linnæan Society of New York for the year ending March 12, 1918, No. 30, 1917-1918. Issued September 18, 1918, pp. 1-38, one plate.

there are two special papers. The first, by John Treadwell Nichols, is entitled, 'Bird Notes from Florida' and comprises notes on twenty-six species observed while cruising between Miami and Sanibel Light, from March 28 to April 21, 1917. Besides Mr. Nichols' records of birds seen, there is a discussion of the spring migration including a record kept by Dr. and Mrs. G. Clyde Fisher at De Funiack Springs, northwest Florida, in the spring of 1909, and some observations on the habits of the Brown Pelican by Dr. Russell Coles.

The second paper is by Mr. Jay A. Weber on 'Bird Temperatures,' which includes records for one to three individuals, of sixty-five species of eastern North American birds. For Passerine species, which make up the bulk of the records, the temperatures ranges from 106.4 to 111.2. Mr. Weber declines to attempt to draw any deductions from his records, as he does not regard them as sufficiently complete. He also raises a possible question of accuracy in such records, since the live bird is in such a state of excitement at the time of taking the record that the temperature may, for that reason, be above the normal, while in the case of a recently killed bird the shock may have the same effect. The list is a valuable contribution to a somewhat neglected subject.—W. S.

Annual Report of the National Association of Audubon Societies.

— In these war years when many institutions and societies have been hard pressed to keep from a temporary cessation of their activities the National Association of Audubon Societies has been able to continue without any reduction in the scope or extent of its activities, which is greatly to the credit of the officers in charge of its work. Realizing at the outset the important part that bird protection could play, as a guard against crop destruction by noxious insects, the Society made its appeal to the public on these lines and met with immediate response. In the days of food conservation the practical value of the Society's work has appealed to the people as never before.

The need of constant watching of the actions of the State Legislatures in relation to bird protection has been specially illustrated during the past year. The Gulls breeding on the Maine coast islands were assailed as being detrimental to sheep grazing, and the Brown Pelican in the Gulf States was branded as a destroyer of fishes needed for food, while efforts were made to wrest from the Government title to the Klamath and Malheur Bird Reservations in order to convert them into ranching country. The Society has been instrumental in demonstrating that the Gulls were beneficial to the sheep grazers, and that the Pelicans fed almost entirely on species not used for food, and one of the agents is now working to secure legislation in Oregon to ensure the permanent preservation of the bird reservations. In spite of all the published scientific data, laws are con-

stantly being proposed to meet ignorant or selfish wishes for the destruction of some bird or other, and the constant attention of such a body of trained men as the Audubon Societies provide is necessary to controvert such action.

We can only speak in this connection of these few activities of the Association; everyone should get the report and read it for themselves. Besides the reports of the field agents,—always interesting and instructive,—there are reports from seventeen state societies and forty-two bird clubs and other affiliated organizations. In the report of the treasurer we note that the annual membership contributions amount to nearly \$27,000; while a single anonymous subscription to the children's educational fund is for \$20,000. Truly the pioneers in this work can feel amply repaid for the time they unselfishly devoted to starting the movement for bird protection.—W. S.

Zimmer on Rare Birds from Luzon and Mindoro.¹—Mr. Zimmer presents notes on specimens of forty-two species, which on account of rarity, unusual distribution, or peculiar plumage are worthy of record. The specimens are from collections made by himself during the years 1913–1916. One new form *Hyloterpe crissalis*, a Thickhead Shrike, is described as new (p. 230), from Mt. Banahao, Laguna, Luzon. A number of specimens of the hitherto unique *Zosterornis affinis* McGregor, were also obtained.—W. S.

Recent Papers by Wetmore.²—Mr. Wetmore has recently made a study of the anatomy of *Nyctibius* and upon comparing it with *Podargus* and several of the Caprimulgidæ he comes to the conclusion that the differences between the Podargi and the Caprimulgi, recognized as superfamilies of the suborder Nycticoraciæ by Ridgway, are not so transient and sharply defined as has been supposed. *Nyctibius* appears to be about midway between the Caprimulgidæ and the Podargidæ and of twelve principal structural characters, used in the classification of these birds, it agrees with each group in five particulars. Mr. Wetmore would arrange the Nycticoraciæ in two superfamilies, the Steatornithoidæ and the Caprimulgoidæ, the former containing the single genus *Steatornis* and the latter the families Podargidæ, Nyctibiidæ, Ægothelidæ and Caprimulgidæ, the last being regarded as the highest. Attention is called to the need of further study of the anatomy of *Ægotheles* and *Batrachostomus* in order to arrive at a clearer conception of their exact relationship. Our Australian coworkers should be able, with Mr. Wetmore's paper as a basis,

¹ A Few Birds from Luzon and Mindoro. The Philippine Jour. of Science, Vol. XIII, Sect. D, No. 5, September, 1918, pp. 219–232.

² On the Anatomy of *Nyctibius* with Notes on Allied Birds. By Alexander Wetmore. Proc. U. S. Nat. Mus., Vol. 54, pp. 577–586.

to supply the desired information, or to furnish him with some of the needed material.

In a second paper¹ he describes some bird bones from Kitchen Midden deposits on the islands of St. Thomas and St. Croix. These represent nine species from the former and seven from the latter. A femur and tibia from St. Thomas form the basis of a new genus and species of Rail-like bird, here named *Nesotrochis debooyi* (p. 516), while some vertebrae from a large cooking vessel buried low in the deposit proved those of *Gallus*, agreeing exactly with recent bones of a female domestic fowl.—W. S.

Five Contributions to Economic Ornithology by Collinge.—Dr. Walter E. Collinge of the University of St. Andrew's, Scotland, in recent years has been the most active student of Economic Ornithology in Great Britain. It is of interest to note that he is convinced of the superiority of the volumetric method of analyzing the contents of birds' stomachs, he being the first British investigator to adopt it. Two² of his recent papers dwell more or less on this topic and in one of them he notes that upon reëxamination of his material representing the missel-thrush, adopting the volumetric instead of the numerical method he formerly used, he is compelled to reverse his estimate of its economic value. This is a striking illustration of the difference in results under the two systems. In this paper Dr. Collinge briefly treats of the economic status of eight common British birds of which two are distinctly injurious, viz., the House Sparrow and the Wood Pigeon; two are too numerous, and consequently injurious, viz., the Rook and the Sparrow Hawk; one is locally too numerous, viz., the Missel Thrush; and four are highly beneficial, viz., the Skylark, the Green Woodpecker, the Kestrel, and the Lapwing.

The other three papers³ by Dr. Collinge note the necessity of rational bird protection in Great Britain. All inclusive protection urged by propagandists has been overdone, and reaction has followed. Despite the long existence of a government bureau for the scientific investigation of economic ornithology, the United States has not entirely escaped harm resulting from the activities of bird protection zealots. It will be well if the lessons we have had are taken to heart and trouble avoided in the future. Dr. Collinge's summing up of the situation in Great Britain may be quoted:

"1. That in the past the question of wild bird protection and destruction has never received really serious consideration. The objects sought

¹ Bones of Birds Collected by Theodor De Booy from Kitchen Midden Deposits in the Islands of St. Thomas and St. Croix. By Alexander Wetmore. *Ibid.*, pp. 513-522.

² On the Value of the Different Methods of Estimating the Stomach Contents of Wild Birds. *Scottish Naturalist*, May 1918, pp. 103-108, 2 figs.

Some Recent Investigations on the Food of Certain Wild Birds. *Journ. Bd. Agr. [London]*, Vol. XXV, No. 6, Sept. 1918, pp. 668-691, 17 figs.

³ Wild Birds in Relation to Agriculture, *Jour. Land Agents' Society*, Vol. XVII, No. 5, May 1918, pp. 202-208, 1 fig.

Wild Birds and Legislation, *Ibid.*, No. 7, July 1918, pp. 278-285.

The Value of Insectivorous Birds, *Nature*, July 25, 1918, Reprint pp. 1-4.

in most of the Acts of Parliament upon the subject have been largely of a selfish nature and not for the good of the country."

"2. That the majority of these Acts have been ill-considered and often hastily prepared, many of them have been repealed and others frequently amended or modified."

"3. That no attempt has been made by those who advocate the protection of wild birds, to understand the problem presented by wild bird life. Blindly, and often strongly prejudiced, they advocate protection for all birds, and protection only."

"4. That such an attitude is calling forth a deep resentment from those who have to live by the products of the soil, many of whom having waited in vain for repressive measures, *have now taken to destroying wholesale all bird life.*"

"5. *That the irresponsible advocacy of uniform protection is indirectly contributing more than anything else to the wanton destruction of many of our most useful birds.* 'Some of the very greatest friends that our nation has are being destroyed without mercy . . . a defensive force upon which most of our prosperity depends.'"

"6. That the immediate need of the present is for a wide and comprehensive Act that will give protection to all non-injurious or beneficial birds, and provide adequate repressive measures for those species which have become too numerous and destructive."—W. L. M.

Chapman's 'Our Winter Birds.'¹—Dr. Chapman has the happy faculty of accurately feeling the pulse of the bird-loving public and supplying just what they need almost before they realize their wants. It was so with the appearance of his 'Hand-book' many years ago and his 'Bird Life' and 'Warblers' in more recent years. Still more recently appeared a little monograph, one might almost say a primer, on bird migration under the title 'The Travels of Birds,' and now follows a similar little book on 'Our Winter Birds,' just the thing for school use and for beginners in bird study.

On account of the comparative scarcity of birds in winter there seems to be a special charm at this season in rounding up the whole bird population of one's neighborhood, as evidenced by the popularity of 'Bird-Lore's' Christmas lists, and this little book will do wonders in teaching the public what birds may be seen in the cold months of the year and doubtless prevent many a mistake in identification.

On the inside of the covers are small figures in colors of the common residents and winter visitants from admirable paintings by Mr. E. J. Sawyer, which do away with the necessity of long descriptions and permit the author to devote practically all the text to the habitat, habits and characteristic actions of the species.

The text is divided into four parts, 'Introduction,' 'Home Birds,' 'Field

¹Our Winter Birds. How to Know and How to Attract. Illustrations by Edmund J. Sawyer. D. Appleton and Company, New York and London. 1918. 12mo. pp. i-ix — 1-180. Price \$1.25 net; by mail \$1.35.

Birds' and 'Forest Birds,' and under these some fifty species are discussed in the author's well known attractive style, while the two plates contain sixty-three figures. The book represents a clever idea well carried out. The publishers state that the present edition is designed especially for school use and is to be followed by another, more profusely illustrated for the general reader.—W. S.

The Ornithological Journals.

Bird-Lore. XX, No. 5. September–October, 1918.

The Oven-bird in Minnesota. By Thomas S. Roberts, M. D.—An admirable popular account with photographic reproductions of nests.

A Day's Sport with the Red-backs and Greater Yellow-legs. By Verdi Burtch.—With good photographs of both species.

Some Notes on the Ruffed Grouse. By H. E. Tuttle.

The Horned Larks form the subject for the articles of Migration and Plumages by Drs. Oberholser and Chapman respectively, with a plate by Fuertes illustrating five of the twenty-three races covered by the text.

Bird-Lore, XX, No. 6, November–December, 1918.

Notes from a Traveler in the Tropics. By Frank M. Chapman.—Dr. Chapman, who is on a mission to South America for the American Red Cross, describes the country through which he passed and the bird-life which he encounters en route. The first installment covers the coast-line trip to Cuba with illustrations of the Man-o'-war Bird and the Ani by Louis Agassiz Fuertes.

When the North Wind Blows. By A. A. Allen.—Winter Bird-life at Ithaca, N. Y., with excellent illustrations from photographs by the author.

Homeland and the Birds. By Mabel Osgood Wright.—A plea for special efforts at bird protection during the war.

A Wild Duck Trap. By Verdi Burtch.—Caught by the freezing ice on the harbor at Branchport in a small open area where they starve to death.

The papers on plumage and migration treat of the Magpies, and two thirds of the number are taken up with the annual report of the National Association of Audubon Societies.

The Condor. XX, No. 5. September–October, 1918.

Notes on the Nesting of the Mountain Plover. By W. C. Bradbury.—A study of the bird at a spot some twenty miles east of Denver, Colo., with numerous excellent illustrations from photographs.

Frank Stephens — An Autobiography.—A valuable historical article with portrait.

Evidence that Many Birds Remain Mated for Life. By F. C. Willard.—The evidence is mainly the fact that pairs of birds built in the same situations year after year. The author admits that it is not conclusive and to an unprejudiced mind such facts would seem to point rather to the fact that one of the pair returned to the same spot in successive years. Bird-

banding experiments have shown in several instances that of a banded pair of nesting birds only one was found nesting at the same spot in the following year, its mate being a different individual.

A Return to the Dakota Lake Region. (Continued.) By Florence Merriam Bailey.

Some Oceanic Birds from the Coast of Washington and Vancouver Island. By Stanton Warburton, Jr.

Description of a New Subspecies of *Cyanolanius clemenciae*. By Harry C. Oberholser.— *C. c. bessophilus* (p. 181) Chiricahua Mts., Arizona, the bird of the southwestern United States and Chihuahua, is separated from true *C. c. clemenciae* which is restricted to northeastern, central and southern Mexico.

Some Summer Birds of Alert Bay, British Columbia. By P. A. Taverner.— An annotated list of forty species.

The Wilson Bulletin. XXX, No. 3. September, 1918. •

The Brown Pelican,— A Good Citizen. By Alfred M. Bailey.— A timely refutation of the charges made against this bird.

Notes on the February Bird-life of Southern Mississippi and Louisiana. By Cheswell J. Hunt.

A Vulture Census and Some Notes. By John Williams.— Valuable statistics on the habits and abundance of the Black and Turkey Vultures at St. Marks, Fla.

Some Birds along the Trails of Glacier National Park. By P. E. Kretzmann.

Birds about our Lighthouse. By John Williams.— September 22–October 5, 1917 at the mouth of St. Johns River, Florida.

The Oologist. XV, No. 9. September 1, 1918.

Pennsylvania and New Jersey Nesting Dates for 1915. By R. F. Miller.

South African Shrikes. By O. O. C. Nicholls.— In this article we notice upward of thirty typographical errors. Unfortunately this fault is rather frequent in 'The Oologist,' especially in the case of technical names. These are always difficult for both compositor and proof-reader and in a popular journal it would seem far better to omit them altogether than to continually misspell them. A number of contributors we notice have adopted this practice already.

The Oologist. XXXV, No. 10. October 1, 1918.

Breeding Birds of the Pocono Mountains [Penna.] By A. D. McGrew.

The Oologist. XXXV, No. 11. November 1, 1918.

An Annotated List of Birds Observed from May to July in Central Logan County, Illinois. By A. D. DuBois.

Some Common Land Birds Found in the Immediate Vicinity of McKeesport, Penna. By Thos. L. McConnell.

The Ibis. X Series, VI, No. 4. October, 1918.

The Reversed Under Wing-coverts of Birds and their Modifications, as exemplified in the Birds of West Africa. By George L. Bates.— A very

important contribution to a rather neglected subject. The major and median under wing-coverts, as many may know, are reversed, that is to say the exposed side is the under side of the feather. Moreover they overlap one another in two ways, either in the same way as the remiges or in the opposite way, and they may be reduced in size or be in part lacking. The differences which they exhibit in these respects may naturally be of much importance as giving an intimation of relationships between different groups and Mr. Bates offers his notes with an idea of their use in this connection. While he does not consider them sufficiently complete for reaching any general conclusions he calls attention to the fact that the Owls and Night-jars show no tendency whatever to the condition prevailing in the Picarian families, that the Parrots show no resemblance to the Cuckoo type nor the Swifts to that prevailing in the Kingfishers and Woodpeckers.

Notes on Recently Described Races of Siamese and Malayan Birds, with a Description of one New Race. By H. C. Robinson and C. Boden Kloss.—This paper and a reply by Mr. E. C. Stuart Baker deal with the validity of various new forms described mainly by Baker and Kloss. The brevity of many descriptions and the impossibility of recognizing the bird described, without access to the type have already been discussed in the review pages of 'The Auk,' and we heartily endorse what these authors have to say in this line. While the status of some of the forms discussed is apparently settled, in the majority of cases each side maintains their opinion, and we have still another illustration of the impossibility of agreement where differences are so slight that personal opinion is the main criterion in deciding on their recognizability.

Notes upon European Birds met with during a Short Visit to South Africa. By B. B. Riviere.

A List of the Birds of the Anglo-Egyptian Sudan, based on the Collections of Mr. A. L. Butler, Mr. A. Chapman and Capt. H. Lynes, and Major Cuthbert Christy. Part II. By W. L. Slater and C. Mackworth Praed.—This contribution of 119 pages concludes the Passeres. As in the preceding instalment many species are considered with regard to all their geographic races and new forms are described both from the Sudan and elsewhere. We notice the following new forms proposed: *Cinnyris osea butleri* (p. 619), Lado Enclave; *Rhodophoneus cruentus kordofanicus* (p. 633), Western Kordofan; *Tschagra senegala sudanensis* (p. 637), Mongalla, Sudan; *Cisticola erythrops zwaiensis* (p. 656); Lake Zwai, southern Abyssinia; *C. e. roscires* (p. 657), Roreires, Sennar; *Sylvietta rufescens transvaalensis* (p. 667), Rustenberg, Transvaal; *Eremomela flaviventris alexanderi* (p. 673) Bara, Kordofan; *Parisoma blanfordi somaliensis* (p. 707), Mundara, Somaliland; *Elminia longicauda loandae* (p. 712), N'Dalla Tando, North Angola; and *Hirundo puella unitatis* (p. 718), Pinetown, Natal.

This issue of 'The Ibis' is the 224th and completes the tenth series of this notable magazine. The editor believes that it compares favorably with the previous series, notwithstanding the unprecedented events that have

taken place throughout the world during the six years which it covers. In this opinion we heartily agree and offer our congratulations upon the success of his labors, the trying nature of which we appreciate only too well.

Bulletin of the British Ornithologists' Club. CCXXXVI. October 29, 1918.

Mr. Meade Waldo described the efforts for the protection of Kites in Wales.

Mr. P. F. Bunyard exhibited nest feathers and down of the Harlequin Duck from Iceland and remarked on the errors in published descriptions of them.

Major A. G. Sladen commented upon a collection of birds made in Palestine.

Mr. E. C. Stuart Baker described a new flycatcher from Siam as *Cyornis magnirostris carulifrons* (p. 8).

Mr. W. L. Selater succeeded Lord Rothschild as chairman of the Club for the next five-year period.

British Birds. XII, No. 4. September, 1918.

Some Breeding Habits of the Sparrow Hawk. By J. H. Owen. (Concluded.)

Notes on the Autumn Migration at Odessa in 1917. By Maud D. Haviland.

The Behaviour and Mouth-coloration of Nestling-birds.—By W. R. Butterfield.—Argues for the protective value of these markings and of certain actions in frightening away enemies.

British Birds. XII, No. 5. October, 1918.

Nest Down in Some British Ducks. By Annie C. Jackson.—Relates to fourteen species.

The Moults and Sequence of Plumages of the British Waders. By Annie C. Jackson, Part VIII.—Covers the genus *Totanus* and one species of Phalarope.

British Birds. XII, No. 6. November, 1918.

Notes and Observations on the Nesting of the Bullfinch. By Frances Pitt.—With several excellent photographs of the bird at the nest.

A List of Summer Birds Observed on the Outer Farne Islands. By Edward Miller.

Avicultural Magazine. IX, No. 10. August, 1918.

Wood-Swallows. A photograph of a pair feeding young.

In a review of Beebe's 'Tropical Wild Life,' it is rather amusing to see the violent opposition of the reviewer to the use of the word 'Oriole' for species of Icteridæ. Surely he must be aware that these birds have been known as 'Orioles' continuously since the very beginnings of American ornithological literature and are now called 'Orioles' by probably a far larger number of individuals than know the species of *Oriolus* by that name. We do not question the fact that the name belongs historically to

the latter, but it is as impossible to change such names today as it would be to change the names of several familiar objects of every-day use which, though quite different, are called by the same names on the two sides of the Atlantic. Curiously enough the word 'Flycatcher' passes without protest in the same review for the American tyrants, which though perfectly correct as the universal American term for the birds, is far worse than the case of 'Oriole,' since the two groups of 'Orioles' belong to the same suborder, while the two styles of 'Flycatcher' do not.

Avicultural Magazine. IX, No. 11. September, 1918.

How Birds of Paradise are Caught.

Twelve-wired Bird of Paradise. By Graham Renshaw.—Effect of captivity on coloration.

Avicultural Magazine. IX, No. 12. October, 1918.

Chinese Cage Birds. By K. H. Jones.

Kaleege and other Pheasants. By Frank Finn.

Ave Atque Vale: Villers-Bretonneaux — The total destruction of Lieut. Delacour's magnificent aviary in the fighting in France. There were 360 birds of 141 species contained in his collection.

The Emu. XVIII, Part I. July, 1918.

Australian Green-backed Finch (*Erythrura trichroa macgillivrayi*). By J. A. Kershaw. With colored plate.

Notes on Some Additions to the H. L. White Collection. By A. J. Campbell.

Birds of Lake Victoria and the Murray River for 100 Miles Down Stream. By Capt. S. A. White.—A very interesting account with a fully annotated list.

The Skeleton of the "Kea Parrot" of New Zealand (*Nestor notabilis*). By R. W. Shufeldt (see *antea* p. 131).

Queensland Notes. By D. LeSouef.—Another interesting narrative.

A Study of Australian Specimens of the Little Penguin (*Endyptula minor*, Forster). By W. B. Alexander and Dr. Brooke Nicholls.—A careful study of sixty individuals which seems to show that the Australian birds are all referable to one race, *Eudyptila minor novohollandie*, instead of three as has been claimed by Mathews.

Description of a New Subspecies of *Hylacola pyrrhopygia* (Vig. & Horsf.). By F. E. Howe. *H. p. magna* (p. 59), Cobbora, N. S. W.

Nesting Notes from Moree. By F. C. Morse.—A diary of observations from September, 1917, to May 1918.

The Emu. XVIII, Part II. October, 1918.

Striated Grass Wren (*Amytornis striata*, Gould). With colored plate of mounted birds.

What are Australian Petrels? By Gregory M. Mathews.—Finds no recent records of thirteen of the species accredited to Australia by Gould. The editors question the advisability of rejecting the species from the Australian List on this account as they think that the birds' ranges may have

changed or they have for some reason become rarer. Incidentally Mr. Mathews endorses Murphy's recently described species of Albatross *Diomedia sanfordi* and also the subgenus *Rhothonia* Murphy, raising it to a genus.

Food of Diurnal Birds of Prey. By D. Le Souef. Shows that the Australian Eagles have been much maligned and do not do anything like the damage to lambs that they are credited with.

Bird Notes from the Boat Harbor (Tasmania) Region. By Miss J. A. Fletcher.

A Trip in Search of the Spotted Scrub-Wren (*Scricornis maculata*) and the Little Wattle-Bird (*Anellobia lunulata*). By C. L. E. Orton.

Cormorants: Are they Pests or Otherwise? By W. T. Forster.—Some evidence of their devouring food fishes.

The Jungle and the Snows. By Robert Hall.—An interesting account of a trip to India.

An Afternoon Among the Birds in the Baltimore (Md.) Woods, United States of America. By Edwin Ashby.—Mr. Ashby visited America last summer and it is very interesting to read his impressions of our avifauna and to learn what Australian species our familiar birds brought to mind.

Description of a New Subspecies of *Malurus cyanotus*. By H. L. White.—*K. c. diamantina* (p. 121), Diamantina River, W. Queensland.

Description of a New Subspecies of *Acanthiza nana*. By H. L. White.—*A. n. dawsoniana* (p. 122), Dawson River, C. Queensland.

Notes on Birds Seen on the Murray River, August, 1918. By W. B. Alexander.

Descriptions of two New Nests and Eggs. By Henry L. White.—*Malurus leucopterus edouardii* and *Eremiornis carteri*.

South Australian Ornithologist. III, Part 8. October, 1918.

Notes upon the Black-breasted Plover (*Zonifer tricolor*). By S. A. White.—With photographs of bird and nests.

A Sketch of the Life of Samuel White. By S. A. White.

Revue Française d'Ornithologie. X, No. 112-113. August-September, 1918. [In French.]

Some Defensive Reactions of Bird Colonies. By M. R. Deschiens.

Study of a Collection of Birds made by E. Wagner, in the Province of Misiones, Argentina. By A. Menegaux.

Some Data on 'Yellow Liver' in the Ostrich. By M. Aubry.

Ardea. VII, No. 3. August, 1918. [In Dutch.]

The Long-tailed Titmice (*Egithalus caudatus*). By G. Wolda.—A study of local and individual variations.

The Significance of the Crossing of Individuals of Different Linnæan Species in the Origin of our Domestic Forms. By H. N. Koorman.—Crossing of wild Species of Gallus.

Ornithological Articles in Other Journals.¹

Shufeldt, R. W. Our Big Colonial Eagle.—Terror of the Monkeys of the Philippines. (American Forestry, September, 1918).—On *Pithecopaga jeffreyi*, with illustration of the head and foot natural size.

Oberholser, H. C. The Scientific Name of the Passenger Pigeon. (Science, November 1, 1918).—*Columba canadensis* Linn. based on the female bird has page priority over *C. migratoria* of the same author, so that the proper name of the bird is *Ectopistes canadensis*.

Clarke, John M. Alleged Rediscovery of the Passenger Pigeon. (Science, November 1, 1918).—At Amsterdam, N. Y., October 1, 1918, seen by S. M. Rasmussen and two students near West Galway. Mr. Rasmussen had however seen the species but once before.

Thayer, Abbott H. Camouflage. (The Scientific Monthly, December, 1918). An interesting paper on this subject. The fact should not be lost sight of however that the mere possibility of placing a bird or animal in a position where its coloration helps to conceal it, in no sense proves that this is a habitual pose of the animal or that this has evolved its pattern of coloration (cf. p. 123 *antea*).

Taverner, P. A. The Gannets of Bonaventure Island. (The Ottawa Naturalist, May, 1918.)

Williams, M. Y. Brief Notes on the Fauna of Lambton County, Ont. (*Ibid.*).

Macnamara, Charles. The Chimney Swift. (*Ibid.*, September, 1918.)—An excellent article dealing especially with the study of a nest built on the wire guard to an open fireplace in a closed summer cottage. Illustrated by photographs.

Tothill, J. D. Diving Habit of the Spotted Sandpiper. (*Ibid.*)

Baxter, Evelyn V., and Rintoul, Leonora J. Report on Scottish Ornithology in 1917 Including Migration. (Scottish Naturalist, July-August, 1918.)

Baynes, Ernest Harold. A Ruffed Grouse as a Hostess. (Bull. Amer. Game Prot. Assn., July, 1918.)

McAtee, W. L. A Suggestion for Wild Duck Farmers. (*Ibid.*)

Quarles, E. A. The Wild Turkey at Woodmont (Md.) (*Ibid.*)—With full account of breeding the birds in captivity in order to keep preserves fully stocked.

Anderson, J. C. Further Notes on New Zealand Bird Song: Kapiti Island. (Trans. and Proc. New Zealand Inst., 1, pp. 282-295.)

Duerden, J. E. Absence of Xenia in Ostrich Eggs. (Jour. of Heredity IX, No. 6, pp. 243-245.)—South African Ostrich Hens mated with North

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.

African cocks lay eggs characteristic of their own species with no sign of the male influence (*Xenia*) in the eggshells.

Mottram, J. C., and **Green**, F. W. E. Some Aspects of Animal Coloration from the Point of View of Color Vision. Pt. II. (*Science Progress*, XIII, No. 5.) — Worthy of careful study by students of protective coloration.

Collinge, W. E. The Preservation of Game Birds and its Relation to Agriculture. (*Ibid.*)

Kuroda, Nagamishi. Notes on Corean and Manchurian Birds. (Annot. Zoöl. Japonensis, IX, pt. IV.) [In English.] Annotated list of 204 specimens with a distributional table of all species known from these countries.

Wilson, F. Erasmus. An Ornithological Trip to the Nhill District. (*Victorian Naturalist*, XXXV, pp. 93-100.)

Quijada, Bernardino. Birds of Chile and a Discussion of their Spanish Names. (*Bol. del. Mus. Nac.—Santiago*, X, pp. 5-27.) — Twenty-eight species.

Oberholser, H. C. Mutanda Ornithologica, IV. (*Proc. Biol. Soc. Wash.* XXXI, pp. 125-126.)

Owing to shifting the generic name *Tanagra* to the Euphonias, the following names become preoccupied and substitutes are here proposed.

Euphonia vittata Scf. becomes *Tanagra catasticta* nom. nov. (p. 125); *E. aurea pilcata* becomes *T. a. cynophora* n. n. (p. 126); *E. violacea magna* becomes *T. v. pampolla* n. n. (p. 126); *E. lanirostris peruviana* becomes *T. l. zopholega*, n. n. (p. 126) and *E. olivacea* becomes *T. minuta* Cab.

Baker, E. C. Stuart. The Game Birds of India, Burma and Ceylon. (*Jour. Bombay Nat. Hist. Soc.*, XXV, No. 4.) — Genera *Pucrasia* and *Chrysolophus*.

Whistler, H. Notes on the Birds of Ambala District, Punjab. (*Ibid.*) — Annotated list, to be continued.

Publications Received.—**Beebe**, William. A Monograph of the Pheasants. Volume I. Published under the Auspices of the N. Y. Zoölogical Society by Witherby & Co., London, 1918. Price \$62.50 per volume. Royal quarto.

Beebe, William. *Jungle Peace*. New York, Henry Holt and Company, 1918. Price, \$1.75 net.

Chapman, Frank M. *Our Winter Birds*. New York, D. Appleton & Company. 12 mo. pp. 1-180, 1918. Price, \$1.25 net. By mail, \$1.35.

Lawler, George A., and **Earnshaw**, Frank L. *Game Laws for 1918*. Farmers' Bulletin 1010 United States Department of Agriculture. October, 1918.

Miller, Leo E. *In the Wilds of South America*. New York. Charles Scribners' Sons, 8vo, pp. 1-424 1918. Price, \$4.50.

National Association of Audubon Societies. Fourteenth Annual Report (*Bird-Lore* XX, No. 6.)

Riley, J. H. Annotated Catalogue of a Collection of Birds made by

Mr. Copley Amory, Jr., in Northeastern Siberia. (Proc. U. S. Nat. Mus. Vol. 54, pp. 607-626.)

Slater, William L. Aves. (Zoölogical Record, Vol. LIII, 1916.) Price six shillings. Zoöl. Soc. of London, Regent's Park, London, N. W., August, 1918.

Shufeldt, R. W. (1) The Skeleton of the "Kea Parrot" of New Zealand (*Nestor notabilis*) (The Emu, XVIII, Part I, July, 1918.) (2) On the Study of Sex (Alienist and Neurologist, Vol. XXXIX, No. 2.) (3) Our Big Colonial Eagle (American Forestry, Vol. 24, No. 297, September, 1918.)

Taverner, P. A. (1) Addenda to the Birds of Jasper Park, Alberta. (Canadian Alpine Journal, Vol. IX, 1918.) (2) The Hawks of the Canadian Prairie Provinces in their Relation to Agriculture. (Canada Geological Survey, Museum Bulletin No. 28.) Biological Series, No. 7, August, 1918,

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CORRESPONDENCE

Maggot Infested Birds.

EDITOR OF 'THE AUK':

Since beginning the operating of my hospital for the care and treatment of injured wild birds, some three or four years ago, my attention has frequently been called to the number of birds suffering from the presence of maggots in some of the external parts of the body. The number of avian sufferers has increased so greatly this season over previous years, and there seems to be so little known about the fly producing these worms, that I feel impelled to present my observations to the readers of 'The Auk' in the hopes that a complete history of the fly may be furnished by some one.

The victims seem to be confined almost exclusively to the smaller birds, Yellow Warblers, Goldfinches, House Finches, Horned Larks, Vireos, and the House Sparrows in particular, and are fledglings, scarcely an adult coming to the hospital. A few Western Meadowlarks have been brought to me, two specimens — fledglings — yielding one hundred worms, their bodies presenting the appearance of having been struck by a load of shot. The largest number of these worm-infested creatures come from the homes of the House Sparrow. A friend reported that a litter of infant pigs were invaded by the fly and three of them died from the presence of the maggots burrowing into the brain through the eyes. It is reported also that a bird-devouring cat fell victim to the worms.

The favorite location selected by the fly to deposit its eggs and young, — for the young evidently hatches in the act of deposit in the soft tissues of the bird and immediately burrows beneath the surface, — is on the head, near or in the corner of the eyes, about the neck and upper part of the wings,

but the legs have been the only parts not invaded so far as my observation goes. The maggot eats a burrow or chimney into the flesh of its victim, remaining stationary and feeding upon the fluids of the helpless messmate until death releases it, when the horrid thing deserts the lifeless carcass and if not destroyed buries itself in the earth. Very little seems to be known about this strange fly, so far as my inquiries have extended, but the old-timers call it the "screw fly," and regard it with great disfavor.

A number of years ago a lady brought her six-month-old infant to me for examination and relief, stating that whilst wheeling her baby through the park it suddenly cried out as though in pain, and she discovered one of these screw flies dashing about over the child's face. An investigation revealed some six or eight microscopic larvæ busily burrowing into the tender skin of the helpless victim. And this was within half an hour after the attack of the fly.

In order to get some reliable data in regard to the genesis of this maggot, I secured a number of them and bedded them in earth, confining the receptacle in which they were to pass through their mysterious transformation in a box covered with close-woven wire netting which effectually prohibited the escape of the fly.

Within a few days' time the larvæ were transformed into the chrysalis state, and in about three weeks two flies appeared, smaller than the ordinary green fly but resembling it in every way. These flies died before I could carry out further experiments, but other hatchings I trust will give me the desired opportunity of watching them sting a live bird.

! Dr. J. Bequaert of the American Museum of Natural History, to whom the dead flies were submitted, reports as follows:

"The flies obtained by Dr. Arnold from bird-infesting maggots belong to the genus *Protocalliphora* of the Calliphorinae or bluebottle flies. In Europe and North America the larvæ of two very closely allied species of *Protocalliphora* are known to parasitize birds. The species reared by Dr. Arnold from skin-boring maggots I consider to be the true *Protocalliphora azurea* (Fallen). In the Eastern United States (Pennsylvania, New York) and also in Europe there is an apparently different species, *Protocalliphora sordida* (Zetterstedt), whose maggots live among the feathers of young or even adult birds, sucking blood at intervals without boring into the skin. The life history and distribution of these two bird parasites are not yet completely known, and I should be very grateful for further information on the subject, especially if accompanied by maggots or flies."

Fewer maggot infested birds were brought to the hospital the past summer than during the previous few years.

Careful experiments proved positively that the fly would not deposit its eggs or larvæ in the dead carcasses of birds.

W. W. ARNOLD, M. D.

Rooms 5 and 6, First Nat. Bank Building,
Colorado Springs, Colo.

Evolution of Bird Song.

EDITOR OF 'THE AUK':

I was much interested in the article in the October number of 'The Auk,' on "Sexual Selection and Bird Song," by Chauncey J. Hawkins. Mr. Hawkins' conclusions are interesting, and perhaps entirely correct, but there are one or two weak points in his arguments, that I should like to point out. I have also some observations of my own, which it seems to me, point to the opposite conclusion, that sexual selection is the primary cause of the evolution of bird song.

Bird voice and bird song are two different things, the evolutions of which have not necessarily been brought about in the same manner. Yet Mr. Hawkins, in portions of his paper relating to his own observations, does not carefully distinguish between voice and song. His remarks concerning the calls of Crows and Jays will not apply to a discussion of song. His observations of Robins and Goldfinches in winter are not so stated as to make it clear whether the birds were really singing or merely indulging in rather musical call-notes. No one supposes that bird-voice, call notes, alarm notes or notes of female to young have been evolved by sexual selection. But when it comes to the true song of the male bird, there seems to be, in my opinion, good reason to suppose that sexual selection had at least some part in its evolution.

In order to avoid mistaken ideas it would be well to have a definition of bird song. I am not sufficiently well acquainted with the literature of this subject to know whether anyone has attempted such a definition, so I will give what I should consider a proper definition in my own words. *Bird song is a vocal performance produced by the male bird during a definite season of the year, that season including the period of courtship, mating and nesting.* Such a definition would imply that a vocal performance in which the female indulges regularly is not a song. Similarly a vocal performance not confined to a definite season of the year is not a song. I am aware that there are cases where an individual female has sung the song of the male. I have met with a single instance of this sort in my own experience in the case of the Slate-colored Fox Sparrow (*Passerella iliaca schistacea*) (Condor XII, 80). I believe that such instances are merely those of individuals showing a tendency toward masculine traits, and that such things may occur in any singing species. Such isolated facts do not hurt the definition or make it less plain. In the same manner a single individual might sing outside the regular song period of its species, or might prolong its nesting a little beyond the limits of its period of song. So long as such occurrences are not general the definition of song remains clear. I doubt if anyone could find an authentic instance however of two individuals of a singing species which mated and began nesting when the male was not in full song.

It is to be noted that musical quality is not part of the definition of song. Many bird calls are exceedingly musical without being songs. Such is the

twitter of a winter flock of Tree Sparrows (*Spizella monticola*). On the other hand some true songs, according to the definition, are sadly unmusical to human ears at least. The efforts of the male Yellow-headed Blackbird (*Xanthocephalus xanthocephalus*) are a good example.

One point about bird song which seems to have been more or less neglected by most field observers, is that in many species the song differs from the ordinary type during the short period of courtship. This difference may be in the loudness or form of the song or in performances connected with it. Thus the Song Sparrow (*Melospiza melodia*) and Yellowthroat (*Geothlypis trichas*) rise in sudden ecstacy of flight song, and prolong the vocal performance to several seconds longer than its ordinary duration. The Meadowlark (*Sturnella magna*) also sings a flight song, but one absolutely different from the ordinary song. It is a long-continued jumble of short quick notes and quite closely resembles the flight-song of the Bobolink (*Dolichonyx oryzivorus*). The Robin (*Planesticus migratorius*), in the late days of April when mating is in progress, may be found singing with its bill closed, the notes hardly audible for more than a hundred feet. At such times its mate is nearly always to be found in the same tree, evidently listening with pleasure to this whispered song, which is apparently sung for its benefit only. This mating song of the Robin is a common occurrence in the life of one of our most abundant birds. I have noted it many times in many localities in the past fifteen years. It is common to both eastern and western subspecies, yet most ornithologists seem to have overlooked it entirely, for I have never seen mention of it in print, nor do I know any ornithological friend who has observed it independently.

This fact that many birds have two songs, an ordinary song and a mating song, is significant in solving the problem of the origin of song. The ordinary song is evidently not sung from sexual impulses, but is simply an outburst of vocal sounds expressing great vigor and joy of living. Any observer will note that this song is more commonly influenced by time of day and weather conditions than by the presence of the bird's mate. But the mating song, on the other hand, seems to be caused directly by sexual impulses. If we would know the primary cause of bird song in general, then the question to be solved is which of these forms of song is the more ancient. Did birds first begin to sing simply from joy of living, or were the first songs induced by the period of courtship, and the ordinary song evolved later?

One observation which seems to give some evidence pointing to the greater antiquity of the mating song is furnished by the Meadowlarks (*Sturnella magna* and *S. neglecta*). Both the Eastern and Western Meadowlarks have ordinary and mating songs, the former short and most commonly rendered from a perch, the latter long-continued and always sung on the wing, frequently in pursuit of the mate. The great differences in the ordinary songs of these two species is too well known to need comment, but the similarity of their mating songs is less well known. In fact I have never seen these flight songs mentioned in print by any

writer. The point is that save for certain introductory notes rendered by the western bird before it leaves its perch for the flight, the mating songs of the two species are almost identical. This is the more interesting since neither the call-notes nor alarm notes of the two species are at all alike. This then seems to me good evidence that before these species became separated, their common ancestor had a mating song, one which may have been derived even more anciently from a common ancestor with the Bobolink. Then geographical conditions separated the birds and the ordinary songs were slowly evolved, the eastern birds producing a high piercing whistle, while the western ones evolved a rich, loud thrush-like warble and this leads me to believe that the first songs of birds were mating songs, evolved by sexual selection and limited to the period of courtship only.

ARETAS A. SAUNDERS.

Norwalk, Conn., Nov. 26, 1918.

Australia's Effort to Save her Bird Fauna.

EDITOR OF 'THE AUK':

In my last October Australian mail I received a most interesting letter from my friend Captain S. A. White, of Fulham, South Australia, where he holds the Local State Secretaryship for the Royal Australasian Ornithologists' Union. Captain White is one of Australia's best known ornithologists and general naturalists. He has conducted upwards of a dozen scientific expeditions into the unexplored wilds of Southern Australia, where he has discovered unknown races of natives, collected many new forms of birds, plants, and other specimens — and, finally, published some six or eight booklets, illustrated by fine halftones, treating of these several expeditions.

Among his other experiences Captain White has come to realize the fact that many species of Australian birds are on the very verge of extermination; some have already gone forever, while a whole host more are becoming scarce. This pitiable state of affairs applies also to the flora over similar areas.

Now Captain White has recently taken hold of this matter with great force and in 'The Register' of Adelaide invited the attention of the Commonwealth to this serious state of things, especially to the rapid disappearance of many of Australia's most beautiful and interesting species of birds — and we all know what a magnificent avifauna she has.

It would appear that the Government has repeatedly broken its promises to set aside "Flinders Chase" on Kangaroo Island for this purpose, which Captain White points out is an ideal place for the purpose. In the course of his remarks in 'The Register' for October 9, 1918, he says "News came to hand by the last American mail that another 12,000 acres of woodland, prairie and watercourse has been added to the great forest reserves in the

county of Illinois, and more than 30 miles of shore line of Lake Michigan has been set aside as a sanctuary for wild animals and birds. This news comes when we here in South Australia are fighting hard to show the 'powers that be' the necessity of setting aside an area of poor country on Kangaroo Island for the same purpose, and shame be it to South Australia that there are no such parks or reserves in this State as there are in America and even approaching those now existing in other States of the Commonwealth."

Few countries in the world possess the bird fauna that Southern Australia has, as any complete ornithological work with colored plates of all the species will demonstrate. Even such an admirable little work as 'An Australian Bird Book' by Dr. J. A. Leach, with its plain and colored figures, gives a fine realization of the extraordinary avifauna of that great island continent. We find no Humming Birds, Vultures or Woodpeckers, to be sure, but an enormous array of nearly 400 species of everything else known to the Class Aves, including such archaic types as the Emu, Lyrebird, Moundbuilders, and so on. A very large percentage of the forms are of wonderfully varied and brilliant plumage, especially among the Kingfishers, Rollers, Cockatoos, Parrots, Chats, Regents, Honey-eaters, Diamond Birds, and many others.

It is greatly to be hoped that the government will give heed to such earnest appeals to it as have been made by such distinguished and far-seeing ornithologists as Captain White, Dr. Leach and not a few others among Australian scientists and sincere lovers of all that nature offers in that grand old sunny continent of the Southern Hemisphere.

R. W. SHUFELDT.

Washington, D. C., 28th November, 1918.

NOTES AND NEWS.

In a discussion of nomenclature in 'The Auk' for October, 1918, p. 508, the writer referred to a "list of *proposed* changes and additions to the 'Check List' compiled by Dr. H. C. Oberholser and embodying the compiler's opinions upon certain of the cases."

This sentence seems to have been interpreted by some readers as a reflection upon Dr. Oberholser by charging him with inserting in a list of "proposed changes" a personal opinion as to the advisability of the changes. No such criticism was intended and while the writer sees no reason why Dr. Oberholser should not have added such opinion, nevertheless, he did not do so, and the writer was misled by certain opinions already published elsewhere and quoted in these lists.

Our whole object was to emphasize the fact that these lists did not have the authority of the A. O. U. They simply represent the present status of nomenclature if all the proposed changes not subsequently rejected by others were accepted.

The use of the words "becomes" and "will therefore stand" have misled others into the view that the final action had been taken, whereas Dr. Oberholser simply means "becomes" or "will therefore stand" *provided the proposed change is accepted.*

It has proved impracticable to hold meetings of the Committee for the past several years and in order to have all *proposed* changes conveniently accessible, Dr. Oberholder has, at the request of the chairman, prepared these annual lists for final action when a new Check-List is prepared.—W. S.

WALTER FREEMAN MCMAHON, an Associate of the American Ornithologists' Union, was killed in action, in France, August 28, 1918.

Mr. McMahon was born in Chelsea, Massachusetts, June 17, 1889. He attended the Shurtleff School at Chelsea and later the Lewis School at Roxbury. Subsequently he took a course in the School of Fine Arts, and studied zoölogy at Harvard University. He early developed an intense interest in the study of birds and for a time lectured extensively at various places in Massachusetts. He conducted bird exhibitions in Tremont Temple and the Mechanics' Building in Boston. For two years he was secretary to Edward H. Forbush, State Ornithologist of Massachusetts, during which time he conducted much of the correspondence of the office and drew many of the illustrations used in Mr. Forbush's bulletins. He served a year as secretary of the Massachusetts Game Protective Association with an office in Boston. In January, 1917, he was called to the office of the National Association of Audubon Societies in New York, where in a short time he became Chief Clerk. The bird walks he conducted in Central Park quickly became well known, and many bird-lovers in the City thus made his acquaintance. He was a member of the Linnæan Society and regularly attended its meetings. He left the Association on March 15, 1918, to enter the Army and in less than sixty days sailed for France. He saw more than a month's service in the front lines and as "scout" for his platoon was engaged in a number of dangerous enterprises. It was while undertaking a desperate mission in this capacity that he met his death from the bullet of a German sniper while crossing No-man's Land. Walter McMahon was not only a forceful character, but he possessed, to an unusual degree, an innate refinement and a quiet courtesy that particularly endeared him to all with whom he was associated.—T. G. P.

DOUGLAS CLIFFORD MABBOTT, at the time a private in the 79th Company, 6th Regiment of the United States Marine Corps, was killed in action to the north of Chateau Thierry, France, September 15, 1918. Mabbott has been an Associate of the American Ornithologists' Union since 1916

and a member of the United States Biological Survey since 1915. He was born at Arena, Iowa County, Wisconsin, March 12, 1893, and was educated in the public schools of that state, graduating from the High School at Baraboo. While in Washington, D. C., in order further to fit himself for his official work, he took a special course in zoölogy at George Washington University. He was self-taught in natural history, however, and before coming to the Biological Survey creditably passed two of its examinations, one of which required special knowledge of mammals, the other of birds. In the Biological Survey, he was an assistant in economic ornithology, and was especially trained to investigate the food habits of wild ducks. He made good progress in this work and left with the Survey, ready for publication, three manuscripts treating the food habits respectively of the three species of Teals, of the Gadwall and Widgeon, and of the Pintail and Wood-duck. In the summer of 1917 Mabbott helped to make a survey of the resources in food for wild fowl of the lakes of North Dakota. He served in the National Guard of the District of Columbia in 1916 when trouble with Mexico threatened, and was honorably discharged. He enlisted for service in the present war in February 1918, as soon as he could complete reports on the North Dakota work and on the groups of wild ducks studied. He received ten weeks' training at Paris Island, South Carolina, and was sent at once to France. He had a rifle blown from his hand by a bursting shell, received hospital treatment for shell shock and had only recently recovered and resumed his place in the ranks at the time he was killed. His last words exhorted his comrades to hold the ground gained. Mabbott enlisted in the Marines to get quick action and he got it, and he will ever be numbered among the heroic band that stopped the German drive on Paris. In his office work Mabbott showed tireless application and he had become very efficient in his special line. Out of doors he was a splendid companion with a keen eye and ear for nature's wonders. While of an independent nature and original turn of mind, in character he was a most likable, straightforward and wholesome boy. To the writer of these lines he was not only an irreplaceable assistant and successor in an especially valued line of work, but a sincere and manly young friend whose loss leaves a definite void.—
W. L. M.

PROF. DAVID ERNEST LANTZ, Assistant Biologist in the Biological Survey since 1904, and an Associate of the American Ornithologists' Union since 1885, died of pneumonia at his home in Washington, D. C., Oct. 7, 1918, after an illness of only a week. He was born at Thompsettown, Pa., Mar. 1, 1855, and at the time of his death was in his 64th year.

After graduating at the State Normal School at Bloomsburg, Pa., Prof. Lantz became principal of schools at Mifflintown, Pa., a position which he occupied two years. In 1878 he moved to Kansas where during a residence of a quarter of a century he became widely known in educational and scientific circles. He served as superintendent of schools at Manhattan, professor of mathematics in the State Agricultural College for

fourteen years, and later as principal of the Dickinson County High School, and field agent of the Kansas Agricultural Experiment Station.

In 1904 he received an appointment in the U. S. Department of Agriculture and has since devoted his attention mainly to investigations on mammals of economic importance. He published extensively on economic mammalogy and was the author of twenty or more Farmers' bulletins and a number of other reports and special papers.

During his residence in Kansas he published about thirty-five papers and short notes on birds and added two species to the state list, the Purple Gallinule in 1893 and the Roseate Spoonbill in 1900. His most important ornithological contributions were his 'List of Birds in the Goss Collection' and his 'Review of Kansas Ornithology.' The latter paper contained a unique feature in the 'Historical List' showing the date when each species was first recorded from the state.

Prof. Lantz was widely known in scientific circles in Kansas and in Washington. He was a life member of the Kansas State Horticultural Society, the Kansas Academy of Science, and served as secretary and president of the Academy of Science. He was a member of the Biological Society of Washington and for five years filled the office of recording secretary. When the 'Ten Year Index of The Auk' was in course of preparation he served on the committee and took an active part in the work.

He is survived by his wife, Mrs. Clara Deen Lantz, and two daughters, Mrs. Frank S. Evans of Baltimore, Md., and Mrs. J. N. Simmons of Victor, Colo.—T. S. P.

CHECK LISTS.—In view of the invitation extended by the B. O. U. to the A. O. U. to coöperate in the preparation of a series of check lists of the birds of the principal zoölogical regions of the world(see 'The Auk,' Oct. 1918, p. 509), it is interesting to recall what has already been done by the A. O. U., the B. O. U., and the R. A. O. U. and some of their members in the publication of check lists.

The A. O. U. has published an official 'Check-List of North American Birds' including the species and subspecies which occur north of the Gulf of Mexico and the Rio Grande and also on the peninsula of Lower California. The first edition appeared in 1886 and two revised editions have since been issued, one in 1895 and the last in 1910. Before the organization of the A. O. U. several check lists of North American birds were published by individual authors who later became members of the Union and took part in the preparation of its first Check-List. Of these the first was published by Baird in 1858, the second by Coues in 1873 with an elaborately annotated revised edition in 1882, and the third by Ridgway in 1881. The check lists of Baird and Ridgway were issued by the Smithsonian Institution and National Museum and those of Coues were private publications.

The official check list of the British Ornithologists' Union has been limited to two editions of the 'List of British Birds,' one of which appeared

in 1883 and the other a revised edition¹ in 1915. In 1912 a 'Hand-List of British Birds'² was published independently by Hartert, Jourdain, Ticehurst, and Witherby, all of whom were members of the B. O. U. Several earlier lists have been published covering the same ground, among which the more important are the 'Zoölogist List' of 1870, Wharton's List of 1877, Col. Irby's 'Key List' of 1892, and Seebohm's 'Geographic Distribution of British Birds,' 1893.

The Royal Australasian Ornithologists' Union in 1913 published the result of ten years' work of its committee in the form of an 'Official Check-List of the Birds of Australia.'³ In addition to this there are at least three other check lists all published by Gregory M. Mathews during the last decade, viz. a 'Hand-list of the Birds of Australasia,' 1908, in 'The Emu,' based on Sharpe's 'Hand List'; a 'Reference-list to the Birds of Australia' in 'Novitates Zoölogicae,' XVIII, 1912; and a 'List of the Birds of Australia,' 1913. Australia is thus unusually well supplied with recent lists of its birds.

Of lists of birds of other regions prepared by members of the Ornithologists' Unions several deserve mention in this connection. On the birds of America Selater and Salvin's 'Nomenclator Avium Neotropicalium,' 1873, as its name indicates, includes the birds of the Neotropical region; Brabourne and Chubb's 'Birds of South America' appeared in 1912;⁴ while Cory has begun the publication of an extensive 'Catalogue of Birds of the Americas,'⁵ covering the region from Patagonia to the North Pole—of this the second volume (the only one thus far issued) was published in 1918. For Europe, we have among others the 'List of the Birds of Europe' by J. H. Blasius, reprinted from the German in 1862, and Dresser's 'List of European Birds' which bears the date of 1881. For the region comprising the islands of the Pacific Ocean Wiglesworth's 'Aves Polynesia,' 1891, is the most comprehensive list.

Among check lists of the birds of the world are G. R. Gray's⁶ 'Hand-List of Genera and Species of Birds,' in three parts, 1869-71; Boucard's 'Catalogus Avium,' 1876; and Sharpe's 'Hand-List of the Genera and Species of Birds' in five volumes, 1899-1909.

This brief enumeration of only a few of the more important lists of birds of extensive regions includes three check lists that are world-wide in scope, one covering North and South America, seven North America, two South America, two Europe, seven the British Isles, four Australia, and one Polynesia. Some of these lists now require revision and there is room for greater uniformity of treatment of the subject and more catalogues of birds of natural zoölogical areas such as Australia, the Neotropical

¹ For a review see *The Auk*, XXXII, p. 243, 1915.

² For a review see *The Auk*, XXIX, p. 407, 1912.

³ For a review see *The Auk*, XXX, p. 445, 1913.

⁴ For a review see *The Auk*, XXX, p. 286, 1913.

⁵ For a review see *The Auk*, XXXV, p. 365, 1918.

⁶ G. R. Gray was not a member of the B. O. U.

Region, and Polynesia. To meet these requirements is in part the object of the proposed 'Systema Avium.'—T. S. P.

An interesting collection of paintings of extinct birds or those in danger of extinction is being made by the New York Zoölogical Society. The three paintings now exhibited in the Administration Building in the Zoölogical Park are the work of Robert Bruce Horsfall and include the Great Auk, Pallas' Cormorant, and the California Condor.

ACCORDING to 'The Emu' efforts are now being made to raise a sufficient fund to purchase and transfer from England to Australia the great collection of Australian birds belonging to Gregory M. Mathews. This is the first large collection of birds which has been offered for sale since the collection of the late Count Hans von Berlepsch was sold a few years ago. The latter collection was especially rich in South American species.

DR. T. S. PALMER has prepared an interesting historical account of the American Ornithologists' Union, with portraits of the founders and some leading members, which appeared in 'The American Museum Journal' (XVIII, No. 6, November, 1918). The object was to arouse interest in and to advertise the society in the hope of securing additional members. A few copies are available should members desire to secure them from him.

DURING the year 1918 the Union gained 17 life members as follows: Three Fellows — Eugene P. Bicknell, Richard C. McGregor, and T. S. Palmer; two Members — F. H. Kennard and Geo. Shiras 3d; and 12 Associates — Franklin Brandreth, Mrs. Edmund Bridge, Dudley B. Fay, Harry Harris, Harold Herrick, John B. Henderson, Mrs. Ella M. O. Marshall, Miss Elizabeth D. Palmer, Edward L. Parker, L. H. Vandergrift, Gordon B. Wellman and William P. Wharton.

WE learn with much regret of the retirement of Mr. W. R. Ogilvie-Grant from his post in the British Museum (Natural History), on account of ill health. According to 'The Ibis,' Mr. Grant became connected with the museum in 1882 and began his work in the Bird Room in 1885, becoming Assistant Keeper of the Zoölogical Department in 1913. While serving in outer defences of London, in August 1916, in the 1st County of London Volunteer Regiment, he received a sunstroke from the effects of which he has suffered ever since. By absolute rest in the quiet of the country, it is hoped he may soon regain his health.

BEGINNING with the April 1918 issue 'The Ottawa Naturalist' has appeared in a much improved form, with a larger page and new cover. It was established in 1887 by the Ottawa Field Naturalists' Club and is therefore one of the oldest natural history periodicals in North America. Judging by the recent issues the improvement extends also to the subject matter and it bids fair to hold and strengthen its honorable place in scientific literature.

THE CHICAGO ORNITHOLOGICAL SOCIETY founded in December, 1912, by Dr. R. M. Strong continues as an active organization, meeting on the second Tuesday of each month. The officers for the current year are Edward R. Ford, President; Dr. Alfred Lewy, First Vice President; Prof. C. W. G. Efrig, Second Vice President; Miss Marian Fairman, Secretary-Treasurer, address 4744 Kenwood Ave., Chicago, Ill.

AN interesting exhibit of pictures illustrating protective coloration in nature and concerned with the origin of camouflage in war, by Abbott H. and Gerald H. Thayer, was held in the Corcoran Gallery of Art, Washington, D. C., October 26 to November 17, 1918.

EARLY in 1920 the Nuttall Ornithological Club proposes to issue a supplement to its Memoir III, 'The Birds of Essex County' (Massachusetts) by Charles Wendell Townsend, M. D., which was published in 1905.

The author will be glad to receive any notes of interest on the birds of this county, including earlier or later dates than those in the original memoir, in order to make the supplement as complete and valuable as possible. These notes should reach him on or before November 1, 1918. Address 98 Pinckney St., Boston, Mass.

A LETTER of Mr. M. Rasmusson describing the presence of a flock of supposed Wild Pigeons in Saratoga County, N. Y., October 1, 1918, has been given wide publicity by the N. Y. State Museum at Albany and was published in 'Science' and doubtless elsewhere. While it is of course impossible to satisfactorily verify such observations, attention might be called to the statement of the observer that he had seen the bird but once before, which was about twenty years ago near Ithaca. Even that observation was a very late one if the date is correctly given.

Another observation of alleged Passenger Pigeons by John M. Crampton, Supt. of the Conn. State Board of Fisheries and Game, in May, 1918, at Southington, Conn., was published in 'The Conservationist' (Albany, N. Y.), August, 1918. It seems more convincing than the other, as Mr. Crampton was familiar with the birds from boyhood, but again positive proof is impossible, and we have to consider several positive records of men who had killed hundreds of pigeons, mistaking doves for pigeons in later years!

CALLED TO THE COLORS.—During the past year lists of the members of the A. O. U. in military and naval service have been published in each number of 'The Auk' as the information was received. It now seems desirable to present in one place the names of all these members in order to show the active part taken by the American Ornithologists' Union in the great world war.

The following list has been corrected to Nov. 11, 1918, the date of the signing of the armistice. It is still incomplete and in some cases (as shown by months in parentheses), the latest information available is now out of

date. Future editions of the list are likely to consist mainly of corrections which should be sent to the Secretary so that the service record of the Union may be made as complete as possible.

Killed in Action.

DUNLOP, ERIC BROOKE, Winnipeg, Man., Mar. 19, 1917.

McMAHON, WALTER FREEMAN, New York City, Aug. 28, 1918.

MABBOTT, DOUGLAS CLIFFORD, Washington, D. C., Sept. 15, 1918.

ADAMS, DR. Z. B., Brookline, Mass. Am. Exped. Forces, in France.

ANDERSON, ERNEST MELVILLE, Esquimalt, B. C. Private A Co., R. C. R., B. C. Special Service Unit, Quebec.

ANTHONY, HAROLD ELMER, New York City. Capt. 309th Field Artillery, Camp Lewis, American Lake, Wash.

BABCOCK, DR. H. L., Dedham, Mass. Lieut. Med. Reserve Corps.

BAKER, JOHN HOPKINSON, Dayton, O. Lieut. Aviation Corps, Am. Exped. Forces, in France.

BERGTOLD, DR. WILLIAM HARRY, Denver, Colo. Major Medical Corps, U. S. General Hospital No. 21, Denver, Colo.

BOYLE, HOWARTH STANLEY, New York City. Ph. M. 3, U. S. Naval Base Hospital Unit 1, Am. Exped. Forces, in France.

BRADLEE, THOMAS STEVENSON, Boston, Mass. Major, Asst. to Dept. Quartermaster in charge of Personnel & Transportation Division, Governor's Island, N. Y.

BRITEN, DR. GEORGE SIDNEY, Syracuse, N. Y. Captain Medical Corps, Am. Exped. Forces, in France.

BROOKS, ALLAN [CYRIL], Okanagan Landing, B. C. Major 11th Canadian Infantry Brigade H. Q., Brit. Exped. Forces, in France.

BROOKS, WINTHROP SPRAGUE, Boston, Mass. Ensign in the Navy (Retired).

BURLEIGH, THOMAS D., Pittsburgh, Pa. 20th Engineers (Forest), in France.

CAHN, ALVIN ROBERT, Chicago, Ill. Laboratory work in Base Hospital, in France.

CHAPIN, JAMES PAUL, New York City. 1st Lieut., care of R. R. & C., A. P. O. No. 757, Am. Exped. Forces, in France.

CHAPMAN, DR. FRANK MICHLER, New York City. Red Cross Commissioner, South America.

CHAPMAN, MRS. FRANK MICHLER, New York City. In Red Cross work, South America.

CROSBY, MAUNSELL SHIEFFELIN, Rhinebeck, N. Y. Captain Quartermaster Corps, Am. Exped. Forces, in France.

- DECKER, HAROLD KENNETH, New Brighton, N. Y. In Naval Service, 66 Martin St., Cambridge, Mass.
- DERBY, DR. RICHARD, New York City. Major, Medical Corps, Am. Exped. Forces, in France.
- DICE, LEE RAYMOND, Washington, D. C. Private Yale Army Laboratory School, New Haven, Conn.
- EASTMAN, FRANCIS B. Major 344th Infantry, Camp Grant, Rockford, Ill. (Mar., 1918).
- FAY, SAMUEL PRESCOTT, Boston, Mass., 1st Lieut., Camp Devens, Ayer, Mass. (Mar. 1918).
- FOWLER, FREDERICK HALL, Palo Alto, Calif. Captain of Engineers, Office Chief of Engineers, Washington, D. C.
- FRY, REV. HENRY JACOB, Montclair, N. J. Chaplain, U. S. Navy.
- GOLDMAN, EDWARD ALFONSO, Washington, D. C., Major Sanitary Corps, A. P. O. No. 721, Am. Exped. Forces, in France.
- GOODRICH, MISS JULIET THEODOSIA, Chicago, Ill. In war work in France.
- GRISCOM, LUDLOW, New York City. 2d Lieut., Service des Accredités, Credit-Lyonnais, Paris, France.
- HAGAR, JOSEPH ARCHIBALD, Newtonville, Mass. 2d Lieut. Infantry, Camp Devens, Ayer, Mass. (Mar. 1918).
- HALL, FRANK GREGORY. Signal Corps School of Meteorology, 32d Service Co., College Station, Texas.
- HARPER, FRANCIS, Washington, D. C. 1st Lieut., Sanitary Corps, Am. Exped. Forces, in France.
- HOLT ERNEST GOLSAN, Washington, D. C. 2d Lieut. Infantry, 10th Co., 3rd Battalion, 152d Depot Brigade, Camp Upton, N. Y.
- KITTREDGE, JOSEPH JR., Missoula, Mont. 1st Lieut. 10th Engineers (Forest) Am. Exped. Forces, in France.
- LAING, HAMILTON MACK, Portland, Ore. Instructional Section, School of Aerial Gunnery, Beamsville, Ont.
- LEISTER, CLAUDE WILLARD, Ithaca, N. Y. Private Hdq. Co., 110th Infantry, Am. Exped. Forces, in France.
- LEWIS, HARRISON FLINT, Yarmouth, N. S. District Auditor, M. D., No. 5, P. O. Box No. 6, Quebec, P. Q.
- LINCOLN, FREDERICK CHARLES, Denver, Colo. Acting Sergeant, Pigeon Section 293d Aero Squadron, March Field, Riverside, Calif.
- LORING, JOHN ALDEN, Owego, N. Y. 1st Lieut. of Ordnance, Texas.
- MAPLES, JAMES COMLY, Port Chester, N. Y. Seaman in the Navy Section Base No. 1, Third District, New Haven, Conn.
- MARX, EDWARD J. F., Easton, Pa. Capt. Battery B, 16th Field Artillery, Camp Greene, N. C. (Mar. 1918).
- MATTERN, EDWIN S. Am. Exped. Forces, in France.
- MAYFIELD, DR. GEORGE R., Nashville, Tenn. Am. Exped. Forces, in France.

- McCOOK, PHILIP JAMES, New York City. Major, Adjutant 9th Brigade, Am. Exped. Forces, in France. (Wounded in action Nov. 6, 1918. Convalescing in Base Hospital No. 6, in Bordeaux.)
- METCALF, FRANKLIN POST. Lieut. Signal Corps. Care Guarantee Trust Co., New York and Paris. In France.
- MEYER, GEORGE RALPH, Captain Coast Artillery Corps, Fort Kamehameha, H. I.
- MEYER, MISS HELOISE, LENOX, Mass. Red Cross, in France.
- MITCHELL, DR. WALTER IUNGERICH, Wichita, Kans. Captain Medical Corps, Camp Funston, Kans.
- MURIE, OLAUS JOHAN, Moorhead, Minn. Cadet Army Balloon School, Fort Omaha, Nebr.
- NOBLE, GLADWYN KINGSLEY, Cambridge, Mass. Ensign U. S. Navy.
- OLDYS, HENRY, Silver Spring, Md. Asst. Auditor War Dept., in France.
- OVERTON, DR. FRANK, Patchogue, N. Y. Major Medical Corps, Camp Upton, N. Y.
- PALMER, R. H., Pocatello, Idaho. Reserve Officers Training Corps, No. 9, Presidio, Calif. (Nov. 1917).
- PANGBURN, CLIFFORD HAYES, New Haven, Conn. Formerly Acting Lieut. Red Cross in France.
- PEPPER, DR. WILLIAM, Philadelphia, Pa. Lieut. Col. Medical Reserve Corps, Philadelphia, Pa.
- PETERS, JAMES LEE, Harvard, Mass. 2d Lieut. Quartermaster's Corps, Am. Exped. Forces, in France.
- PHILLIPS, DR. JOHN CHARLES, Wenham, Mass. Medical Corps, Fort Benjamin Harrison, Indianapolis, Ind. (Dec. 1917).
- POOLE, EARL L., Reading, Pa. Private Signal Corps, Advance Supply Depot No. 1, A. P. O. 712, Am. Exped. Forces, in France.
- ROBINSON, WIRT. Colonel, U. S. Military Academy, West Point, N. Y.
- ROGERS, CHARLES HENRY, New York City. Sergeant Co. B, 31st Machine Gun Battalion, 11th Division, Camp Meade, Md.
- SANBORN, COLIN CAMPBELL, Evanston, Ill. Battery C, 149th Artillery, Am. Exped. Forces, in France.
- SCHAEFER, OSCAR FREDERICK, Geneva, N. Y. 10th Engineers (Forest), Am. Exped. Forces, in France.
- SHELTON, ALFRED COOPER, Eugene, Ore. 2d Lieut. Sanitary Corps. 831 5th St., Santa Rosa, Calif.
- SHUFELDT, DR. ROBERT WILSON, Washington, D. C. Major Medical Corps, Army Medical Museum, Washington, D. C.
- SMITH, LESTER WHEADON, Meriden, Conn. First Class Seaman, Naval Reserve, in France.
- STIMSON, DR. ARTHUR M., Washington, D. C. Sanitary Officer, 2d Naval District, War College, Newport, R. I.
- STODDARD, HERBERT LEE, Chicago, Ill. Am. Exped. Forces, in France.

- STORER, TRACY IRWIN, Berkeley, Calif. First Lieut. Sanitary Corps, Laboratory Car 'Metchnikoff,' Fort Sam Houston, Texas.
- SWEENEY, JOSEPH A., Halsey, Nebr. Private Co. E, 2d Battalion, 20th Engineers (Forest), Am. Exped. Forces, in France.
- TYLER, DR. WINSOR M., Lexington, Mass. Captain Medical Reserve Corps, Fort Adams, Newport, R. I.
- WILCOX THOMAS FERDINAND, New York City. Capt. in Air Service, New York City.
- WOOD, DR. CASEY ALBERT, Chicago, Ill. Lieut., Medical Corps, 7 West Madison St., Chicago, Ill.
- WOOD, GEORGE B., Philadelphia, Pa. Am. Exped. Forces, in France.
- YOUNG, JOHN PAUL, Youngstown, O. Captain, 5th Co., Coast Artillery Corps, Fort Hancock, Sandy Hook, N. J.
-

JUST as we go to press comes the sad news of the death, on January 6, 1919, of Theodore Roosevelt. So prominently and continuously has he figured in the history of our Country during his active life, and so great have been his services to humanity, that his attainments as a naturalist have been completely overshadowed. Only a few have appreciated the breadth of his knowledge in the field of science or realized that he had there established a lasting reputation wholly independent of his greater fame.

A member of the Nuttall Ornithological Club, during his college days at Cambridge, and an Associate of the American Ornithologists' Union from 1888 to 1902, he was, throughout his life, an active and accurate student of birds. As a hunter he was not content with the mere accumulation of trophies or specimens but invariably obtained valuable and original information on the habits of the animals, and his numerous contributions to ornithology and mammalogy will stand for all time as works of reference.

On certain special subjects, such as animal coloration, he was an authority and his intimate knowledge of the literature and the extent of his personal observations were a revelation to those who were privileged to discuss them with him.

In the United States National Museum and the American Museum of Natural History his name will be forever perpetuated in connection with the great African and South American collections which he was largely instrumental in securing.

Those who were in a position to judge this side of the man will realize that it was only the eminence of Roosevelt the statesman and the constant call to public service, that obscured the reputation and checked the further development of Roosevelt the naturalist.

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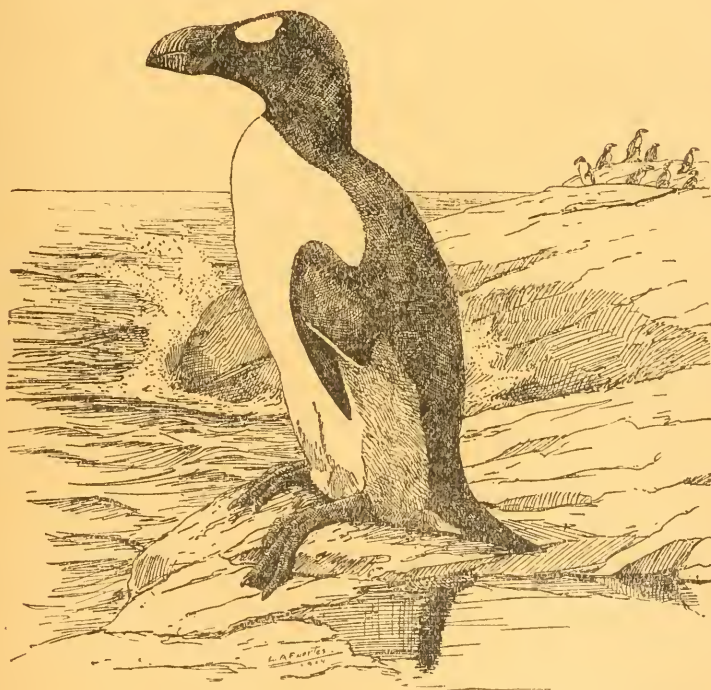
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Olim Thorsen Miller

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No. 2.

MRS. OLIVE THORNE MILLER.

BY FLORENCE MERRIAM BAILEY.

Plate VII.

LITTLE more than a month after the last meeting of the A. O. U., at which greetings were sent from the Council to Mrs. Miller as the oldest living member of the Union, came the announcement of her death, on December 26, 1918. Born on June 25, 1831, she had indeed been allotted a full span, and for thirty-one of her eighty-seven years she had been associated with the American Ornithologists' Union joining four years after it was founded and being made Member in 1901 when that class was established.

Harriet Mann — for the more familiar name of Olive Thorne Miller was the pen name adopted after her marriage — was born at Auburn, New York, where her father, Seth Hunt, was a banker; but she was of New England ancestry on both sides of the family, her paternal grandfather being an importing merchant of Boston, and her great-grandfather, Captain Benjamin Mann, having organized a company during the revolution of which he was in command at Bunker Hill.

From Auburn the family moved to Ohio when she was eleven years old, making the journey, in lieu of railroads, by "packet" on the canal through the Mohawk Valley, by steamer across Lake Erie, and finally by an old-fashioned thoroughbrace coach for twenty-five miles through Ohio — a journey full of romance to an

imaginative child, and described entertainingly in one of Mrs. Miller's delightful and in this case largely autobiographical child stories, 'What Happened to Barbara.' In Ohio she spent five years in a small college town where she attended private schools, among them one of the Select Schools of that generation, with an enrollment of some forty or fifty girls. At the age of nine, as she says, she "grappled with the problems of Watts on the Mind!" To offset the dreariness of such work, she and half a dozen of her intimate friends formed a secret society for writing stories, two members of the circle afterwards becoming well known writers. For writing and reading even then were her greatest pleasures. The strongest influence in her young life, she tells us, was from books. "Loving them above everything, adoring the very odor of a freshly printed volume, and regarding a library as nearest heaven of any spot on earth, she devoured everything she could lay her hands upon." As she grew older the shyness from which she had always suffered increased painfully, and coupled with a morbid sensitiveness as to what she considered her personal defects made people a terror to her; but solitary and reticent, she had the writer's passion for self expression and it is easy to understand her when she says, "To shut myself up where no one could see me, and speak with my pen, was my greatest happiness."

In 1854, she married Watts Todd Miller, like herself a member of a well known family of northern New York, and in her conscientious effort to be a model wife and to master domestic arts to which she had never been trained, she sacrificed herself unnecessarily. "Many years I denied myself the joy of my life — the use of my pen," she tells us, "and it was not until my children were well out of the nursery that I grew wise enough to return to it."

The history of the vicissitudes of her literary life is at once touching and enlightening. Full of ardor to reform the world, to prevent needless unhappiness and to set people on the right path, her first literary attempt was the essay, but as she expressed it, "the editorial world did not seem to be suffering for any effusions of mine," and her manuscripts were so systematically returned that she was about giving up, concluding during very black days that she had mistaken her calling; when a practical friend gave her a new point of view. What did the public care for the opinions of

an unknown writer? she asked. Let her give what it wanted — attractively put information on matters of fact. Then when her reputation was established, people might be glad to listen to her views of life.

Philosophically accepting the suggestion, she calmly burned up her accumulated “sentiments and opinions,” and set about writing what she termed “sugar-coated pills of knowledge” for children. The first, the facts of china-making in the guise of a story, she sent to a religious weekly which had a children’s page, and to her surprise and delight received a check for it — her first — two dollars! This was apparently in 1870, and for twelve years, she worked in what she terms that “Gradgrind field” in which during that period she published some three hundred and seventy-five articles in religious weeklies, ‘Our Young Folks,’ ‘The Youth’s Companion,’ ‘The Independent,’ ‘St. Nicholas,’ ‘The Chicago Tribune,’ ‘Harper’s,’ ‘Scribner’s,’ and other papers and magazines, on subjects ranging from the manufacture of various familiar articles, as needles, thread, and china to sea cucumbers, spiders, monkeys, and oyster farms; and during those twelve years, in addition she published five books, the best known of which were perhaps ‘Little Folks in Feathers and Fur,’ 1873, ‘Queer Pets at Marcy’s,’ 1880, and ‘Little People of Asia,’ 1882.

About this time, having lived in Chicago nearly twenty years, the Millers, with their two sons and two daughters, moved to Brooklyn, where they lived until Mr. Miller’s death. Not long after settling in Brooklyn, when she had spent twelve years mainly on miscellaneous juvenile work, Mrs. Miller was visited by a friend who gave her a new subject, completely changing the course of her life. The friend was none less than Mrs. Sara A. Hubbard, whom she had known as a book reviewer in Chicago, but who was also an enthusiastic bird woman — later an Associate of the A. O. U. — and whose greatest desire in coming to New York had been to see the birds.

As Mrs. Miller naïvely remarks, “of course I could do no less than to take her to our park, where were birds in plenty.” And here, in Prospect Park when she was nearly fifty years old — incredible as it seems in view of her later work — Mrs. Miller got her first introduction to birds. “I knew absolutely nothing

about ornithology," she confesses; "indeed, I knew by sight not more than two birds, the English Sparrow and the Robin, and I was not very sure of a Robin either! I must say in excuse for myself," she adds, "that I had never spent any time in the country and had been absorbed all my life in books. My friend was an enthusiast, and I found her enthusiasm contagious. She taught me to know a few birds, a Vireo, the charming Catbird, and the beautiful Wood Thrush, and indeed before she left me I became so interested in the Catbird and Thrush that I continued to visit the park to see them, and after about two summers' study the thought one day came to me that I had seen some things that other people might be interested in. I wrote what I had observed and sent an article to the 'Atlantic Monthly' and it was accepted with a very precious letter from Mr. Scudder, who was then editor. All this time my love of birds and my interest in them had been growing, and soon I cared for no other study. I set up a bird-room in my house to study them winters and I began to go to their country haunts in the summer."

Of the bird-room described so interestingly in 'Bird Ways' it is only necessary to say that first and last Mrs. Miller had about thirty-five species of birds which she bought from the bird stores in winter and allowed to fly about in her bird room, where she could study them unobtrusively at her desk by means of skillfully arranged mirrors. For twenty summers, from 1883 to 1903, she spent from one to three months in the country studying the wild birds, visiting among other sections, Maine, Massachusetts, Vermont, New Hampshire, New York, Ohio, North Carolina, Michigan, Colorado, Utah, and California, taking careful notes in the field and writing them up for publication at the end of the season. To one who has not known her, the method may sound deliberate and commercial, but to one who has worked joyfully by her side, each year's journey is known to have meant escape from the world, to the ministering beneficence of Nature. Let her speak for herself.—"To a brain wearied by the din of the city . . . how refreshing is the heavenly stillness of the country! To the soul tortured by the sights of ills it cannot cure, wrongs it cannot right, and sufferings it cannot relieve, how blessed to be alone with nature, with trees living free, unfettered lives, and flowers

content each in its native spot, with brooks singing of joy and good cheer, with mountains preaching divine peace and rest!"¹ Freed from city life and the tortures imposed by her profound human sympathy, each gift of fancy and imagination, each rare quality of spirit, joined in the celebration of the new excursion into fields elysian. But while each sight she saw was given glamour and charm by her imagination and enthusiasm, her New England conscience ruled her every word and note, and not one jot or tittle was let by, no word was set down, that could not pass muster before the bar of scientific truth.

Mrs. Miller's first bird book was published in 1885 and the others followed in quick succession although they were interlarded with magazine articles and books on other subjects — as 'The Woman's Club,' 1890, 'Our Home Pets,' 1894, 'Four Handed Folk,' 1896, and a series of children's stories, 1904 to 1907. Her eleven bird books, published by the Houghton, Mifflin Company, were 'Bird Ways,' 1885, 'In Nesting Time,' 1887, 'Little Brothers of the Air,' 1892, 'A Bird Lover in the West,' 1894, 'Upon the Tree Tops,' 1897, 'The First Book of Birds,' 1899, 'The Second Book of Birds,' 1901, 'True Bird Stories from my Note-Books,' 1902, 'With the Birds in Maine,' 1903, 'The Bird our Brother,' 1908, and her last book, 'The Children's Book of Birds' — a juvenile form of the First and Second Book of Birds — 1915.

The newspaper and magazine articles of this second period of Mrs. Miller's literary work, beginning with the time when she first began to study birds, were published not only in the principal religious weeklies and others of the former channels, but by various syndicates, in 'Harper's Bazar,' and the 'Atlantic Monthly.' They included not only a large number of bird papers, some of which appeared later in her books, but also articles on general subjects, proving her friend's statement, for now that her reputation had become established on a basis of fact, the public was ready to profit by her "sentiments and opinions."

Her last book of field notes — 'With the Birds in Maine' — was published in 1903, when she was seventy-two, after which time she was able to do very little active field work and her writing was confined mainly to children's books.

¹ Upon the Tree-Tops', 3, 1897.

In 1902 Mrs. Miller had visited her oldest son, Charles W. Miller, in California, and fascinated by the outdoor life and the birds and flowers of southern California, she would have returned to live, without delay, had it not been that her married daughter, Mrs. Smith, and her grandchildren lived in Brooklyn. In 1904, however, accompanied by her younger daughter, Mary Mann Miller, she did return to California, where her daughter built a cottage on the outskirts of Los Angeles on the edge of a bird-filled arroyo where rare fruits and flowers ran riot and the cottage — El Nido — became embowered in vines and trees.

From 1870–1915, as nearly as can be determined by her manuscript lists, Mrs. Miller published about seven hundred and eighty articles, one booklet on birds and twenty-four books — eleven of them on birds, her books being published mainly by the Houghton Mifflin Company and E. P. Dutton. When we stop to consider that her real work did not begin until she was fifty-four, after which four hundred and five of her articles and nineteen of her books were written, and moreover that during her later years, by remarkable self-conquest, she became a lecturer and devoted much of her time to lecturing on birds in New York, Brooklyn, Philadelphia, and other towns, we come to a realization of her tireless industry and her astonishing accomplishment.

When living in Brooklyn she was a member of some of the leading women's clubs of New York and Brooklyn, giving her time to them with the earnest purpose that underlay all her work. In the midst of her busy life, it is good to recall as an example of her devotion to her friends, that for years Mrs. Miller gave up one day a week to visiting an old friend who had been crippled by an accident; and after she had gone to California took time to make for her a calendar of three hundred and sixty-five personally selected quotations from the best in literature.

Among Mrs. Miller's pleasures during her later years in the East were the meetings of the Linnæan Society held in the American Museum of Natural History in New York, and the A. O. U. meetings which she attended in New York, Philadelphia, Boston, and Washington, enjoying not only the papers of other workers, but the rare opportunity to meet those interested in her beloved work. In a letter written after one of the meetings she exclaimed — "You don't

know what a good time we have always. We had a real 'love feast' this time. Not only all the old standbys — Mr. Brewster, Mr. Sage, Dr. Allen, Dr. Merriam and the rest, but a lot of Audubonites and John Burroughs. I went over and stayed with Mrs. May Riley Smith and attended every session." In this same letter she speaks of her promotion to the new class of membership and says, "It is a great pleasure to have *honest work* recognized, and encourages one to keep at it."

When Mr. Brewster, in view of a discovery made by Mrs. Miller, wrote in 'The Auk,' regretting that one "gifted with rare powers of observation" should not record at least the more important of her discoveries in a scientific journal, Mrs. Miller replied in another note to 'The Auk,' confessing that she would not know what was a discovery; adding with the enthusiasm that vitalized her work — "to me everything is a discovery; each bird, on first sight, is a new creation; his manners and habits are a revelation, as fresh and as interesting to me as though they had never been observed before." Explaining her choice of a literary rather than a scientific channel of expression, she gives the key to her nature work, one of the underlying principles of all her work — "my great desire is to bring into the lives of others the delights to be found in the study of Nature."

Looking over the bookshelf where the names of Burroughs, Torrey, Miller, and Bolles call up each its own rare associations, I am reminded of a bit of advice that came long years ago from Mr. Burroughs' kindly pen — "Put your bird in its landscape" — as this seems the secret of the richness and charm of this rare company of writers, for while beguiling us with the story of the bird, they have set it in its landscape, they have brought home to us "the river and sky," they have enabled us to see Nature in its entirety.

Remembering this great boon which we owe Mrs. Miller, it seems rarely fitting that when her three score years and ten were accomplished, her last days should have been spent in the sunshine surrounded by the birds and flowers which brought her happiness in beautiful California.

AN EXPERIENCE WITH HORNED GREBES (*COLYMBUS
AURITUS*).

BY ALEXANDER D. DUBOIS.

Plates VIII-X

THE southeastern portion of Teton County, Montana, lying in the prairie region east of the Rocky Mountains, comprises flat and rolling bench-lands, traversed at frequent intervals by coulees which are tributary to the Teton and Sun Rivers. On these benches are occasional shallow depressions which have no natural drainage. They form transient "prairie sloughs" which may be dry at one season and wet meadows or ponds of water at another.

The slough which afforded the present observations is a crescent-shaped depression, not more than ten or twelve acres in extent, curving about a knoll upon which stands a homesteader's cabin. There are no lakes or water courses in the immediate vicinity. During the last few years the region has been rapidly transformed into grain farms. At the time these notes were made the meadow in question was bordered on three sides by plowed fields. The spring of 1917 was an extremely rainy one, following a winter of much more than normal snow-fall. In consequence, the crescent-shaped meadow became a marshy sheet of water.

On the open water of this pond two Grebes were seen on several days in May. On the third of June, while walking around the pond scanning its surface with a field-glass, I was suddenly amazed to see a Grebe sitting upon a nest which protruded above the water amid the scant vegetation. Careful examination showed the bird to be *Colymbus auritus*. She slipped from the nest, as I slowly waded toward her, and swam about in the open water, anxiously watching my every movement. The interest was mutual. After watching the bird for some time I went up to the nest and found that it contained two eggs. Subsequent visits showed that the eggs were deposited at intervals of two days; the dates of the visits and number of eggs found at each visit being as follows: June 3 (2);



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2

1. NESTING SITE OF HORNED GREBE IN A FLOODED MEADOW. NEST BEYOND OPEN WATER. WHEAT STUBBLE IN FOREGROUND.
2. HORNED GREBE ON HER NEST, SHOWING SCANT SURROUNDING VEGETATION.

June 5 (3); June 7 (4); June 9 (5); June 12 (6); June 13 (6).

Whenever I appeared at the edge of the slough, it was the custom of the two Grebes to float about upon the area of open water with an air of supreme unconcern. They busied themselves constantly with their toilets, preening the feathers of all parts of their bodies and very frequently tipping or rolling themselves in the water to reach their under parts with their bills. In this half-capsized posture they would float for several seconds, exposing to view the strikingly prominent white area that is normally below the water-line. This preening and floating in different positions, on the part of both birds, proceeded without interruption during my entire stay, each day that I visited them. It became very evident that it was practiced as a ruse to hold the attention of the intruder and thus divert him from their nest.

On the morning of June 12, a camera was taken to the nest-site with the purpose of making photographs of the nest and eggs. On the land to the south, a homesteader with eight horses to his plow, was turning over the virgin sod. His furrows ended at the edge of the slough southwest from the nesting site of the Grebes. Upon wading to the nest I found the six eggs shielded on the southwest side, by a partial covering of vegetation which had been pulled up on that side only. The general character of the country and location of the nest are shown in the photograph on Plate VIII. After making a photograph, and remaining for a time near the nest to observe the parent birds, I left the tripod and camera in position and went away. The female was continually gaining either confidence or bravery and had been swimming about in an agitated manner, not far from me, as I stood quietly by the camera. Before I had gotten out of sight of the nest I saw her go to it and change the covering or shielding material to its opposite edge, thus sheltering the eggs from the too inquisitive gaze of the camera's eye. When I returned from the cabin the bird was on the nest, incubating. She took to the water as I came up, but continued to swim back and forth among the scant, neighboring tufts of marsh grass. As I stood very quietly for some time behind the camera her boldness gradually increased, until at length I was able to photograph her near the nest, with the aid of only ten feet of rubber tubing attached to the shutter

release. The making of these photographs consumed much time and continually the Grebe was growing bolder. She swam almost under the camera, and when I came close to the nest she made a dash at me, shooting entirely out of the water. This show of force was afterward repeated frequently, and it sometimes ended with a violent, splashing dive which sent a shower of spray over the camera outfit and the photographer. Meanwhile her spouse drifted quietly at a safe and respectful distance. Although one photograph of the bird on her nest was secured by means of a very long thread, the result was rather unsatisfactory.

On the following day, June 13, I donned the hip boots again and stationed myself with the camera outfit, determined to see if patience would be rewarded by an opportunity to photograph the bird on her nest at close range. It was a wearisome experiment, but not without result, for eventually the Grebes became remarkably bold. The female was the first to approach. She swam around the nest repeatedly, but for a long time refused to venture upon it. For the most part the male witnessed her adventures from a discreet distance. Occasionally however, he came up; and finally, while the female was showing her agitation by swimming hurriedly about, the male swam deliberately to the nest, climbed up its side, and sat on the eggs, facing me. A plate was exposed on this unexpected sitter but unfortunately was ruined by an accident before development. He became alarmed by my activities in changing plate-holders, or perhaps by the removal of my head from beneath the focusing cloth, and suddenly slipped off the nest into the water. Both birds were subsequently photographed together, near the nest.

I cautiously moved the camera somewhat closer and waited. The female frequently shot out of the water at me with a rush accompanied by a harsh cry, and sometimes ended her attack with a dive and a great splash. Eventually she went upon the nest, and once in contact with her eggs, she became invincible. I photographed her thus; then moved the tripod toward her, slowly and cautiously, keeping my head beneath the cloth. In this way the camera was placed within arm's length of the bird and another exposure made, which resulted in the intimate portrait of Plate X, fig. 1. I uncovered my head, but she remained firm, and when

I extended my hand toward her she reached out her long neck and delivered a vicious, stinging stab with her sharp bill. The threatening attitude of the bird, just previous to striking, is shown in Plate X, fig. 2.

The exposed situation of this nest is shown in several of the photographs. It consisted of a mass of coarse grasses, many of them fresh and green, floating in about a foot of water, the body of the nest below the water line being of such bulk as to almost touch the muddy bottom. The nest-lining, in the bottom of the well hollowed cavity, was very wet and soggy, being only slightly above the water surface when the nest was unoccupied, and probably below it when the weight of the bird was added to that of the nest. This lining was composed of decaying vegetation which was decidedly warm to the touch, in the sunshine, while the wet rim of the nest was cold.

The eggs of this set were taken. They were of course in various stages of incubation, from fresh in the last, to well begun in the first-laid egg. For some time after I had left the empty nest, taking the camera with me, the two Grebes swam to and fro beside it, or circled around it, frequently going to the nest and climbing part way up. Occasionally one of the birds, presumably the female, sat upon the nest for a brief period, shifting herself in a restless manner, and then returned to the water.

For several days I stayed away. Would these birds nest again in this small and rapidly diminishing slough at so late a season? Would they leave the slough and go elsewhere to nest? Or would they abandon the duty of reproduction altogether? These questions seemed of sufficient interest to demand further observations, but not wishing to further inject the factor of the human menace into their already complicated affairs, I left the birds entirely to themselves. Meanwhile extremely dry warm weather was causing rapid evaporation and the slough was shrinking very perceptibly.

My next visit, on the eighteenth of June, disclosed the fact that the Grebes were not only present but were building a new nest not far from the old one. The nest seemed nearly completed. The two birds were floating near each other on the open water, preening their plumage in the ostentatious manner previously described.

At seven-thirty on the morning of June 21, the new nest con-

tained two eggs, partially covered, especially on the northwest side, which was the direction from which I approached the slough. There was a striking difference in the coloring of the two eggs, in view of the slight difference in their ages. One egg was a drab-tinted cream; the other a beautiful greenish tint with a freshness and delicacy which is difficult to describe, and which marked it as having just been deposited by the bird. A schedule of the subsequent visits to this nest is given in the accompanying table:

Visit No.	Date	Time of day	Number of eggs	Were eggs covered ?	Was either bird seen?
1	June, 18		0		Both on open water
2	" 21	7:30 A.M.	2	Partially covered	
3	" 22	8:00 A.M.	2	Sparsely covered	
4	" 23	7:30 A.M.	3		Not seen
5	" 24	9:00 A.M.	4	Covered	Bird seen on nest
6	" 25	7:30 A.M.	4	Lightly covered	Not seen
7	" 25	Sunset	4	Covered on E. side	Not seen
8	" 26	7:30 A.M.	5	Covered	One on open water
9	" 27	7:00 A.M.	5	Not covered	Saw bird leave nest
10	" 28	7:30 A.M.	5	Chiefly on E. side	Not seen
11	" 29	Evening	5	Covered	Not seen
12	July, 4		5	Covered on top	Not seen
13	" 8		5	Covered	Yes; in water-lane
14	" 9		5	Covered	Not seen
15	" 10	8:00 P.M.	5	Not covered	One bird seen
16	" 11	6:00 P.M.	5	Not covered	Not seen
17	" 12	5:00 P.M.	5	Partially covered	One on open water
18	" 13	6:00 P.M.	4	Not covered	Not seen
19	" 14		4	Lightly covered	Not seen
20	" 15	Evening	3		Bird on nest
21	" 16	10:00 A.M.	3	Not covered	Not seen
22	" 17	10:00 A.M.	3	Not covered	One seen with young
23	" 18	7:30 P.M.	2	Not covered	Not seen
24	" 20	6:00 A.M.	2	Not covered	Not seen
25	" 22	7:30 P.M.	2	Not covered	Not seen
26	" 23	9:00 A.M.	2	Not covered	Not seen
27	" 24	Evening	2	Not covered	Not seen

When I approached on the morning of June 24, the Grebe was on her nest. She made herself as inconspicuous as possible by



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2

1. A PAIR OF HORNED GREBES AT HOME. FEMALE AT RIGHT.
2. NEST AND EGGS OF HORNED GREBE.

holding her head down, close to the nest rim. As I came within twenty-five or thirty yards of the nest the bird hastily pulled a covering of green-stuff over the eggs and slid silently into the water, disappearing completely. Although I watched for some time I did not succeed in catching even a glimpse of either of the birds.

On the occasion of the sixth visit (June 26) I found the nest lightly covered with fresh green stems and blades which had been plucked by the bird. At that time I made the notation in my field book: "Never see the birds on the open water any more." However, on the next day, some time after I had left the nest, I did see one of the Grebes floating on the open water. The eggs had again been covered with fresh vegetation.

On the morning of June 27, I approached by a circuitous route, passing by the nest with my interest ostensibly concentrated elsewhere. But as I passed too near her the bird slipped quickly off the nest without stopping to cover the eggs; and I could not find her afterward. It will be noted from the tabulated schedule that neither of the birds was seen at the tenth, eleventh, or twelfth visits. The thirteenth visit was more successful for I saw a Grebe sitting perfectly motionless, at the edge of a water-lane which traversed some of the thickest vegetation, its bright red eyes appearing as its only conspicuous feature. The next day (fourteenth visit), I could not find the birds, and the fifteenth visit gave me only a fleeting glimpse of a Grebe. The eggs were not covered but were slightly shielded on the side from which I had come. On the evening of July 12, one of the birds was observed floating, silent and solemn, with head toward me, at the farthest side of the open water. It was evident at this time that the birds had changed their dress since my acquaintance with them at their first nest, for no yellow "horns" were now visible.

On July 13, finding only four eggs in the nest, and pieces of egg shell both there and in the water, I searched carefully in the vicinity of the nest but without result. I could neither find the newly hatched young nor catch any glimpse of either parent. On the next day the conditions were the same except that the eggs were slightly covered and a few small feathers had been left on the nest, showing that the bird had been upon it.

The twentieth visit, on the evening of July 15, gave me an opportunity to examine the bird at close range. She was on the nest and allowed me to approach, cautiously, to a point twenty or thirty feet from her. She was considerably changed in appearance. The yellowish-white tip of the bill remained unaltered and the light line through the lower margin of the lore was observed to still persist, but the plumage of the head was much subdued, the yellow plumes having been exchanged for mere inconspicuous grayish streaks on the sides of the head. As I came up I could see a young bird poking its head through her wing. She soon left the nest, with a startling rush, and swam rapidly away, leaving three eggs in the nest and two tiny youngsters in the water. The newly hatched downy young can both swim and dive in a feeble way. As I approached them they tried to escape by diving. When I held them in my hands they gave utterance to a little cry not greatly different from that of domestic chicks.

The downy young are very striking in appearance. They are striped longitudinally with black and white stripes; the white however is rather a "soiled" or grayish white. There are two narrow white stripes on the head which converge to a point at the base of the bill. Between these stripes, on the forehead, is a small slightly raised bare spot, of a bright red color, back of which is a white elongated blotch, or median stripe. The bill is pink and has on both mandibles a white tip which resembles white porcelain. This is larger on the upper mandible than on the lower. On the upper mandible between the nostrils there is a black spot. The iris is brown, not red like that of the adults. The lobate feet are remarkably well developed, but the wings are rudimentary.

On the following day, July 16, I failed to find either the parent or the young at the nest. The three remaining eggs were not covered. Again on the morning of the seventeenth, the nest held only the three uncovered eggs; but when I skirted the east end of the slough to examine a Sora's nest, I was startled by the parent Grebe taking wing not far from me. She flew over the farthest part of the slough, but soon returned, after circling a time or two, to the small area of open water, where she alighted with a splashing glide. When on the wing this bird shows very prominent

white markings. The white secondaries cause the posterior portion of the wing to show as a prominent white area, and of course the entire under surface of the body, being white, is very conspicuous when the bird wheels. The flight is so duck-like that the flying Grebe might readily be mistaken, at a distance, for a duck.

I waded to the spot whence this bird had taken flight and presently saw the water agitated by some small creature beneath the surface. It was one of the diminutive downy Grebes, floating submerged, head downward, with its forward parts thrust into a mass of filamentous vegetation (algae), while its legs, stretched to their full extent posteriorly, were pointed vertically upward toward the surface of the water. I easily took it up in my hand.

The next day, July 18, at 7:30 P. M., another egg had hatched. The nest was not covered. It contained two eggs and nearly all of the opened shell of the other, which last circumstance was of course unusual. I heard the young bird, and by following the faint sound of its voice found it, in the water, about six or eight feet from the nest. It was small enough to have just emerged from the shell. Its bill was very pink and the naked red spot, or comb, on its forehead very bright, though only slightly raised above the surrounding skin. By the merest chance I discovered a downy young duck within a few feet of the Grebe's nest. It was not identified. Perhaps it had been attracted by the cry of the little Grebe. The adult Grebes were not seen, either on this visit or on July 20, when I looked for them early in the morning. On the latter date the two eggs and the nest were cold and the orphan above mentioned was dead, on the slope of the nest just above the surface of the water. There was an opening in the top of its skull through which its brain had been removed by some small creature. This nestling had probably never seen its parents but had taken to the water wholly by instinct.

On the evening of July 22, the two eggs were cold and had not been disturbed since my previous visit, at which time their positions had been carefully noted. However one of them was "pipped" and I could distinctly hear the voice of the bird within the shell. A search for the parent Grebes was without avail. A

faint voice, at the other side of the water, was detected and was followed several times, but when its author was finally located it proved to be not a Grebe but a recently hatched Sora Rail.

The next morning, although the sun shone upon the nest, the eggs were cold and the fetuses in both of them were dead. No birds were seen. My last visit, on the evening of July 24, yielded no further result. But I noted now, that there was no water around the nest. It was stranded upon a mud-bar. This was undoubtedly the cause of forced abandonment of the nest. The Grebes were unable to reach it by a water route, and no other mode of travel was possible to them. A search around the water area, now very small and shallow, gave no further evidence. The Grebes were never seen again.

In reviewing the account of these observations certain groups of data suggest themselves for summarization:

It is interesting to note that only six days elapsed between the removal of the first set of eggs and the deposition of the first egg in a new nest.

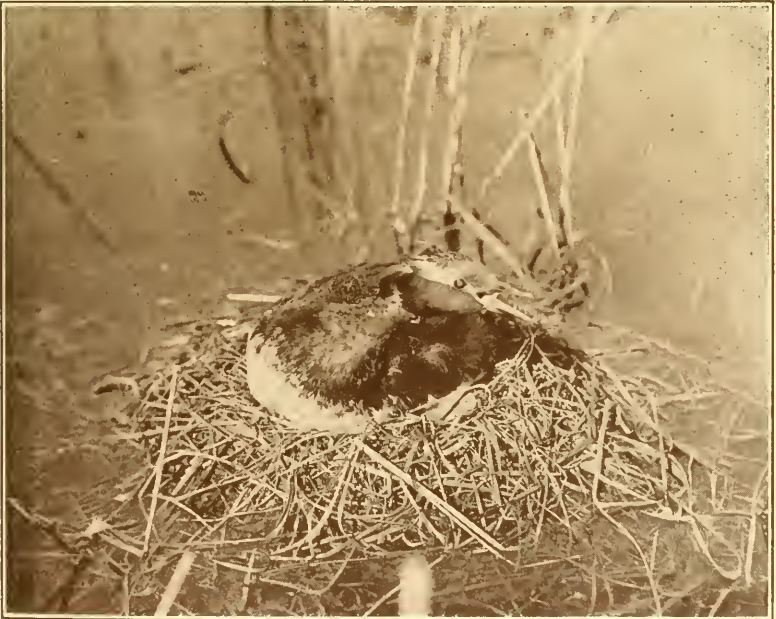
The period of incubation is twenty-four or twenty-five days, as shown in the following table of dates, noted at the second nest:

Egg No.	Date Laid	Date Hatched	Incubation Period in days
1	June 19 (?)	July 13	24
2	June 21	July 15	24
3	June 22 or 23	July 17 or 18	25
4	June 24	July 22, (Pipped)	Fetus died
5	June 26	Fetus died	

It will be observed that the fourth egg was alive and on the point of hatching, twenty-eight days after it was deposited, but this cannot be considered normal, since the egg had been deprived of the parent heat for several days. It seems remarkable that the fetus survived the cool nights.



1



2

1. HORNE GREBE WITHIN ARM'S LENGTH OF THE CAMERA.
2. FEMALE, HISSING AND READY TO STRIKE IN DEFENSE OF NEST.

The change of color which these eggs undergo, is also worthy of note. I do not refer to the nest-stains caused by contact with the fermenting vegetation of the nest lining, but to a uniform color change of the surface layer of the shell, which is brought about presumably by exposure to light and atmosphere. Referring to the eggs of the second nest by numbers it will be noted that egg number two, when first observed at 7:30 A. M., had apparently just been deposited. As previously stated, its color was a very delicate bluish-green. Egg number one had already attained its final color; a sort of drab-tinted buff, which rendered it less conspicuous in the nest. Twenty-four hours later, egg number two had changed to the same color as egg number one. No data were recorded for egg number three in this respect. Egg number four, after thirty-six hours, was "nearly but not quite the same color as the others." After it had been in the nest forty-eight hours it was noted as, "same color as other eggs." But egg number five could scarcely be recorded as fully changed after eighty-four hours had elapsed. These notes would seem to indicate that the first-laid eggs change color more rapidly than the later ones. It may be noted in this connection that the first eggs are slightly richer in the light green pigment; possibly, also, they receive less shelter from the parent bird than the later eggs.

The usual vocal performance of these Grebes, so far as I was able to determine, is a sort of "ko-wee, ko-wee," repeated at regular intervals. It might be compared to the squeak of a dry wheelbarrow producing one double squeak at each revolution of the wheel. It is however of a clearer quality than this comparison might indicate. Each "ko-wee" has rising inflection and its two syllables are run closely together, with the accent on the last syllable.

The remarkable change of manner which came over these birds as the moult began will be appreciated by reference to the tabulated schedule of visits. The pugnacious bravery of the female at her first nest is amply attested by the photographs, while the records of the second nest show that the birds rarely permitted themselves to be observed, even at a distance, although they had eggs as before.

These Horned Grebes were absolutely isolated so far as con-

cerns other individuals of the species.¹ There were certainly no other Grebes in the slough. Their nesting associates were as follows: Red-winged Blackbird (*Agelaius phoeniceus fortis*), about three pairs nesting; Sora Rail (*Porzana carolina*), three or four pairs nesting; Wilson's Phalarope (*Steganopus tricolor*), several pairs; Killdeer (*Oxyechus vociferus*), one pair in evidence; Savannah Sparrows (*Passerculus sandwichensis alaudinus*) were present at the slough all summer; and a pair of Pintails (*Dafila acuta*) were believed to have a nest in an adjoining field. The adjoining prairie was monopolized, as usual, by the Horned Larks (*Otocoris alpestris leucolama*) and Longspurs (*Calcarius ornatus* and *Rhynchophanes mccowni*).

At the present writing this slough is dry; the road which passes through it is traveled every day by automobiles; and the spot where the Grebes established their home a year ago has now been plowed and planted.

HISTORICAL NOTES ON HARRIS'S SPARROW (*ZONOTRICHIA QUERULA*).

BY HARRY HARRIS.

DURING the early decades of the nineteenth century when those pioneer ornithological enthusiasts, whose names and discoveries are familiar to all students of the science, were pushing beyond the frontiers in quest of new objects of study, the Kansas City region was the gateway to the wilderness and the very outpost of civilization. In this immediate neighborhood where the downrushing Missouri is joined by the less turbulent Kaw, and where the great river bends finally to the east, were situated the frontier settlements of Independence, Fort Osage (Fort Clark, of Lewis

¹ Mr. A. A. Saunders advises me that so far as he is aware this is the only record of nesting of the Horned Grebe in Montana, although he has found two previous records of occurrence of the species in the state.

and Clark), Westport, and the great Konzas Indian village, while a short distance up-stream were three other landmarks frequently mentioned by travelers, Fort Leavenworth, the mouth of Little Platte River, and the Black Snake Hills.

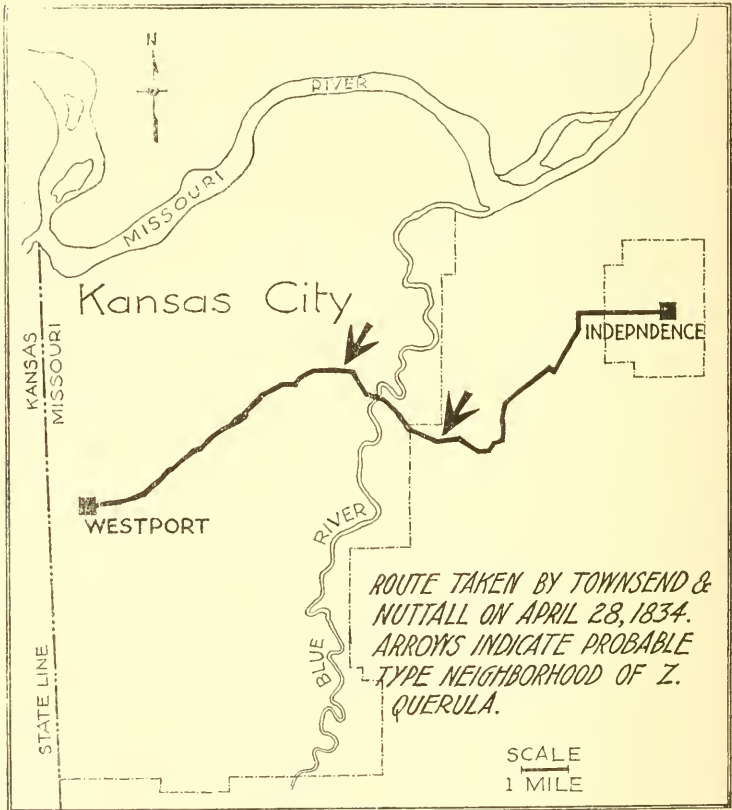
These names bring to mind several notable ornithologists and botanists whose published journals and narratives are at once fruitful sources of information to the working student and delightful reading to any person. Of all the young scientists who passed this way in their eagerness to explore the unknown beyond and gather its treasures to science, perhaps none are of more interest, though others may be more widely known, than John K. Townsend and Thomas Nuttall. Nuttall's discovery here of the bird now known as Harris's Sparrow (*Zonotrichia querula*), together with the fact that two other eminent ornithological explorers, at later periods, each believed he had discovered the bird in this same region, renders the tradition of peculiar and obvious local interest.

A long entertained hope of being able to determine the actual locality in Jackson County, Missouri, where Nuttall took the original specimen of this Sparrow, has led the writer to bring together the widely scattered data bearing on the early history of the bird. The facts in question, which do not appear to have been previously assembled, present several interesting features.

Nuttall and Townsend had outfitted in St. Louis in late March, 1834, preparatory to a leisurely pedestrian journey of some three hundred miles across the state to Independence, where they were to join the large caravan under Captain Nathaniel J. Wyeth, bound for the Columbia River country. On April 28th the party left Independence over the frontier trail to Westport, distant approximately fourteen miles. Some time during the day Nuttall, who was primarily a botanist and is said to have carried no gun, took, or had taken for him by some member of the party, the type specimen of Harris's Sparrow which he named the Mourning Finch (*Fringilla querula*). Nuttall writes: "We observed this species, which we at first took for the preceding [White-crowned Sparrow], a few miles to the west of Independence, in Missouri, towards the close of April. It frequents thickets, uttering in the morning, and occasionally at other times, a long, drawling, monotonous and solemn note *te de de de*. We heard it again on the 5th of May,

not far from the banks of the Little Vermilion, of the Kansa."¹

The information contained in this short paragraph is the only guide the writer has had in a search for the spot where the species was first met with. Not a little difficulty has been experienced



in tracing the road between Independence and Westport in use in the early thirties, since but meager graphic record of its course has been preserved. The accompanying sketch map is in the main

¹ A Manual of the Ornithology of the United States and of Canada, by Thomas Nuttall, Second edition of the volume on Land Birds. Boston, 1840.

authentic, authorities differing as to only a short stretch about three miles from old Westport. Many years association with the birds of this region leads the writer to the conclusion that these scientists would have had difficulty in crossing the Blue Valley at this season of the year without seeing or hearing troops of these striking Sparrows. That part of the road lying within the valley is indicated on the map by arrows.

Townsend's frame of mind on this momentous day is best described in his own words. "On the 28th of April, at 10 o'clock in the morning, our caravan, consisting of seventy men, and two hundred and fifty horses, began its march; Captain Wyeth and Milton Sublette took the lead, Mr. N.[uttall] and myself rode beside them; then the men in double file, each leading, with a line, two horses heavily laden, and Captain Thing [Captain W.'s assistant] brought up the rear. The band of missionaries, with their horned cattle, rode along the flanks.

"I frequently sallied out from my station to look at and admire the appearance of the cavalcade, and as we rode out from the encampment, our horses prancing, and neighing, and pawing the ground, it was altogether so exciting that I could scarcely contain myself. Every man in the company seemed to feel a portion of the same kind of enthusiasm; uproarious bursts of merriment, and gay and lively songs, were constantly echoing along the line. We were certainly a most merry and happy company. What cared we for the future? We had reason to expect ere long difficulties and dangers, in various shapes, would assail us, but no anticipation of reverses could check the happy exuberance of our spirits.

"Our road lay over a vast rolling prairie, with occasional small spots of timber at the distance of several miles apart, and this will no doubt be the complexion of the track for some weeks.

"In the afternoon we crossed the Big Blue River at a shallow ford. Here we saw a number of the beautiful Yellow-headed Troopials, (*Icterus zanthocephalus*) feeding upon the prairie in company with large flocks of Blackbirds, and like these, they often alight upon the backs of our horses."¹

¹ Narrative of a Journey Across The Rocky Mountains, to the Columbia River and a Visit to the Sandwich Islands, Chili, &c. With a Scientific Appendix. By John K. Townsend. Philadelphia, 1839.

Here is a vivid picture of a situation well calculated to stir the imagination and excite the enthusiasm of this twenty-five year old easterner on his first visit to the virgin West, and thoughts of ornithological discoveries were no doubt reserved for the future. Nuttall could not have been so distracted by the excitement incident to the departure of this wild cavalcade, since he had had several previous experiences of the wilderness, was an older man, and was by nature "shy, solitary, contemplative, and of abstract manner." At all events he set the ornithological pace immediately at the start of the journey by discovering a new bird. Townsend's silence in his 'Narrative' regarding this important event was of course due to courtesy to the discoverer who had not yet given his species to science.

In my account of Nuttall's discovery of his "Mourning Finch," I have assumed that the specimen he took in Jackson County is the type. Perhaps it would be more accurate to say that in the absence of any definite knowledge regarding the type specimen it is presumed from his description that the specimen here taken was the type. The description referred to was published in the second edition of his *Manual* (the volume on water birds being a reprint of the first edition) which did not appear until 1840. It will thus be seen that this important species was allowed to remain in obscurity for six years while twenty-four other new species subsequently discovered on the trip had been described, as well as sixteen figured by Audubon in the *Great Work*, prior to the appearance of Townsend's *Narrative* in 1839. Nuttall's published description of the bird is merely the briefest possible outline of salient specific characters, no measurements whatever being given.

On his return to the East, two years in advance of Townsend, Nuttall had in his possession a quantity of the latter's material for delivery to the Philadelphia Academy of Sciences, which Institution had helped substantially in financing the travelers. It was this material that Audubon sought so eagerly to possess, that his great work then nearing completion might not lack the new species.¹ Audubon had called on Nuttall, in Boston, in the hope

¹ An unbiased account of Audubon's efforts to secure these specimens is given in Chapter XXXI, Vol. 2, of Dr. Herrick's recent historical study 'Audubon The Naturalist.' Further light on the subject may be found in a letter from Audubon to Harris under date of Oct. 26, 1837, published in the *Auk*, Vol. XX, p. 370, by S. N. Rhoads. Audubon has left a full account of his activities at this time in the Introduction to Vol. 4 of the 'Ornithological Biography.'

of assistance from that quarter, and was promised duplicates of all the new species in his possession. It is said that five species were here secured, but the Mourning Finch was not included. Nuttall had reserved this discovery for his own book, and not only was posterity thereby deprived of an Havell engraving of the largest and handsomest of our Sparrows, but Audubon, being kept in the dark, was himself to later publish the bird as the discovery of his friend Edward Harris.¹

On the same day that Townsend and Nuttall were so picturesquely entering the Indian country, Maximilian, Prince of Wied, who had spent the previous year on the upper Missouri, was making his way down-stream on his return to civilization. On May 13, 1834, when but a few miles from the northern boundary of Missouri, his hunters took specimens of a bird new to him. In the second volume of his published journal,² he says: "It was toward eight o'clock in the cool morning of May 13 (1834) that we stopped on the right bank of the river and landed on a fine, green prairie, beset with bushes and high isolated trees. . . . We found many beautiful birds, among which *Icteria viridis* and the handsome Grosbeak with red breast *Fringilla ludoviciana*. . . . At noon we reached Belle-Vue, Major Dougherty's Agency. . . . To the naturalist the surroundings of Belle-Vue were highly attractive. The beautiful wooded hills had shady ravines and small wild valleys. . . . Many, and some of them beautiful, birds animated these lovely thickets, the Cuckoo, the Carolina Dove, the Red-breasted Grosbeak, *Sialia wilsoni*, several Finches, among which *Fringilla cyanea* and *erythroptalma*, and of about the same size a new species which at least in Audubon's Synopsis of the year 1839 is not enumerated and which I called *Fringilla comata* (2)"³ The (2) in the text refers to a note at the end of the chapter where a description of the Harris's Sparrow is given in great detail, and where the statement is made that "this bird nests in thickets along the shore of the Missouri River in the neighborhood of the mouth of La Platte River." The first volume of Maximilian's

¹ Notes from a letter of Edward Harris, Auk, 1895, p. 227, Geo. Spencer Morris.

² Reis im Innern Nord-Amerika. 2 Vols. Coblenz, 1839-1841.

³ Having access only to a reprint of this rare work in which the ornithological matter is largely deleted, I am indebted to Mr. Otto Widmann for this extract which he translated from the original publication.

journal, containing the record of his trip up the Missouri, was published in 1839, while volume two, covering the period when the Sparrow was taken, did not appear until 1841. Had he published both volumes simultaneously in 1839, his specific name *comata* would of course be current. It is interesting to note that though he took his first specimen just fifteen days after Nuttall had taken the type, and at a time when the bulk of the migrants had passed north, he had overlooked an opportunity of being the actual discoverer during the previous April, when he had been in the direct migratory path of the Sparrow at the season of its greatest abundance there.

Nuttall himself had overlooked an opportunity of discovering the bird twenty-four years earlier, and had his attention at that time been directed to birds as well as plants, he would no doubt have become acquainted with the species. Referring to the Journal of his companion,¹ John Bradbury, an English botanist, it is found that they passed through this region during the spring migration of 1810, and while Nuttall's absent-minded preoccupation in collecting plants was a standing joke among the voyageurs, Bradbury was somewhat more alive to ornithological possibilities, and has left many entertaining, and a few valuable notes on the better known birds. They had spent April 8th and 9th at Fort Osage, now Sibley, Jackson County, Missouri; and the writer knows of no more certain place to find Harris's Sparrows in early April than in the timber and thickets of this bottom land.

The Lewis and Clark party had passed through this region in June, 1804, and again early in September, 1806, and Thomas Say of the Long Expedition had been here in August, 1819. Maximilian was therefore the first ornithologist to enter the range of this species while the birds were in transit.

The last "discoverer" was Edward Harris, in whose honor Audubon gave the bird its vernacular name. The memorable voyage of Audubon and Harris, together with Bell, Sprague, and Squires, up the Missouri River in 1843 is too well known to require comment. A few quotations will serve in connection with the story of the Sparrow. On May 2 the party passed the point in

¹ Travels in the Interior of America in the Years 1809, 1810, & 1811 &c. By J. Bradbury. Liverpool, 1817.

Jackson County, Missouri, where Nuttall and Townsend had left the river nine years previously. Early the next morning they reached Fort Leavenworth. After leaving this post the boat was stranded on a sand-bar from 5 o'clock in the evening until 10 the next morning, giving the naturalists considerable time to do some collecting in the neighborhood. In his famous journal¹ of the voyage, Audubon says under date of May 4: "Friend Harris shot two or three birds which we have not yet fully established. . . . Caught . . . a new Finch." And on the next day he states: "On examination of the Finch killed by Harris yesterday, I find it to be a new species, and I have taken its measurements across this sheet of paper." In volume seven of the octavo edition of his 'Birds of America,' where the new species taken on the trip are described, the remarks under the Sparrow are as follows: "The discovery of this beautiful bird is due to my excellent and constant friend Edward Harris, who accompanied me on my late journey to the upper Missouri River, &c., and after whom I have named it, as a memento of the grateful feelings I will always entertain towards one ever kind and generous to me.

"The first specimen seen was procured May 4, 1843, a short distance below the Black Snake Hills. I afterwards had the pleasure of seeing another whilst the steamer Omega was fastened to the shore, and the crew engaged in cutting wood.

"As I was on the look-out for novelties, I soon espied one of these Finches, which, starting from the ground only a few feet from me, darted on, and passed through the low tangled brushwood too swiftly for me to shoot on the wing. I saw it alight at a great distance, on the top of a high tree, and my several attempts to approach it proved ineffectual; it flew from one to another treetop as I advanced, and at last rose in the air and disappeared. During our journey up stream my friend Harris, however, shot two others, one of which proved a female, and another specimen was procured by Mr. J. G. Bell, who was also one of my party. Upon our return voyage, my friend Harris had the good fortune to shoot a young one, supposed to be a female, near Fort Crogan, on the fifth of

¹ Audubon and His Journals. By Maria R. Audubon. With Zoölogical and other Notes by Elliott Coues. 2 Vols. N. Y., 1900.

October, which I have figured along with a fine male. The female differing in nothing from the latter.

"All our exertions to discover the nest of this species were fruitless, and I concluded by thinking that it proceeds further northward to breed."

The work in which this supposed discovery was announced was published in 1844, four years after the second edition of Nuttall's 'Manual' appeared. Since this manual was the first American work on ornithology, excepting Wilson's, to go into a second edition, it was presumably widely known among ornithologists, and it is not easy to understand why Audubon and his coworkers were in ignorance of their lack of claim to Nuttall's Mourning Finch.

During the twenty-five or thirty years following Audubon's visit to the Missouri haunts of the Sparrow, practically nothing was learned of its life-history or distribution, and the few scattered specimens that were taken were all from the same general region. A specimen furnished by Lieut. Couch, taken at Fort Leavenworth on October 21, 1854, formed part of the material used by Prof. Baird in his epochal work in 1858, as did another taken at the same point on April 21, 1856, by Dr. Hayden, of Lieut. Warren's Pacific Coast Surveys party. Dr. Hayden took three other specimens further up the river in the same year. Dr. P. R. Hoy, who collected in the type region in 1854, took a specimen on May 7, and on May 13 met with a troop of fifteen or twenty. There are a few other records from the Missouri Valley and one from Texas (Dresser, *Ibis*, 1865) prior to the numerous ornithological activities of the early seventies. Dr. J. A. Allen, collecting in the interest of the Museum of Comparative Zoölogy, had his headquarters at Fort Leavenworth during the first ten days of May, 1871, and found Harris's Sparrows exceedingly abundant in the bottom timber on the Missouri side of the river. He added a few field notes on behavior, appearance, etc, and took a series of specimens. Baird, Brewer, and Ridgway state that from the time of its discovery in 1834 up to 1872 but little information had been obtained in regard to the Sparrow's general habits, its geographical distribution, or its mode of breeding, single specimens only having been taken at considerable intervals in the valley of the Missouri and elsewhere. In 1874 Dr. Coues brought together all the avail-

able data in his interesting article on the bird in 'Birds of the Northwest,' but was able to add nothing in determining the bounds of its habitat, which he gave as "Region of the Missouri. East to Eastern Iowa."

It was not until ten years later that enough information had accumulated to warrant an attempt at defining the limits of its range and the periods of its migration. This was done by the painstaking and accurate Wells W. Cooke in the first volume of 'The Auk,' in 1884. In this article, 'Distribution and Migration of *Zonotrichia querula*,' he was able only in a very general and indefinite way to give the western and southern extent of the range, but the eastern limits remain practically as he defined them.

In 1913 Professor Cooke noted the interesting peculiarity of the migration of the Harris's Sparrow in the interval that elapses after the first spring advance. He states¹ that the birds become common along the Missouri River in northwestern Iowa soon after the middle of March and yet it is not until early May that they are noted a few miles further north in southeastern South Dakota and southwestern Minnesota. He adds that the dates suggest the probability that these March birds have wintered unnoticed in the thick bushes of the bottomlands not far distant, and have been attracted to the open country by the first warm days of spring. This theory is borne out by the facts as observed by the writer in the Kansas City region. The birds are present in this vicinity during even the most severe winters, but keep to the dense shelter of the Missouri bottoms. During mild and open winters a few scattered flocks may even spend the entire season until spring in the hedges and weed patches of the prairie country.

This Sparrow has always attracted attention in the field by its large size and conspicuously handsome appearance, as well as by its sprightly and vivacious manner and querulous notes, but it has seldom been the subject of special notice in the literature of American birds. Its bibliography is chiefly confined to diagnostic listing in formal works on ornithology, brief annotations in faunal lists, and occasional mention in published field notes.

During the thirty-four years that have elapsed since Prof. Cooke's

¹ The Migration of North American Sparrows. Compiled by Prof. W. W. Cooke, chiefly from data in the Biological Survey. *Bird Lore*, 1913, p. 301.

article of 1884, the Sparrow, as a migrant, has become well known to ornithologists. Its narrow migration path, the center of which in the United States is approximately down the 96th meridian, has been worked out; the wide extent of territory covered by stragglers has been fully reported;¹ the food habits of the bird while on migration have been thoroughly investigated and the results published;² the nest has been seen once,³ and young just out of the nest have been collected,⁴ and the general region of the breeding ground itself is known to be where barren tundra meets the edge of the timber between Hudson Bay and Great Bear Lake. But the eggs yet remain to be discovered.

NOTES ON THE STRUCTURE OF THE PALATE IN THE ICTERIDÆ.

BY ALEXANDER WETMORE.

THE curious keel-like, angular projection found on the palate in the North American Grackles of the genus *Quiscalus*, recognized as one of the prominent characters distinguishing that group of Blackbirds, is a structure that can hardly fail to attract attention when the mouth is examined in freshly killed specimens, or in birds preserved in spirits. Recently, certain observations made in the field on these birds, which will be recounted later, recalled this structure to mind and the writer was led to make a somewhat detailed study of the palatal keel in the Grackles, and finally to examine the appearance of the palate in other members of the family *Icteridæ*. In these studies, carried on in the United States National

¹ The Status of the Harris's Sparrow in Wisconsin and Neighboring States. By Alvin R. Cahn. Bull. Wis. Nat. Hist. Soc., Vol. XIII, No. 2, pp. 102-108. Also in numerous lists and field notes published in 'The Auk,' 'Wilson Bull.' and the other bird journals.

² The Relation of Sparrows to Agriculture. By Sylvester A. Judd. Bull. Biol. Surv. No. 15, 1901.

³ Bird Records from Great Slave Lake Region. By E. T. Seton. The Auk, 1908, p. 72.

⁴ Biological Investigation of Hudson Bay Region. By E. A. Preble. N. A. Fauna No. 22. Washington, 1901.

Museum, there have been available suitable specimens representing all of the leading genera with the exception of *Clypeicterus*, *Ocyalus*, *Lamprosar* and *Macragelæus*. In all, one hundred and thirteen species belonging to thirty-one genera have been examined.

Study of skins of the genus *Quiscalus* shows that the palatal keel is developed as a compressed projection from the roof of the mouth, slightly behind the center of the commissure (Fig. 1). Viewed

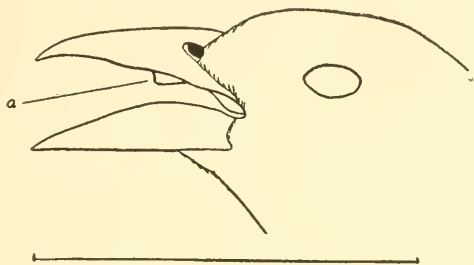


Fig. 1. Head of *Quiscalus quiscula aeneus*. a Palatal keel (about natural size.)

from the side it is truncated in front, forming an angular projection that has a tendency to become toothed at the tip. Posteriorly it lowers to merge finally into the level of the palate. The anterior margin is sharp, and the posterior portion is thicker and stronger. The entire ridge is developed as a fold in the horny sheathing of the palate, and the surface of the premaxilla underneath is smooth and flat with no indication of a bony ridge to support the keel.

From the examination of museum skins it appears that the palatal ridge begins to develop in juvenile birds a short time before they leave the nest, at a stage when the body is well covered with feathers, and the incoming tail feathers have attained a length of 20 to 25 millimeters. In such birds the keel appears as a very slightly raised ridge that forms a distinct line on the palate. The bill at this time has reached about three-fourths of the length attained when the bird is adult, so that the beginning of this ridge appears to be located far forward, though it occupies the same position in relation to the external nasal opening that the fully developed keel does in the adult. In the dried skins the ridge is somewhat indistinct, but it is possible that it may be more readily apparent in living or recently killed specimens.

In birds that are almost fully feathered and that are about ready to leave the nest the bill has become stronger, the raised palatal line is heavier, and has a rounded anterior end that forms a marked projection and then continues to merge with the palate in front. In older specimens, able to fly but with the rectrices only 95 to 105 mm. long, the palatal ridge was better marked, being broad and strong basally and more slender toward the point. In a few of the specimens of this stage examined the cutting angle seemed well developed, but in others it was less strongly indicated. In birds that were fully grown but still in juvenal plumage the ridge was well developed but not so prominent as in adults. In some the basal portion was broad and rounded, verging toward the formation of palate found in the genus *Megaquiscalus*. In others the anterior cutting angle was more prominent but the entire ridge had only attained from one-half to three-fourths of its full height.

No one apparently has raised the question of the possible function of this keel, developed as described above, so that it seems proper to record here certain field observations made by the writer that indicate the use of this structure. As might be expected it serves in securing and preparing certain parts of the food. In December 1917, near Stuttgart in eastern Arkansas, during a time when the ground was covered by a light fall of snow, flocks of Bronzed Grackles were found feeding among small groves of a pin oak (*Quercus pagodaefolia*). The ground under these trees was nearly bare and the birds were working about searching for the small acorns that had fallen and were partly concealed under leaves and low plant growth beneath the oaks. The Grackles were tame and with a pair of binoculars it was an easy matter to watch them at close range. The acorns were picked up, held in the bill and pressed firmly against the keel on the palate, then released, turned slightly by means of mandibles and tongue, and then again gripped strongly. In this way the acorn was rotated until a line had been impressed entirely around the shell. With a little further manipulation the shell dropped off in two halves and the kernel was swallowed entire without further preparation, though frequently it was gulped down only after some effort. After watching one feeding flock for some time I clapped my hands sharply to startle them and then examined the ground where they had been at work.

Scattered among the leaves were many acorn shells, most of which had been cut in two in a line transverse to the longitudinal axis. Some had fairly smooth, clean-cut margins, while others were roughened and jagged. In searching through the leaves I picked up one acorn still intact that had been dropped by one of the birds, perhaps when the flock was frightened up, in which a line had been impressed entirely around the center. In this the impressions of the palatal keel were distinctly visible.

When attention was once attracted to this manner of feeding other incidents were noted in which the palatal keel was brought in play. On one occasion on the streets of Washington a Purple Grackle was observed attempting to split open a kernel of corn dropped from some passing dray. The bird held this grain in the slight notch near the center of the bill and pressed it against the angular keel. The grain proved refractory, as it snapped out several times, dropping 8 or 10 inches away, to be seized and again compressed. Watching until it had been dropped I frightened the bird and secured the kernel of corn. On one side four grooves impressed in the hard outer surface were visible showing where, and with what force, the sharp keel had been applied.

Apparently the palatal ridge develops with the gradual growth of the bill, and becomes fully functional shortly after the immature bird is left by its parents to its own resources in securing food. It seems to be fully grown in all by the middle of September. In many adult specimens the ridge shows signs of heavy wear from the nearly constant use to which it is put. In some the cutting angle was well rounded in front from constant abrasion, while in others the anterior margin had become irregular and broken. In one specimen the thin lower margin of the compressed keel was entirely worn away, leaving a low rounded projection in which the two sides of the fold by which the keel had been formed were clearly visible, with a line of separation between them. It was interesting to note that the palatal ridge was usually well worn in old adults, taken in late fall or early spring, belonging to the northern races (*Quiscalus q. quiscula* and *Q. q. arceus*) while little or no wear was apparent in similar specimens of the southern form (*Q. q. aglaeus*) from South Carolina and Florida. The data available from the examination of a small number of stomachs of this

form from Florida show a preponderance of insects and fruits with very little mast or grain, a fact of interest, but one that is not fully substantiated as the material available is small.

Among near relatives of *Quiscalus quiscula* a slightly developed palatal ridge was encountered in *Megaquiscalus macrourus*, where the projection was broad and well rounded posteriorly, and narrow in front with the lower margin acute, forming a sharp keel. In some specimens seen this keel was slowly reduced until it merged smoothly with the palatal surface in front. In others the anterior margin was obtusely declivous. The obtuse anterior cutting angle projected below the margins of the tomia for nearly a millimeter in a few individuals, and in these occasional specimens the resemblance was striking to those bills of *Quiscalus* in which the ridge was most poorly developed. Juvenile specimens of *Megaquiscalus m. macrourus* from Fort Clark, Texas, that had been collected just after they had left the nest, had the palatal ridge already well indicated though only about one-half developed. In the slender-billed forms known as *Megaquiscalus tenuirostris* and *M. nicaraguensis* the palatal keel was much as in *M. major* though slighter and less pronounced.

In Blackbirds belonging to the West Indian group known as *Holoquiscalus* a raised line was also more or less developed. In general the growth was similar to that in *Megaquiscalus* as the posterior portion was broad and rounded, while anteriorly the ridge was narrowed and the lower margin became acute. There is some variation in the size of this anterior portion; in a few the crest is obtusely declivous in front, approaching the condition found in *Quiscalus*, but never with the keel produced so that it projects below the plane subtended by the cutting edges of the tomia.

The discovery of a peculiar knoblike process on the palate of the mexican orioles belonging to the species *Icterus gularis* was one of the really surprising discoveries made during a more or less cursory examination of the palate in various species and genera of *Icteridæ* picked out at random, and it was the finding of this structure in an Oriole that led to a detailed examination of all of the material available. In *Icterus gularis* the palatal ridge is from 1.2 to 1.5 millimeters high at its anterior end (Fig. 2). The entire structure is broad and somewhat flattened. The ventral surface is slightly

rounded, the sides slightly sloping, the sides and lower surface joining at a sharp angle. In front the ridge is abruptly truncated at its ventral margin where there is sometimes a slight tooth or projec-

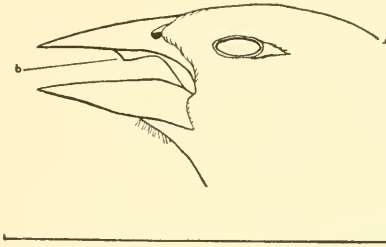


Fig. 2. Head of *Icterus gularis yucatanensis*. b. Palatal knob (about natural size.)

tion. Below this point the anterior surface slopes abruptly, and then passes over into the roof of the palate. The ridge is about two millimeters broad, and there is a slightly indicated raised line on the ventral surface for three-quarters of its length behind. From this description it may be seen that this blunt projection is entirely different from the sharply keeled ridge found in *Quiscalus*.

Examination of other orioles shows that *Icterus gularis* stands alone in respect to this development as there is nothing found in other species that approaches it save for a broad, low, rounded projection, slight but distinct, that is found on the palate in *Icterus xanthornus*. In *Icterus laudabilis* and *I. prothemelas* there is a very slightly raised median ridge developed on the posterior part of the roof of the mouth. In twenty-eight other species belonging to this genus the palate exhibits no peculiarities worthy of mention. This structure in the bill in *Icterus gularis* is constant in its presence, and serves as a trenchant character distinguishing it from other orioles, or in fact from any other members of the *Icteridæ* that have been available for examination. The differences pointed out above, together with others of lesser importance, seem to be of generic value. It is therefore proposed to recognize for this species the genus name

Andriopsar Cassin.¹

Type.—*Ps[arocolius] gularis* Wagler, Isis, 1829, p. 754 (type locality, Tehuantepec, Oaxaca).

Diagnosis.—Medium-sized *Icteridæ* with short, heavy bill; a prominent knob-like projection on the posterior median portion of the palate, broad and somewhat flattened in general form, with abrupt sides, truncated in front, sometimes with a tooth or notch at the anterior ventral angle, about 2 millimeters broad and from 1.2 to 1.5 millimeters high in front; depth of culmen at base nearly equal to one-half length of culmen (varying from slightly more to slightly less); tarsus slightly longer than culmen from base; middle toe with claw equal to two-thirds, or slightly more, of length of tarsus.

One species in which three subspecies have been described is at present known to belong in this genus. These will stand as follows:

Andriopsar gularis gularis (Wagler)

Andriopsar gularis tamaulipensis (Ridgway)

Andriopsar gularis yucatanensis (Berlepsch)

At present there is no information on the feeding habits of these orioles available but it seems certain that they will show some striking peculiarity in choice of food or in manner of securing and handling it when the life history of the species is better known.

In conclusion I desire to give a brief summary of the condition of the palate in other *Icteridæ* where comment is necessary. In *Euphagus carolinus* and *E. cyanocephalus* there is a slight elongate ridge of low elevation, rounded posteriorly more acute in front, and not projecting as far as the level of the tomia. This raised line is slightly more pronounced in *E. carolinus* than in *E. cyanocephalus* in spite of the fact that the latter has a heavier, stronger bill. The species known as *Ptiloxena atroviolacea* has an elongate, narrow, slightly elevated ridge on the posterior portion of the palate, rounded behind and more or less acute in front, but with too low an elevation to be considered a highly specialized structure. Sumichrast's Blackbird (*Dives dives*) has a palatal structure somewhat resembling that of the genus *Holoquistes* save that the entire ridge is shorter.

¹ Proc. Acad. Nat. Sci. Philadelphia, Vol. XIX, 1867, p. 49.

With regard to others, *Tangavius æneus* has a slight ridge, that becomes stronger behind, extending for two-thirds the length of the palate. A similar ridge in *Molothrus badius* is less developed at its anterior end than in the preceding genus. In *Molothrus fringillarius* (one specimen only examined) this ridge is still less in development. In *Molothrus ater*, the cutting edges of the tomia do not extend below the level of the palate, and there is a rounded swelling behind the center; in *Molothrus atronitens* only a very slight ridge is present, and finally in *M. rufo-axillaris* there is no peculiarity worthy of mention. *Nesopsar nigerrimus* shows a well marked rounded ridge on the posterior part of the palate that merges into the anterior surface without becoming produced as an angle. *Xanthopsar imthurni* shows a slightly developed posterior ridge, while in *Agelaius phæniceus* (including *gubernator*) there is a very faint swelling at the posterior end of the palate, that becomes much more pronounced in *A. tricolor*. *Agelaius thilius* and *A. icterocephalus* show a faintly raised median line, that in the latter species is broadened and rounded posteriorly. *Amblyramphus holosericeus* has a long, low, keeled median ridge, and in the three species of *Sturnella* there is an elongate keel, that is rounded behind and acute in front. In *Curæus aterrimus* the palate is on a level with the edge of the tomia, and has a low rounded bulge on its posterior surface. *Trupialis militaris* and *T. falklandicus* have a slight rounded posterior ridge, that is absent in *T. bellicosa* and *T. defillipi*, and finally in *Gymnomystax melanicterus* there is a low, narrow, keeled ridge on the posterior part of the palate, that merges gradually into the surrounding level in front. None of the other species seen present any marked peculiarities.

THE CROW IN COLORADO.

BY W. H. BERGTOLD.

A STUDY of the technical status, and distribution of the Crow in Colorado discloses, at once, an interesting, and a peculiar situation.¹

The Crow was first recorded in Colorado, so far as I am able to learn, by Aiken (1), who reported it in this State in 1872 under the name *Corvus americanus*; thereafter several other writers mentioned the bird, as having been found in Colorado:—Ridgway in 1877 (2), Stephens in 1878 (3), and Drew in 1881 and 1885 (4), all using the same name employed by Aiken.

Ridgway (5) erected the subspecies *hesperis* in 1887, at that time giving its range substantially as outlined today by the A. O. U. 'Check-List'; the validity of this subspecies was not admitted by the A. O. U. Committee until July, 1908 (6). In his original description of the new subspecies (*hesperis*) Ridgway did not state how many skins he examined nor whence they came, but gave as the eastern limit of the new subspecies "east to the Rocky Mountains," while in his later account (7) of *hesperis*, for which he utilized twenty-three skins for study purposes, he carefully qualifies the eastern limit by adding "from the Eastern portion of the arid region?" It is to be noted that he did not definitely mention Colorado as being included within the *hesperis* area; in his coincidental review of the literature possibly related to the new subspecies, however, all citations of previous records of Colorado Crows are grouped under the literature of subspecies *hesperis*. This probably was done because he did not have time to sift out the records relating to the eastern slope from those of the western slope so as to place them under the literature relating to the individual subspecies. So far as Colorado is concerned in this question, Ridgway probably did not take this matter up in detail because

¹ My thanks are due to the following friends who made it possible for me to study crow skins from parts of the State not covered by my own collection; L. A. Adams, A. H. Felger, J. D. Figgins, F. C. Lincoln, E. R. Warren, Witmer Stone, and to my various friends for permitting me to quote them in the body of this paper.

there is not a single Crow skin in either the National Museum, or in the Biological Survey Collections, which came from Colorado.

Most, if not all, of the writers who thereafter, directly or indirectly, touched on the Crow's position in Colorado, made their diagnoses as to subspecies on regional grounds alone.

In the interval between Ridgway's erection of subspecies *hesperis*, and its admittance to the A. O. U. 'Check List' (1887 to 1908) Morrison (8) and Drew (19) were, so far as I know, the only writers to record the Crow in Colorado, Morrison mentioning it first, as *Corvus frugivorus* and the second time (9) as *Corvus americanus*, while Drew entered his record under the latter name.

Cooke's 'List of the Birds of Colorado' was published in March 1897, and in it he grouped all of the previous Colorado Crow records, regardless of region, under the name *Corvus americanus*; notwithstanding that Ridgway had ten years previously separated the eastern and the western Crows, Cooke (22) logically disregarded this action, because he followed the A. O. U. 'Check-List' in assembling his 'List of Colorado Birds.' In all the various supplements which Cooke published to his list (the last being in 'The Auk' of October 1909) he did not change his early naming of the Colorado Crows, allowing them to stand as *Corvus americanus* or its synonym. I am confident that he recognized the probability of there being two subspecies in the State, but wisely refrained from opening the question because of lack of material available for definite determination. Furthermore I am given to understand that there are no Crow skins in the collections of the State Agriculture College at Fort Collins, where Cooke was located when he compiled his 'List,' which fact would lend support to the idea that his omission to mention the possibility of both the Eastern and the Western Crows being found in Colorado was due to his unwillingness to pass judgment on a question without the support of definite material or data.

In his 'The Present Status of the Colorado Check-List of Birds' (10), Cooke again was silent as to the presence of subspecies *brachyrhynchus* or of *hesperis* or of both within the confines of Colorado, though at least three writers (11), (12), (13), had previously mentioned the Colorado Crow in their respective papers, as being *hesperis*; Cooke was too careful and experienced an ornithologist

to have overlooked these records and I am sure his silence was judiciously intentional and premeditated.

It thus appears that between 1887 and 1912 the Crows of Colorado had been recorded by some observers, so far as subspecies were concerned, as *brachyrhynchos*, and by others as *hesperis*, but so far as I know and am able to learn, none suggested or recorded that these two subspecies coexisted in the State.

I am inclined to believe that Sclater's (13) designating the Colorado Crow as *hesperis* was made on purely geographical grounds, because the collection then at his command, (that at Colorado College, Colorado Springs) contains but one crow skin, a partial albino, which proves to be, under examination, subspecies *brachyrhynchos*. E. R. Warren allows me to state that he has no Crow skins in his collection, and that he made his subspecific diagnosis of *hesperis*, for the birds seen near Bulah, Colorado, on geographic grounds only. In later records Warren (14) wisely refrains from trying to decide as to the subspecies, when listing the Crows seen in Montrose County, and in northern Colorado, mentioning the birds merely as *Corvus brachyrhynchos*, and Henderson (18) did likewise in his Boulder County List.

I do not know on what grounds Hersey and Rockwell (11) made their statement that subspecies *hesperis* was to be found on the eastern slope of the Rockies.

Since Cooke's last word on our Colorado avifauna, two more writers have given the Crow as a species found within the State, each listing it as *hesperis*, and both records are for the Atlantic slope. I am permitted by F. C. Lincoln (15), the first of these two writers, to say that he did not take any Crows in Yuma County, and that he made his subspecific diagnosis on geographic grounds alone. It is now, unhappily, impossible to determine what led Betts (16), the second of these two writers, to conclude that the Boulder County Crow was *hesperis*. I do not know whether he collected specimens in Boulder County; but Junius Henderson informs me that Betts sent crow *eggs* to the National Museum. But he probably did not send skins for, as has already been said, there is not a Crow skin in the National Museum collection, from Colorado. The internal evidence (18) points to the belief that Betts too, recorded the Boulder County Crow as *hesperis*, on geographic grounds alone.

Crows seen by Warren (17 and 20) in other parts of the State are given as subspecies *brachyrhynchos*, but again named on regional grounds only.

From the foregoing it appears that the Crows of Colorado were listed, principally as *Corvus americanus* up to the acceptance of subspecies *hesperis* in the A. O. U. 'Check-List,' and since then variously listed as *Corvus brachyrhynchos*, *Corvus brachyrhynchos brachyrhynchos*, or *Corvus brachyrhynchos hesperis*, but, to repeat, so far as I can learn, in no instance have any of the last two kinds of records been made on skin determinations. This statement is based on a study of the published records, and on a considerable relevant correspondence with my associates throughout the State; if I err the statement is open and subject to correction.

The western third of Colorado lies on the Pacific slope, and the eastern two-thirds on the Atlantic and on both of these slopes the Crow has been detected, and variously recorded as to subspecies. The A. O. U. 'Check-List' does not speak of *hesperis* actually extending eastward to the Rocky Mountains, but Mr. Ridgway, in a recent communication said to me "I feel quite sure that any Crow found west of the Divide in Colorado would be *C. b. hesperis*. On the other hand, those found on the eastern side would almost certainly be *C. b. brachyrhynchos*."

I am fortunate, not only in having material in my own collection, which substantiates Ridgway's belief, but in also having had access, thanks to my obliging friends, to specimens and data which also show that his belief is essentially correct.

I have been able to study fourteen Crow skins from the eastern side of the Rockies in Colorado, six males and eight females; of the males three are typical *brachyrhynchos*, two are clearly *hesperis*, and the last is mainly *brachyrhynchos*, but with weaker bill and tarsus than is ordinarily found with that subspecies. It is of interest to note that this last specimen was taken in Weld County close to the locality whence came the two previously mentioned *hesperis* skins. It is much more difficult to allocate the females of this group of skins; however four are more typically subspecies *brachyrhynchos* than is another female in my collection which I collected many years ago in New York, and another female is also of this subspecies, but with a weak bill, while the remaining three

are too near the dividing line to be definitely located as to subspecies, all showing characters of one or of the other of the two forms under study, in varying degrees of intensity.

I have been able to study but one Crow skin from the western slope in Colorado, to-wit, a skin in my collection, which was taken at Ignacio, Colorado, in October, 1917, by my friend and colleague, Dr. Walter L. Mattick; fortunately it is the skin of a male, and is typical *hesperis*.

We are now on firm ground; those skins from the eastern slope which are most likely to be characteristic of a given subspecies, to-wit, males, show that both *brachyrhynchos* and *hesperis* are to be found on that slope, and the Ignacio skin proves that *hesperis* occurs on the western slope.

Hence one can say now that both *Corvus brachyrhynchos brachyrhynchos* and *Corvus brachyrhynchos hesperis* are to be included in future lists of Colorado birds.

The common Crow is normally a bird of moderately large and fairly dense timber, a growth found in Colorado only along the larger streams and in the mountains; if one plot the Crow stations of Colorado on a map, it at once becomes patent that most, if not all, of these stations are to be found along the courses and headwaters of the State's larger streams. This fact seems to lend color and support to the idea that subspecies *brachyrhynchos* probably penetrated Colorado from the east by following the larger streams towards the mountains, for it is along these rivers that one finds trees to the Crow's liking, and too, Crows are increasingly more common as one travels eastward along these watercourses. It would seem reasonable to believe that along similar natural "crow" highways *hesperis* would find its way eastward from the Pacific side into Colorado.

The smaller size, alone, of *hesperis*, often makes it distinguishable in the field, a fact which first came to my attention while in the "hills" on the Gila River in New Mexico, in 1906. During the same year I saw a considerable flock of Crows immediately south of Antonito, Colorado; I was then again impressed by the smaller size of these southern Colorado and New Mexico Crows. I now believe these Antonito Crows were subspecies *hesperis*; Antonito is on (or very close) to the Rio Grande River, which drains part

of the Atlantic-Gulf of Mexico watershed, part of which watershed forms the western portion of Texas, an area included in the present known range of *hesperis*. It does not seem unreasonable to believe that *hesperis* works its way from western Texas, up along the Rio Grande, finally reaching the vicinity of Antonito, and also the San Luis Valley. In support of this latter view I am permitted to say that Mrs. Jesse Stevenson of Monte Vista, Colorado, recently saw a Crow for the first time in twenty-five years in this valley, and was at once impressed with its small size as compared with those she formerly studied in the East.

As mentioned above, it is clear that *hesperis* occurs on both sides of the Rocky Mountains in Colorado. Now one must ask if subspecies *brachyrhynchos* occurs on the western slope as well as on the eastern slope.

I cannot even inferentially decide whether or not subspecies *brachyrhynchos* reaches the west side of the Rockies in Colorado; there is but one reference to it in literature, known to me, as occurring on the western slope of Colorado, to-wit, that by Warren (20) who listed the Crows of Gunnison County as subspecies *brachyrhynchos*, doing it, however, as a matter of expediency only, as he took no specimens. If this subspecies does range to the west side of the Rocky Mountains in Colorado, I believe it will be found in northwestern Colorado, coming in as a straggler from Wyoming. Records of the Crow from northwestern Colorado and southwestern Wyoming are lacking (21), or at least unknown to me.

One can hazard the guess that the Crows of southeastern Colorado are subspecies *brachyrhynchos*, but *hesperis* may also be found in that area, coming in as an infiltration from Texas. I am convinced that *hesperis* works its way up from the Lower Rio Grande Valley, along the eastern foothills, finally reaching, as we now know, as far north as Weld County.

It is highly desirable that a considerable series of Crow skins be collected from Colorado, embracing specimens especially from the western portions of the State, and also from the southern border, to the end that the exact distribution of subspecies *brachyrhynchos* and *hesperis* be definitely delimited for Colorado.

RÉSUMÉ.

I.—It can now be said categorically that the Crow occurs in Colorado in the guise of two subspecies, viz., *brachyrhynchos* and *hesperis*, both being found on the eastern slope, and only the latter on the western slope of the Rocky Mountains.

II.—The above conclusion stands if my determinations of the skins I have studied be correct; if my determinations be incorrect they show that the criteria by which these two subspecies are differentiated, are too subtle and refined for an ordinary ornithologist like myself to grasp and apply, or that the described differences between these two subspecies break down with the Crows found in Weld County.

Measurements of *hesperis* skins (8: millimeters).

Locality	Sex	Wing	Tail	Bill		Tarsus
				Length	Depth	
Weld Co.	♂	303	172	49	18	57
“ “	♂	312	178	45	17	56
Ignacio	♂	317	183	44	17	53

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WINTER ROBINS IN NOVA SCOTIA.

BY HARRISON F. LEWIS.

NEARLY every winter a few stray Robins are observed in Nova Scotia, and occasionally a small flock has been noted as present at that season, although my personal observations here during the six winters immediately previous to that of 1917-18 do not include a half dozen individuals of this species. During the winter of 1917-18, however, Robins were reported in such large numbers and over so great an area as to constitute an occurrence quite unique in the recorded ornithology of the province.

One Robin was seen by me about December 20, 1917, but unfortunately, the exact date of the observation was not recorded. In the last week of January several reports of Robins seen near Halifax were noted, and in the first two or three days of February numerous additional reports were received and I saw a few birds of this species myself. It quickly became evident that Robins were being observed near Halifax, at least, in numbers very extraordinary for the season.

As soon as it was realized that the occurrence was of an unusual character, steps were taken to secure a record of it. It is much to be regretted that, owing to the fact of the casual appearance of Robins here in ordinary winters, this realization was not reached

a few days sooner, for, in that case, attempts to obtain records from others would, no doubt, have been more successful, and my own observations would in all probability have been more extensive. It so happened that, during the time when the Robins were most abundant in this immediate vicinity, military duties, always exacting, became unusually strenuous, and for a while little thought or effort could be given by me to the birds. Nevertheless, as many observations as possible were made, and the observations of those with whom I came in contact were recorded. At the same time, I endeavored to obtain information from other parts of the province, and to that end sent numerous inquiries to those whom I knew to be interested in birds or who were likely to be interested.

Here I was greatly hindered by the present condition of the observation and study of birds in Nova Scotia. I was forced to realize that there are less than a dozen active bird students in the province, and, although there are doubtless many more than that who would note with spontaneous interest the occurrence of Robins here in midwinter, there is no organization by which I could learn of the identity of such individuals when personally unknown to me, or through which I could get into communication with them. I was forced to depend very largely upon blind guess, while following up every clue which I found, and the resulting observations, though fairly numerous, are no doubt but a small part of what might have been obtained had there been, for instance, even one trained and active observer in each county. This fact should be kept in mind when considering the records obtained as evidence of the degree of abundance of the robins.

To all who contributed observations or information concerning the Robins I wish to express my thanks. I am also under obligation to the Amherst 'News-Sentinel,' the Truro 'Daily News,' and the Glace Bay 'Gazette' for publishing, on the initiative of their respective editors, requests that information concerning winter Robins be sent to me. These requests were the means of providing me with no inconsiderable amount of valuable data.

It may be argued that observations learned of in this way are untrustworthy and therefore valueless, for, of necessity, I am not personally acquainted with many of those who so kindly furnished me with information, and I cannot definitely vouch for the skill

in bird observation of each and every one of them. It was considered, however, that, in a case of this kind, such observations might be accepted, at least as evidence tending to show a certain general condition, for nearly every intelligent adult is able to identify a Robin. Certainly, no species here is capable of more accurate popular identification, for even the well-known Crow is confused with the common Northern Raven by all but a few.

The observations obtained are summarized in the following list, which shows, in each case, the date of the observation, the locality in which it was made, the name of the observer or source of information, and the exact or approximate number of birds seen. Care has been taken to indicate any indefiniteness, so that no data are recorded as definite which were not so reported to me or observed by me. Every endeavor has been made to have the observations here recorded as definite as possible, but a number of somewhat indefinite observations are included because they are important, either geographically or temporally, in a report of this nature. With the exception of those observations where names of newspapers are quoted, and of one observation reported by Prof. H. G. Perry and one reported by Mr. W. Archibald, the name of the actual observer accompanies each observation.

- December 20 (about). Bedford, N. S. (H. F. Lewis) 1.
December 27. Sydney Mines, N. S. (Miss Dawe) 1.
January 1. Ohio, Yarmouth, Co., N. S. (Mr. Cann) about 12.
January 1. Yarmouth, N. S. (Mr. H. B. Vickery) 1.
January 5 (about). Upper Musquodoboit, Halifax Co., N. S.
(Miss Leslie) "large flock."
January 16. Glace Bay, N. S. (Mr. A. A. McDonald) 12.
"January." Bridgetown, N. S. (Mr. H. F. Williams) "several."
Daily January 20–February 6. Brookfield, Colchester Co., N. S.
(Mr. Frank Little) 2.
January 24. Dutch Village Road, Halifax, N. S. (Mr. A. E. Brooks) 1.
"Last of January." Belmont, Colchester Co., N. S. (Miss Ruth Lear) 4.
January 26. Sydney, N. S. (Rev. T. A. Rodger) 12.
January 26. Dartmouth, N. S. (Mr. J. E. Smallman) 12.

- January 27 (about). Yarmouth, N. S. ('Yarmouth Herald') of January 29) "several flocks."
- January 27. Dartmouth, N. S. (Sgt. R. Smallman) about 8.
- January 27 or February 3. Pugwash, N. S. (Miss B. Fullerton) 1.
- January 27. Point Pleasant Park, Halifax, N. S. (Sgt. A. Cossham) 1.
- January 27. William St., Halifax, N. S. (Miss H. Paul) 1.
- Daily, January 27-February 8. Truro, N. S. (Prof. L. A. DeWolfe) 2.
- January 28 (about). Sydney, N. S. (Mr. Geo. McLeod) "several."
- January 28. Sydney, N. S. (Rev. T. A. Rodger) 20.
- January 28. Amherst, N. S. (Miss D. Hurtle) 1.
- January 31. Truro, N. S. (Miss E. Waller) 1.
- Through January and first half of February. Truro, N. S. (Miss L. Schurman). 3-4.
- February 1 (about). Pugwash, N. S. (Mrs. McIvor) 2.
- February 1 (about). Carleton, Yarmouth Co., N. S. (Miss Mary Wyman) 1.
- February 1. Yarmouth, N. S. ('Yarmouth Telegram' of February 1) several (killed by owl).
- February 1. Dartmouth, N. S. (H. F. Lewis) 2.
- February 2. Bedford, N. S. (H. F. Lewis) 1.
- February 3. Jubilee Road, Halifax, N. S. (Sgt. W. J. Alsop) 3.
- February 3. Young Av., Halifax, N. S. (Sgt. H. P. Eisner) 1.
- February 3. "Africville," Halifax, N. S. (Sgt. A. G. Cossham) 1.
- February 3. Ocean Terminals, Halifax, N. S. (Mr. C. Churchill) 25-30.
- February 3. Kempt Road, Halifax, N. S. (H. F. Lewis) 1.
- February 3. "The Common," Halifax, N. S. (Sgt. J. A. Fraser) 1.
- February 3. Dartmouth, N. S. (H. F. Lewis) 1.
- February 4. Dartmouth, N. S. (H. F. Lewis) 1.
- February 5 (about). Wolfville, N. S. (reported by Prof. H. G. Perry) 12-18.
- February 5. Gottingen St., Halifax, N. S. ('Evening Mail' of February 14) 1.
- February 6. Truro, N. S. (Prof. E. C. Allen) 2.
- February 8. Loganville, Pictou Co., N. S. (Mr. Wm. McNeil) 4-5.
- February 8. South End, Halifax, N. S. (H. F. Lewis) 5.
- February 9. Truro, N. S. (Prof. E. C. Allen) 1.
- February 11. Truro, N. S. (Prof. E. C. Allen) 1.

- February 12. Dartmouth, N. S. (H. F. Lewis) 1.
February 13 (about). Glenwood, Yarmouth Co., N. S., (Mr. R. M. Sargent) about 12.
February 13 and for some time previously. Pictou, N. S. (Mr. A. Scott Dawson) 30-40.
February 16. Amherst, N. S. (Mrs. H. T. Holmes) 2.
February 18. Dartmouth, N. S. (H. F. Lewis) 1.
"All winter," previous to February 19. Wolfville, N. S. (Mr. Gormley) "a few."
February 21. Antigonish, N. S. (Mr. R. Archibald) 1.
February 24. Pictou, N. S. (reported by Mr. W. Archibald) "several."
February 25. 'The Common,' Halifax, N. S. (Mr. H. B. Vickery) 1.

It will be noted that the points from which Robins are reported are scattered throughout the province, from Sydney and Glace Bay in the east to Yarmouth in the west, and from Amherst, on the New Brunswick boundary, to places such as Halifax and Glenwood, on the south shore. The intervening parts of the province are fairly well represented in the observations, so that these may be held to indicate a condition general in Nova Scotia. I am persuaded that the fact that there are considerable areas, such as the three counties of Shelburne, Queens, and Lunenburg, from which no observations are recorded, is due to the absence of observers there, or to my failure to get into communication with any who may have been there, rather than to the absence of winter Robins from those regions. This belief is strengthened by the fact that, in every place in the province where trained observers were known to be situated, winter Robins were reported by them.

In the case of observations made in Halifax I have recorded the street or part of the city where the birds were seen, so as to show that the distribution in the Halifax area was general, and that it is improbable that the same few birds were being recorded repeatedly by different observers. This is particularly important in connection with the observations made on February 3, on which date many observers saw Robins in and near Halifax. No two of the observations recorded for that day are from the same part of the city. It should be borne in mind, also, when considering these

records, that Dartmouth and Halifax are really parts of one area, for they are on opposite sides of Halifax Harbor, less than a mile apart.

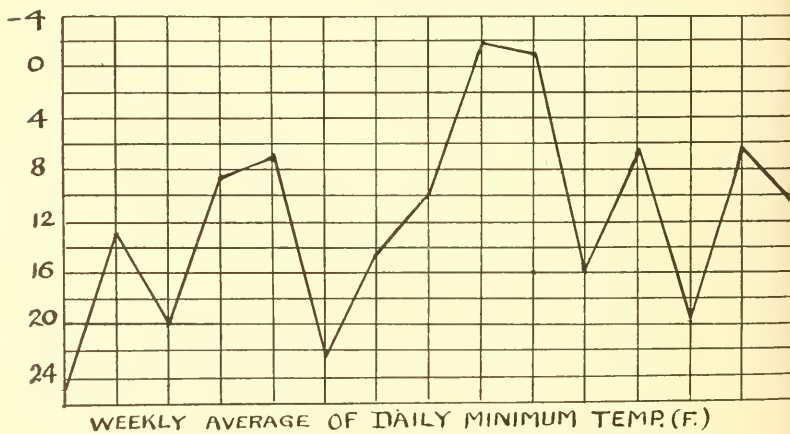
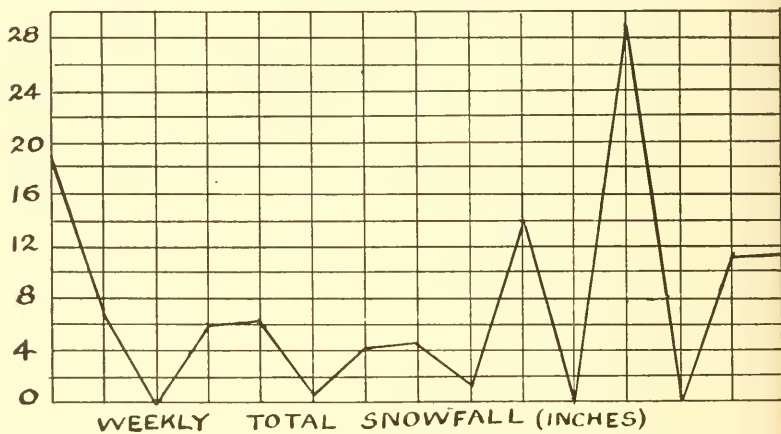
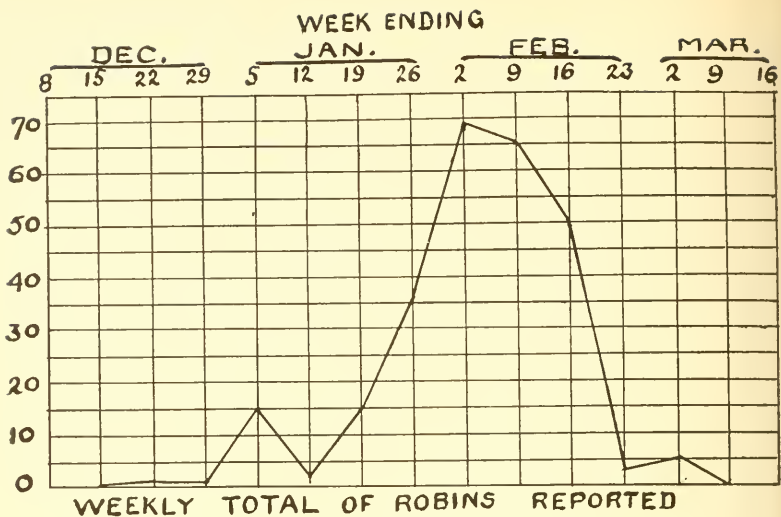
With reference to the observations made in Halifax and Dartmouth, I wish to add that the number of indefinite observations received or learned of was very great. In the presence of a very considerable number of definite observations from that area, it was not thought best to make use of these indefinite ones, but a very fair idea of their nature and extent was gained through conversations, intentional and accidental, and through newspaper reports. After considering the matter carefully, I am of the opinion that a conservative estimate would place the number of adults who, during the winter of 1917-18, saw Robins in Dartmouth or Halifax at forty per cent of the resident adult population of all classes in the two communities. As scarcely any of these people were intentionally looking for Robins, this would indicate a degree of abundance extremely high for the time of year.

Mr. A. Scott Dawson, in his letter of February 13 concerning the large flock of Robins reported by him as remaining for some time near his residence at Pictou, says, "They spend the most of their time on the willows, and are picking at the bark; no doubt they are getting insects, etc., there. They also visit the haw bushes and the holly, as they eat both haws and berries." Those seen by Mr. Wm. McNeil at Loganville on February 8 are said to have been seeking food on a manure pile. Mrs. H. T. Holmes reports that the two Robins seen by her at Amherst on February 16 "were busily picking among some hay in search of food." Rev. T. A. Rodger states that those seen by him in Sydney were fed by his children with crumbs, and Mr. Frank Little, writing from Brookfield on March 25, says, "... this one [winter] between January 20 and February 6 we fed from our back door two Robins and a flock of nine Pine Grosbeaks. It was very cold here then and both came daily between those dates." Several of the birds seen by me were in hawthorn trees, and were feeding on the fruit, which hung on the trees in considerable quantities. The two Robins seen by me at Dartmouth on February 1 were hunting along the upper edge of a low, sandy bank, where some plants of the upland cranberry remained uncovered by the snow. When I examined these plants,

a few minutes later, I could find no fruit upon them. On February 12 I saw one Robin in a mountain ash tree, planted for ornamental purposes, but it flew from the tree at my approach. There was no fruit remaining on that tree.

In several instances it was reported that the Robins were as bright and as lively as in the springtime, but the birds seen by other observers were stated to be slow and stupid, as though weak or numb. Miss Dorothy Hurlley, in a letter dated February 20, says of a Robin seen in Amherst on January 28, "I thought I could catch it, as it was stupid with cold, but it evaded me by flying a little way ahead of me." Nearly all the Robins which I saw appeared to be very loth to move, and when finally "flushed" their flight was slow, short, and uncertain. Besides the killing of some Robins at Yarmouth by an owl, two instances of Robins dying were reported. In a letter dated February 19, Mrs. H. T. Holmes says of Robins recently seen by her at Amherst, "One, while flying, seemed to falter and flutter to the ground. Hoping to revive it, it was brought in, but soon died, possibly starved." Miss Bertha Fullerton, of Pugwash, states, in a letter dated February 26, "My sister is one of the teachers here, and one morning when she went to school there was a frozen Robin on her desk. Likely some of the boys had put it there."

In order to present as clearly and briefly as possible the fluctuations in the number of Robins reported as observed at different times during the past winter, and to facilitate comparison with the local meteorological conditions at any part of that season, I have prepared three graphs, which are shown herewith. They cover the time from December 2, 1917, to March 16, 1918. The upper graph indicates, as closely as possible, the number of Robins reported to me as seen in Nova Scotia in each week of that period. The second graph shows the total number of inches of snowfall at Halifax for each week of the time considered, and the third graph presents the weekly averages of the daily minimum temperatures (Fahr.) at Halifax. To facilitate comparison, this last graph has been inverted, so that lower temperature is represented in the same way as is heavier snowfall or a greater abundance of Robins. For the data used in preparing the two lower graphs I am indebted to Mr. Fred P. Ronnan, official meteorological observer at Halifax.



From the first graph it is readily apparent that few Robins were noted in the province prior to the middle of January. After that time the number seen increased rapidly, reaching its maximum about February 1, and decreasing a little more gradually until about February 20, after which date few Robins were seen. On account of the scarcity of observers, before mentioned, this line does not show the total number of Robins which were present about the inhabited parts of Nova Scotia in any week, nor can its relation to such total numbers be readily determined. It does serve, however, as a moderately correct indicator of the relative abundance of the Robins about the inhabited parts of the province in one week as compared with another.

The graph indicating the weekly snowfall appears as a line of abrupt changes and sharp angles, showing that the variation in the snowfall from week to week was very marked. Somewhat contrary to expectation, no relation between this line and the Robin graph appears to be traceable. It is possible that, if the average depth of snow on the ground in each week could be depicted graphically, the line thus formed would show more direct relation to the weekly abundance of Robins, but, unfortunately, no data from which such a graph could be prepared are available.

The temperature graph appears to correspond very well with the slopes of the Robin graph, especially in the part of the winter prior to February 20. A period of low temperature in the week ending January 5 is found to correspond with a noticeable increase in the number of Robins reported, while higher temperature during the week ending January 12 accompanies a decrease in the number of Robins seen. From January 12 to February 2 increasingly lower average temperatures are contemporaneous with an increasing abundance of Robins observed, and the extremes of both graphs are reached in the same week. In the week ending February 9 both lines fall slightly lower, and in the next week there is a very considerable decline in both. From that time on the relationship appears less close, for a reason hereinafter stated. Such a close correspondence between the two lines as has been pointed out, however, seems most unlikely to be wholly fortuitous, and would appear to indicate that temperature is a greater factor than had been supposed in causing these birds to seek the neighborhood of man.

The question as to why these Robins were so commonly observed in Nova Scotia last winter is one which at present does not seem to be capable of definite answer, for too many of the possible contributory causes are unknown. Some efforts toward a solution of the problem are, however, here submitted.

In the first place, it would appear fair to presume that these Robins were not, as was popularly supposed, misguided arrivals from the south at an unusually early date. It seems probable that they had remained in Nova Scotia, or in regions still further north, from the time of the fall migration until the time when they were seen here. The fact that few were seen between December 1 and the middle of January is explainable by the supposition that during that time they were living in the deep woods, miles from any human being except an occasional Indian or a gang of lumbermen, and that they were then more widely scattered. In the woods at that time large quantities of juniper berries and mountain ash berries would be available for their food supply.

Whether more Robins than usual remained in Nova Scotia in this way last fall seems an open question. Mr. R. W. Tufts, of Wolfville, N. S., in a letter dated February 13, 1918, which was published in the Halifax "Morning Chronicle" of February 15, gives it as his opinion that there was no unusual number of Robins in the province last winter. He attributes the great number of Robins seen in the province at that season solely to the fact that the snowfall was heavier than usual, which, he says, covered the juniper bushes which supplied the Robins with most of their usual winter food, and so forced them to seek sustenance in the inhabited areas of the province, where they were more easily observed. In opposition to this theory it should be noted that the snowfall of last winter, though heavy, was not of a record-breaking character, while I am informed by Mr. Harry Piers, Curator of the Nova Scotia Provincial Museum, and a veteran Nova Scotian ornithologist, that the abundance of Robin observations during the winter of 1917-18 is, so far as is shown by his records or memory, absolutely without parallel. I have experienced some difficulty in obtaining records of snowfall for years other than the more recent ones, but the monthly snowfalls at Halifax for the winter of 1904-05, for instance, compare with those of the winter of 1917-18 as follows.

		<i>December</i>	<i>January</i>	<i>February</i>	<i>March</i>	<i>Total.</i>
Total snowfall } in inches	1904-05	26.3	45.9	37.4	11.6	121.2
	1917-18	33.4	15.1	42.8	30.2	121.5

Although the totals for the two winters are practically alike, yet it will be observed that by February 1, 1918, after a snowfall of 48.5 inches in December, 1917, and January, 1918, Robins were observed as fairly common throughout Nova Scotia, whereas a snowfall of 72.2 inches in December, 1904, and January, 1905, appears to have caused no unusual observations of Robins in the province, nor is there record, so far as I can discover, of any larger number of these birds than usual being seen here at any time that winter. These facts would seem to tend to show either that in the winter of 1917-18 an unusual number of Robins did remain in this part of Canada, or that their appearance in the settled parts of the country was due to other causes than the heavy snowfall, or that both of these hypotheses are true.

It has been suggested to me by Prof. E. C. Allen, of Truro, N. S., that many of the Robins seen in Nova Scotia this winter may have spent the first part of the winter outside of this province, in the neighboring, wilder regions to the northward. In proposing this theory he says, "Granting that scattered Robins do remain [in winter] in regions north of Nova Scotia (a fact concerning which I have no evidence), would not the continued cold weather tend to drive them south, and, owing to the contour of the coast, might they not hesitate to cross the water south of us in winter, and therefore be more or less congested here? . . . It might be argued that Robins would not hesitate to cross the Atlantic strip of water south of us, as many thousands do cross in the fall. On the other hand, might it not be possible that in winter the migratory instinct might not be sufficiently strong to carry them straight out to sea over rough water?" There is need of data from New Brunswick, Prince Edward Island, and Newfoundland concerning winter Robins to throw additional light on this interesting theory.

If the number of Robins which remained here last winter was greater than usual, the cause of this condition is wholly problematical. I have not had such opportunities as I desire for observing the abundance of juniper berries and mountain ash berries in the

wilder parts of Nova Scotia last fall or this spring, but no unusual abundance or scarcity of Robin food has been revealed by such observations as I have been able to make. It may be that the migratory instinct failed last fall in a greater number of Robins than usual, and thus more of them were influenced to remain here, or it may be that subtle meteorological forces caused a change in the migration of some of these birds.

It has already been noted that low temperatures seem to have accompanied the appearance of the Robins. In what way the temperature may have caused the Robins to seek the inhabited districts I cannot say, unless it might be by temporarily congealing the surface of swampy and springy areas, which ordinarily remain open in winter weather, and from which the Robins may have obtained food when the rest of the country was covered with snow. Further investigation appears to be much needed here. While considering temperature, it is worthy of note that the past winter was exceptional for one other thing besides the unusual numbers of Robins seen — that is, for its long, unbroken periods of low temperature. A direct relation between these two phenomena may be suggested. In other parts of northern North America this low temperature seems to have caused an unusual scarcity of winter birds, but that was not the case here.

After February 25, although the weather remained severe, there appear to have been no observations of Robins in the province until the arrival of the first spring migrants, noted at Halifax on March 26. This may be due to the birds' having finally left us for a more congenial climate, but I am strongly inclined to believe that it was caused by the destruction of practically all the Robins in the province, their last available supplies of food having been exhausted. This would account for the disagreement between the Robin graph and the temperature graph after February 20. Although only two dead Robins, other than those killed by an owl, were reported, yet scarcely more than this would be expected, since most of the birds would probably die in out-of-the-way places, and would soon be covered by snow or devoured by animals.

It is hoped that the facts and suggestions here presented may throw some light on the subject of winter Robins and perhaps help to point out some new lines of inquiry, so that before long

additional observations and investigations may make the full truth of the matter clear. The observations of the winter of 1917-18 were unusual, but it is often by a study of the unusual that the usual is understood.

REMARKS ON BEEBE'S 'TROPICAL WILD LIFE.'

BY THOMAS E. PENARD.

IN a previous number of 'The Auk' (1918, XXXV, p. 91), Dr. Witmer Stone reviewed briefly this interesting volume published by the New York Zoölogical Society, presenting the first season's work at the tropical research station, established in British Guiana under the direction of Mr. William Beebe. The results obtained by Mr. Beebe and his associates are of such interest and importance, and the work in general so deserving of the reviewer's praise, that I feel rather reluctant in offering a few slight corrections. My observations are not intended as criticisms, and I would hardly have thought it worth while to express them, were it not for the fact that the very excellence and authoritative character of Mr. Beebe's book might perhaps have the effect of creating a few misleading impressions in regard to some minor matters with which it deals.

In Chapter VIII Mr. Beebe gives a list of the birds of the Bartica District, in which, for the sake of completeness, he includes some species collected by Whitely at the same place, and listed by Salvin in 'The Ibis' for 1885 and 1886. Twenty-two species are starred to indicate that they are new to the Colony of British Guiana. Of this number, however, at least eighteen have been previously recorded from various localities in the Colony as follows:

Columba plumbea plumbea VIEILLOT.—Listed by Salvin (Ibis, 1886, p. 173) from Bartica Grove and Camacusa. Percival (Birds of the Botanic Gardens, 1893, Argosy reprint, p. 6) says that it is "unfrequent in Gardens, though a common species." Dawson (Hand-list of the Birds of British Guiana, 1916, p. 51) lists it as a Colonial species. Some of these

records may, however, apply to *Enanas purpureotincta* (Ridgway). The form inhabiting British Guiana is *Enanas plumbea locutrix* (Max.).

Ibycter americanus (BODDAERT). Bonson (P. Z. S., 1851, p. 56) records it from Br. Guiana under the name of "Red-headed Carracara." It is listed by Salvin (*l. c.*, 1886, p. 77) from Bartica Grove and Camacusa; by Quelch (Timehri, 1890, p. 102 and p. 334) from Demerara Falls and Upper Berbice; by Chubb (The Birds of British Guiana, 1916, i. p. 216, McConnell coll.) from Kamakabra River, etc., giving range in Br. Guiana; and by Dawson (*l. c.*, p. 7).

Urochroma batavica (BODDAERT).—Lloyd (Timehri, 1895, p. 272, sub nom. *Urochroma cingulata*) mentions it as formerly very plentiful in the neighborhood of "Groete Creek," and (*l. c.*, p. 278) gives local range as Essequibo River and N. W. District; F. P. and A. P. Penard (De Vogels van Guyana, 1908, i, p. 523) say these birds are not unfrequently seen in Surinam and Demerara during the Dry Season; Chubb (*l. c.*, p. 336, sub nom. *Touit batavica*) records specimens from Supenaam River and other localities, and gives range in Br. Guiana; and Dawson (*l. c.*, p. 20) lists it as the "Black-winged Parakeet."

Ceryle americana americana (GMELIN).—Recorded by Salvin (*l. c.*, 1886, p. 60) from Bartica Grove and other localities; by Sharpe (Cat. Birds Br. Mus., 1892, xvii, p. 139) from Demerara River; by Chubb (*l. c.*, p. 348) from Bonasika River, etc., giving range in Br. Guiana; and by Dawson (*l. c.*, p. 16).

Cypseloides fumigatus STREUBEL.—F. P. and A. P. Penard (*l. c.*, 1910, ii, p. 95) state that there are specimens in the Georgetown Museum, and Dawson (*l. c.*, p. 34) lists it as a Colonial species.

Tapera nævia (LINNÉ).—Schomburgk (Reis. 1848, iii. p. 713, sub nom. *Diplopterus galeritus*) says that it is abundant in coast regions. Quelch (Timehri, 1891, p. 95; Reprint, p. 27) speaks of it as common in Georgetown; and Percival (*l. c.*, p. 9) states that its frequent plaintive note "Wife-sick" is one of the most familiar garden sounds. It has also been recorded by Salvin (*l. c.*, 1886, p. 64) from Bartica Grove and Roraima; by Shelley (Cat. Birds Br. Mus., 1891, xix, p. 423) from Georgetown; by Chubb (*l. c.*, p. 443) from Ituribisi River, etc., giving range in Br. Guiana; and by Dawson (*l. c.*, p. 23). The Br. Guiana form stands, *Tapera nævia nævia* (Linné).

Pteroglossus aracari aracari (LINNÉ).—Schomburgk (*l. c.*, p. 720) states that the species is tolerably abundant in Br. Guiana. It has been recorded by Salvin (*l. c.*, 1886, p. 65) from Bartica Grove; by Selater (Cat. Birds Br. Mus. 1891, xix, p. 138) from Demerara; by Chubb (*l. c.*, p. 458, sub nom. *Pteroglossus roraimæ*) from Roraima etc., giving range in Br. Guiana; and by Dawson (*l. c.*, p. 22). The form inhabiting Br. Guiana is *P. a. atricollis* (P. L. S. Müller)—see Bangs and Penard (Bull M. C. Z., 1918, p. 55).

Chloronerpes rubiginosus (SWAINSON).—Schomburgk (*l. c.*, p. 715) says he found it throughout Br. Guiana. It has been recorded by

Salvin (*l. c.*, 1886, p. 59) from Bartica Grove, Merumé Mountains, and Roraima; by Chubb (*l. c.*, p. 483) from Anarika River, etc., giving range in Br. Guiana; and by Dawson (*l. c.*, p. 24).

Thamnophilus amazonicus SCLATER.—Schomburgk (*l. c.*, p. 687) states that it inhabits the low bushes of the coast woods. It has been recorded by Salvin (*l. c.*, 1885, p. 423) from Bartica Grove and Camacusa; by Sclater (Cat. Birds Br. Mus., 1890, xv, p. 199) from Takutu River (Salvin-Godman coll.); by Quelch (Animal Life in Br. Guiana, 1901, p. 182); and by Dawson (*l. c.*, p. 26), who stars the species, indicating that there are no representatives in the Museum at Georgetown. All these authors, except Sclater, refer to this species as *Thamnophilus ruficollis* [= *amazonicus* ♀ ?].

Dysithamnus schistaceus (D'ORBIGNY). F. P. and A. P. Penard (*l. c.*, 1910, ii, p. 308) state that there are specimens in the Museum at Georgetown. Dawson (*l. c.*, p. 26) lists it as a Colonial species.

Automolus infuscatus SCLATER.—Recorded by Salvin (*l. c.*, 1885, p. 420, sub nom. *Automolus sclateri*), from Bartica Grove, stating that the specimens are rather smaller than those from the type locality, with faint indication of striation on the throat; and by Sclater (Cat. Birds Br. Mus. 1890, xv, p. 95, sub nom. *Automolus sclateri*) from Camacusa and Bartica Grove. *Automolus sclateri* (Pelzeln) is a pure synonym of *Automolus infuscatus* Sclater, having been proposed by Pelzeln (Orn. Bras., 1867, i. p. 41) on the assumption that the name *Automolus infuscatus* was preoccupied by *Anabates infuscatus* Bonaparte, which, however, proves to be a *nomen nudum* (Cf. Hellmayr, Nov. Zool., 1905, xii, p. 279). Mr. Beebe lists both *infuscatus* and *cervicalis*, apparently considering them two distinct species, the former only being starred as new to the Colony. Hellmayr (Nov. Zool., 1906, xiii, p. 335) says that "the specimens of *Automolus sclateri* from British Guiana in the British Museum are absolutely identical with the type of *P. cervicalis*," and states that the type of *P. cervicalis* is an immature bird. He lists the Guiana form, which differs from true *infuscatus*, as *Automolus infuscatus cervicalis* (Sclater), type locality "Camacusa and Bartica Grove."

Apparently, then, records of *A. infuscatus*, *A. sclateri*, and *A. cervicalis*, in Br. Guiana, apply to the same bird.

Sclerurus rufigularis PELZELN.—Hellmayr (Nov. Zool., 1906, xiii, p. 364) mentions an immature bird from Takutu River, Br. Guiana, and says (*l. c.*, p. 365) that there is a specimen in the British Museum collected by Whately at Bartica Grove. He also says that the Br. Guiana Museum has a ♂ from Ourumee.

Xiphorhynchus guttatoides (LAFRESNAYE).—The form *guttatoides* of Colombia, is a subspecies of *Xiphorhynchus guttatus* Lichtenstein, of which the race inhabiting Br. Guiana is *X. g. sororius* (Berlepsch and Hartert), type locality Perico, Orinoco River. Berlepsch and Hartert (Nov. Zool., 1902, ix, p. 63), who originally described this form as *Dendroornis rostripallens sororia*, mention a specimen from Quonja, Br. Guiana,

coll. Whitely, agreeing with birds from Perico. Schomburgk (*l. c.*, p. 690, sub nom. *Dendrocolaptes guttatus*) says he found it throughout Br. Guiana; Salvin (*l. c.*, 1885, p. 422), referring to it as *Dendroornis guttatoides*, records a specimen from Bartica Grove; and Dawson (*l. c.*, p. 29) lists it under the same name. Quelch (*Animal Life in Br. Guiana*, 1901, p. 177), speaking of *Dendroornis pardalotus* and *Dendroornis guttatoides*, says that one or both of these species will invariably be found in collections made in the forest districts.

Elænia guianensis BERLEPSCH.—The type locality of this species is Camacusa, British Guiana. It has been recorded by Salvin (*l. c.*, 1885, p. 295) as *Elainea elegans*, from Bartica Grove, Camacusa, etc.; by Selater (*Cat. Birds Br. Mus.*, 1888, xiv, p. 150) as *Elainea gainardi*, from Roraima; and by Dawson (*l. c.*, p. 13) as *Myiopagis gainardi*. The Br. Guiana form now stands, *Myiopagis gainardii guianensis* (Berlepsch).

Empidochanes fuscatus cabanisi LÉOTAUD.—Recorded by Salvin (*l. c.*, 1885, p. 297, sub nom. *Empidochanes olivus*) from Bartica Grove; and by Selater (*Cat. Birds Br. Mus.*, 1888, xiv, p. 224, sub nom. *Empidonax oliva*), who states that this is the northern form of *E. bimaculatus* (d'Orb. and Lafr.), adding that he was doubtful whether it was really entitled to the name *oliva*. The type locality of *cabanisi* is Trinidad. The form inhabiting Cayenne is *Empidochanes fuscatus fumosus* Berlepsch, to which we suppose the Surinam bird also belongs.

Riparia riparia (LINNÉ).—Recorded by Salvin (*l. c.*, 1885, p. 206) as *Cotile riparia*, from Bartica Grove.

Sporophila bouvronides (LESSON).—Brabourne and Chubb (*Birds of South America*, 1912, i, p. 367) refer *S. ocellata* (Scl. and Salv.) to this species, and give the type locality Trinidad. References to *S. ocellata* in Guiana probably apply to the same bird which Mr. Beebe had in hand. Mr. Beebe also lists *S. lineola* (Linn.). Sharpe (*Cat. Birds Br. Mus.*, 1888, xii, p. 130) lists *S. ocellata* from Carimang River, Br. Guiana. Dawson (*l. c.*, p. 48) mentions both *ocellata* and *lineola*.

Thraupis palmarum palmarum. (WIED).—Schomburgk (*l. c.*, p. 670, sub nom. *Tanagra olivascens*) states that it is abundant at the coast. It has been recorded by Salvin (*l. c.*, 1885, p. 210) from Bartica Grove and Roraima; by Quelch (Timehri, 1891, p. 81; Reprint, p. 13) who says it is common in Georgetown, mentioning the species again later (*Animal Life in Br. Guiana*, 1901, p. 113); by Price (Timehri, 1891, p. 63) who describes the eggs; by Percival (*l. c.*, p. 16) who states that it is "not very often seen in the Gardens, though common among the innumerable cocconut palms in and about town," where the writer also has seen it; and by Dawson (*l. c.*, p. 46; and Timehri, 1911, p. 272). The type locality of *palmarum* is Bahia, and judging from material examined, I would say that birds from Cayenne, Surinam, and Br. Guiana, differ distinctly from true *palmarum*, and are more nearly allied to, if not indistinguishable from, the Eastern Peruvian race, *Thraupis palmarum melanoptera* (Selater).

Saucerottia erythronota (LESSON).—With reference to this species

also marked with a star, we do not find in Mr. Beebe's list *Agytrina fimbriata fimbriata* (Gmelin), which is common in Br. Guiana, and which has been recorded from Bartica by Chubb (*l. c.*, p. 395). This bird has sometimes been confused with *Saucerottia erythronota* (Cf. Salvin, Cat. Birds Br. Mus., 1892, xvi, p. 187) and has been listed from Bartica by Salvin (*Ibis*, 1885, p. 435) under the name *Agytrina tobaci* of which *erythronota*, type locality Trinidad, is a subspecies.

A longer stay at Bartica, no doubt would have augmented Mr. Beebe's list considerably. For instance, Mr. Chubb, in his work on the birds of British Guiana, records twenty-seven species in the McConnell Collection, which are not included in Mr. Beebe's list.

In Chapter XIII we find an account of the author's ornithological discoveries, pertaining mostly to nests and eggs, with excellent photographic illustrations. Some of these discoveries, however, are by no means entirely new, reliable information on nests and eggs having been published in regard to at least twelve of the seventeen species discussed. Attention is called to the following records:

Chæmepelia talpacoti (TEMMINCK AND KNIP).—Dalglish (*Proc. Roy. Phys. Soc. Edinburgh*, 1889, x, p. 86) describes two nests, each containing two eggs, found Nov. 20, 1886, in Paraguay. Nehr Korn (Kat Eiersamm, 1899, p. 184) lists eggs from Paraguay, 23×18 mm. Euler (*Rev. Mus. Paulista*, 1900, iv, p. 98) describes nests and eggs, 22.5×18 mm. Ihering (*Rev. Mus. Paulista*, 1900, iv, p. 282) describes nest and eggs, and says that he found a nest built upon the deserted nest of another bird, containing two eggs, 22×17 mm. F. P. and A. P. Penard (*l. c.*, 1908, i, p. 340) describe habits, nests, and eggs under *C. rufipennis*, assuming *talpacoti* and *rufipennis* identical in Surinam, judging from specimens which had been identified for them in England as *rufipennis*. Apparently there is some confusion here, and the bird identified as *rufipennis* was probably the newly described *Chæmepelia arthuri* Bangs and Penard (*Bull. M. C. Z.* 1917, p. 45).

Geotrygon [= Oreopelia] montana (LINNÉ).—Eggs listed by Nehr Korn (*l. c.*, p. 186) from Rio Grande, Mexico, and Porto Rico, brownish, 27×21 mm. F. P. and A. P. Penard (*l. c.*, 1908, i, p. 347) say that the nest is very much like that of *Leptoptila*, placed on low branches of trees and in bushes; eggs, short-elliptical, brownish cream-color, 27×21.5 mm.; breeds in the Dry Season. Site, nest, and eggs, have also been described by Lawrence (*Proc. U. S. N. M.*, 1879, i, p. 276), by Wells (*Ibid.*, 1887, p. 625), and by Scott (*Auk*, 1892, ix, p. 124, quoting Taylor).

Porzana albicollis (VIEILLOT).—Nehr Korn (*l. c.*, p. 202) describes eggs from Surinam, meas. 35×26 mm. Ihering (*l. c.* p. 286) describes

eggs received from Iguape, meas. 35-26 × 27-28; he says that the eggs described by Euler (*l. c.*, p. 102) undoubtedly belong to another species. F. P. and A. P. Penard (*l. c.*, 1908, i, p. 206) describe habits, site, nest, and eggs, meas. 35 × 27 mm.

Creciscus viridis (P. L. S. MÜLLER).—Nehrkorn (*l. c.*, p. 203) describes eggs from "Guyana," meas. 32 × 23 mm. F. P. and A. P. Penard (*l. c.*, 1908, i, p. 210) describe habits, nest, and site fully; eggs two, rarely three, usually oval, pure white, almost without gloss, meas. 32 × 26 mm.; they say further that the eggs do not vary much, some having a few black-brown spots at the large end; in the nests are often found infertile and abnormal eggs.

Caprimulgus [= Nyctipolus] nigrescens CABANIS.—Nehrkorn (*l. c.*, p. 156) lists eggs from Amazonia, meas. 23.5 × 18.5 mm. F. P. and A. P. Penard (*l. c.*, 1910, ii, p. 78) describe eggs, one or two, barely glossy, elliptical, pale yellowish-rose, distinctly spotted and blotched with chocolate-brown and purple-gray, meas. 25 × 18.5 mm. The eggs described by Schomburgk (*l. c.*, p. 711) must have belonged to another species.

Empidonomus varius varius (VIEILLOT).—Mr. Beebe (*l. c.*, p. 225) states that "although the eggs of this species have been collected no description of the nest has been given. "We would call attention to description of a nest by Ihering (Rev. Mus. Paulista, 1914, ix, p. 443 and p. 482); the nest was collected by Garbe near Joazeiro, Bahia, in November, 1913.

Pipra aureola aureola (LINNÉ).—F. P. and A. P. Penard (*l. c.*, 1910, ii, p. 188) describe site and nest fully, giving measurements; the eggs are described as two, dull brownish gray, with numerous dark-brown spots, streaks, and dots, over the entire surface, but usually, on one of the eggs of a clutch, forming a wreath at the middle; meas. 21 × 15.5 mm.

Cyanerpes cyaneus cyaneus (LINNÉ).—F. P. and A. P. Penard (*l. c.*, 1910, ii, p. 475) say that the nests and eggs, 20 × 14 mm., do not differ much from those of *C. carulea*, under which name they give full descriptions of nests and eggs. The eggs are described as two in number, oval, almost without gloss, black or purplish black-brown. The nest is described as made of little black roots, pear-shaped or shoe-shaped, with entrance low down at the side, measuring 16 cm. high and 9 cm. across, suspended like the nest of *Todirostrum* from twigs two to five feet from ground. J. A. Allen (Bull. Am. Mus. Nat. Hist., 1891, iii, p. 348) under the name *Arbelorhina cyanea* describes an egg collected by H. H. Smith, "taken with parents, Oct. 13, 1882," in Matto Grosso, Brazil, but judging from the description, it must have belonged to some other species.

Under the general heading of "Seed eaters" Mr. Beebe (*l. c.*, p. 237), speaking of *Oryzoborus angolensis brevirostris*, *Oryzoborus crassirostris*, and *Sporophila castaneiventris*, says, "Familiarity breeds contempt. There could be no truer saying than where these little finches were concerned. In spite of diligent search through all the few reports and excerpts on the

subject, no description of the home or eggs of these birds could be found, and yet, in April and May, their nests were everywhere." H. Lloyd Price, in his paper on "The Nests and Eggs of some common Guiana Birds" (Timehri, 1891, p. 64), says in a general way, "Various species of small finches or grass birds (*Spermophila*, etc.), build tiny nests in the long grass growing at the sides of the trenches; they are generally made of dry grass, and occasionally of dry sticks. The eggs, two in number, are of a greyish white spotted with either red, brown or grey, and of various sizes." Much more definite information in regard to the breeding habits, nests, and eggs of the seed-eaters will be found in the works of F. P. and A. P. Penard, Ihering, Euler, and Nehr Korn. We would call attention to the following accounts pertaining to the species mentioned by Mr. Beebe:

Oryzoborus angolensis brevirostris BERLEPSCH.—Nehr Korn (*l. c.*, p. 105) describes eggs from Brazil. Ihering (Rev. Mus. Paulista, 1900, iv, p. 213) describes nest and eggs. F. P. and A. P. Penard (*l. c.* 1910, ii, p. 388) says that the nest is smaller than that of *O. crassirostris*; the eggs are fully described. All these authors deal with this species under the name *O. torridus*.

Sporophila castaneiventris CABANIS.—Nehr Korn (*l. c.*, p. 105) describes eggs from Amazonia. F. P. and A. P. Penard (*l. c.*, 1910, ii, p. 389) describe habits, nest, and eggs fully. They add the following interesting remarks (translated): "The examples vary very much in form and color as well as in measurements. In many the markings form a distinct wreath about the larger end, others being uniformly covered with gray-brown or brown. Those with wreathed ends are usually of a more oval shape than the evenly covered eggs, but both types are often found together in the same nest. It is thought [by the natives] that the more pointed egg hatches the male, and the browner egg the female. Eggs of a more spherical shape are less common with this species than with the next [*S. minuta*]."

Oryzoborus crassirostris crassirostris (GMELIN).—F. P. and A. P. Penard (*l. c.* 1910, ii, p. 387) describe habits, nest, and eggs fully, with similar remarks in regard to variations in shape and coloration of eggs, both types sometimes being found in the same nest.

Sporophila bouvronides (LESSON). F. P. and A. P. Penard (*l. c.*, 1910, ii, p. 392, sub nom. *S. ocellata*) compare nest to that of *S. minuta*, and eggs with those of *S. castaneiventris*, but say that the eggs of this species average a little longer and also a little grayer, with remarks in regard to the two types of eggs.

In another chapter the author gives much interesting information regarding the habits of Tinamous. By an ingenious experiment he is led to the discovery that birds of the genus *Tinamus* sleep at night in trees, while those of the genus *Crypturus* always pass the night upon the ground. He accordingly correlates this difference

in habits to the character of the back of the tarsus, which in *Tinamus* is rough, and in *Crypturus* quite smooth. He goes on to say (*l. c.*, p. 255):

"These two distinctions have been recognized for many years — *Tinamus* for more than one hundred and thirty, and *Crypturus* for a hundred and six years, and during all this time ornithologists have accepted this character without thought or question."

I may say that the roosting habits of Tinamous are well known to hunters in Surinam, and according to Mr. Beebe himself they were not unknown to his Akawai hunter, Nupee, in whose statements, however, Mr. Beebe seemed disposed to place less confidence than in his own experiment, notwithstanding the fact that in either case conclusive evidence could only be sought in actual observation in the field.

Nearly one hundred years ago Charles Waterton (*Wanderings in South America*, 1825, p. 286) called attention to these habits and suggested that the state of the tarsus might have some bearing upon them. These are his words:

"There is something remarkable in the great Tinamou, which I suspect has hitherto escaped notice. It invariably roosts in trees; but the feet are so very small in proportion to the body of this bulky bird, that they can be of no use to it in grasping the branch; and, moreover, the hind toe is so short, that it does not touch the ground when the bird is walking. The back part of the leg, just below the knee, is quite flat, and somewhat concave. On it are strong pointed scales, which are very rough, and catch your finger as you move it along from the knee to the toe. Now, by means of these scales, and the particular flatness of that part of the leg, the bird is enabled to sleep in safety upon the branch of a tree."

In regard to the "small Tinamou," Waterton (*Ibid.*, p. 287) says, "The foot of this bird is very small in proportion, but the back part of the leg bears no resemblance to that of the larger Tinamou; hence one might conclude that it sleeps on the ground."

Here then, we have at least one naturalist to whom "the casual, nominal affair between Hermann and Illiger versus *Tinamus* and *Crypturus*" was not all.

But Waterton was not the only writer who has mentioned these things. Schomburgk, (*l. c.*, p. 749) under the name *Trachypelmus subcristatus* [= *Tinamus major* (Gmel.)], speaks of the relation of

the rough tarsus to the bird's habit of roosting in trees, but under *Crypturus variegatus* (Wagler) (*Ibid.*, p. 748) says that he does not know whether that species also passes the night in trees. More recently F. P. and A. P. Penard, under the names *Tinamus subcristatus* (*l. c.* 1908, i, p. 318) and *Crypturus variegatus* (*Ibid.*, p. 322) definitely state the bearing of the construction of the tarsi in these two genera upon the dissimilarity in roosting habits.

Mr. Beebe's discoveries in regard to the homes of Toucans, also, are extremely interesting, although the state of affairs regarding our knowledge of the life history of Toucans was really not so scanty as conveyed by the few words of Levaillant which the author quotes. It may be of interest to call attention here to a Toucan egg said to be of *Ramphastos ariel* Vigors, collected by Krone at Iguape, and recorded by Ihering (*Rev. Mus. Paulista*, 1900, iv, p. 262). It is described as oval, measuring 37×28 mm., white, with deep pits on the surface. Schomburgk, Burmeister, and others from time to time, have mentioned Toucan eggs, but beyond saying that the eggs were white, two in number, laid in holes in trees, they did not give much information.

In concluding I wish to emphasize that I appreciate fully Mr. Beebe's good work at the research station in British Guiana, and my remarks should not be construed as having been made with the purpose of depreciating the excellent publication, of which I have discussed, after all, only some very unimportant details.

PROBLEMS SUGGESTED BY NESTS OF WARBLERS OF THE GENUS *DENDROICA*.

BY JOHN TREADWELL NICHOLS.

THE genus *Dendroica* with center of abundance in eastern North America, containing numerous closely related birds, inhabiting in a general way the same region and boldly contrasted the one from the other in plumage, constitutes a striking natural phenomenon calling for explanation.¹

¹ Nichols, J. T., *American Naturalist*. September, 1916; pp. 565-574.

First what advantage to the race can there be in the evolution of so many species of similar habits? Probably though in the main not unlike, a careful comparative study of the species will show that sufficient difference of habit accompanies each to make it fit a slightly different niche in the environment. I mention a single phase, the construction of the nest. For my data on warbler nests I am indebted to Mr. P. B. Philipp of New York, who possesses a very complete personally collected series of these. In his collection we have together verified interesting points that he has learned, and also worked¹ out other matters.

The nests of different species of *Dendroica*, even when found in the same country, are remarkably distinct and can usually be recognized at a glance. In Northumberland County, New Brunswick, a locality with which Mr. Philipp is particularly familiar, Cape May, Yellow, Black-throated Blue, Myrtle, Magnolia, Bay-breasted, Blackpoll, Blackburnian, Black-throated Green, and Yellow Palm Warblers all breed, and he has found the nests of all but the Blackburnian placed in spruces at different heights. The nest of the Blackburnian has not been found here, but doubtless is placed high up in the spruces, as he has found it in such situations in Pennsylvania. The Yellow Palm Warbler usually nests on the ground in moss or dead ferns, but one nest was placed a few inches from the ground in a small spruce. Though a single nest of the Yellow Warbler was found in a spruce, that species may nest more commonly in the willows. Cape May, Myrtle, and Blackburnian Warblers nest high, the other species low.

The nest of the Black-throated Blue has a characteristically pale exterior, weed stems, pale bark, and rotten wood-chips being favorite materials for the bird to use in its construction. It is lined with black, hair-like, slightly crinkly substance, much used for that purpose by Warblers, the stem of a woodland ground-moss (the Cape May has been seen gathering this material). Occasionally horse-hair is substituted for it. In the Black-throated Green, spruce twigs and birch-bark whorls are characteristic of the exterior; hair and an occasional feather, of the interior. The Myrtle and Blackpoll both line the nest heavily with feathers; but the exterior is very different in the two,—in the Myrtle compact, of spruce twigs and fine dry grass, in the Blackpoll loose and balky, rotten

wood-chips, mosses, and a few twigs being used. The Magnolia lines its nest with horse-hair if it can get it, this material being present in Pennsylvania nests taken where it was obtainable, but will use other hair or "moss-stems." One half or more of Mr. Phillip's nests are lined with horse-hair. The Magnolia's nest is composed outside entirely or almost entirely of spruce twigs or grass and is a ragged looking nest. The Baybreast builds a ragged nest that looks like that of the Magnolia but is much larger; for lining it uses fine roots or "moss-stems." The Cape May's nest is thick-walled, rather flat, with fine sticks, a little grass and characteristic dried green moss on the outside, feathers and usually light colored hairs neatly molded down inside. A few "moss-stems" are used in construction, and outside, here and there are specks of very adhesive down. Mr. Philipp has seen a Cape May gathering fur from a dead rabbit, and also apparently picking hair out of a brush-pile.

As regards other species, the Blackburnian builds a nest resembling the Magnolia's but more compact and placed higher. The nest of the Yellow Warbler is smooth, very pale, of plant-down without, and fern-down within. The Yellow Palm Warbler's nest, usually placed on the ground in moss at the foot of a small spruce, is bulky, fairly thick-walled, of grass lined with fine root-lets often combined with some porcupine and at times other hair, and with usually only a few feathers.

There is some variation in the typical location of the nests by species, and in general the nest is very inconspicuous in its location. The dried moss on the Cape May's nest may be especially adapted to conceal it (from below) in the spruce tops from its enemy, the Red-Squirrel. The Baybreasts' ragged nest, well out on a low limb, is almost transparent. The pale Black-throated Blue nest in New Brunswick spruces is placed close to the trunk where it is well concealed; nesting in the rhododendrons in Pennsylvania, the Black-throated Blue nest is well concealed by the glint of light on the rhododendron leaves.

The nest of a bird is one of the most notable products of its instinct. Obviously much precision is necessary in selecting the appropriate materials and fitting them together, for the attainment of a successful product. That to obtain the right materials

is a problem to the individual bird is evidenced by the adoption of horse-hair by the Magnolia Warbler to supplant the very similar "moss-stems" which doubtless were its original material. The Chipping Sparrow must have substituted horse-hair for some pre-civilization material, and its habits are such that horse-hair is almost always obtainable by it and now almost the invariable nest-lining for the species. It is clear that to be successful the nest-building instinct of a given species must be pretty well fixed, that a bird must know what material it will use, also were all the *Dendroicas* dependent on,—let us say, feathers, horse-hair, or rabbit fur, there would be less of it for each, and specific differentiation is thus an advantage to the Dendroicine population as a whole.

Secondly, what advantage to the species is there in their contrasted plumages—in the writer's opinion the colors of each act as a uniform, facilitating the recognition by a bird of its own kind just as they facilitate its recognition by a bird student.¹

A varicolored group of animals such as *Dendroica*, where many related species occupy the same locality,—other such groups come to the writer's mind, notably among tropical reef fishes,—should be considered in formulating or accepting theories on species formation. In many cases isolation and reinvasion are doubtless the succeeding steps in speciation, a process clearly indicated by work recently done by Taylor on the mammals of California.² There is no inherent impossibility of the many *Dendroicas* of eastern North America having been similarly evolved, but with them it would seem to have been a difficult and complicated process instead of a simple and easy one, as with sedentary mammals in a broken country, and may not the forms have arisen for biological advantage without these steps?

¹ Nichols, J. T., Auk. Jan 1912: pp. 44-48.

² Taylor, Walter P. Univ. of Cal. pub. Zoology, Vol. 12, no. 15, March, 1916.

ON THE POPULAR NAMES OF BIRDS.

BY ERNEST THOMPSON SETON.

EVERYONE who has studied the subject knows the enormous projectile power of the exact right name when one wishes to secure popular acceptance of any idea. The amount of effort and ability, devoted by men in commerce to securing the right name is evidence of the experienced view in dealing with the problem. Thousands of dollars in prizes are offered for a good name to be given to some new article, picture, idea, hotel or town. Because these experts know that the happy name makes all the difference between failure and nation-wide acceptance.

We have precisely the same problem offered us in dealing with our birds. The scientific names must, of course, be left to the scientific experts, who, we must admit, take them very seriously; but the popular names have been treated in a most casual or contemptuous way, in many cases ignored altogether.

The attitude of the scientists recalls that of the pedantic classical scholars of the early Queen Anne period. They had imbibed such a contempt for the English language of the day that they set about seriously to rewrite the King James Bible "in dignified English." The first phrase of the Prodigal Son, for example, in the authorized version is as follows: "A certain man had two sons and the younger of them said to his father," etc. Such simple language, they said, "savored of the nursery and stank of the gutter," so they rewrote it, in their "dignified English" as follows:—"In remote antiquity, antedating the meticulous epoch of precise chronology, there was an opulent and distinguished gentleman who resided in the agricultural district of the Orient, and was the progenitor of two adult descendants of the masculine gender. Having attained to majority and, presumably, the years of discretion, the junior scion addressed his immediate ancestral paternal relative and thus expressed the result of a prolonged, solitary and introspective cogitation."

This attitude of the Johnsonian school exactly parallels that of our book ornithologists toward bird names evolved by the common

people. And when I remind you that the so-called classical product is remorselessly scrapped now, and, further, that Skeat, the greatest modern authority on English, has warned us that, rules or no rules, grammar or no grammar, classics or no classics, the street language of London today will inevitably become the university language of England tomorrow; and the street language of modern New York, the university language of America, just as surely as the street language of Elizabeth's time devoured alike the Norman French, and the Anglo-Saxon as well as the bastard classic of the pedants, and became at last the language of Oxford and Cambridge.

Now to apply this to our bird names.

If it is the aim of ornithology to spread a nation-wide knowledge of birds, then the popular names are at least as important as the Latin names.

In 1885, I wrote to 'The Auk' on the same subject, (Vol. 2, p. 316) and have no reason to change the views therein expressed.

The scientist, as such, has no more to do with the popular names of the birds than he has with the conjugation of the verb "to be," for these are a growing part of the living language. And yet, the scientists have arrogated the sole right to dictate the popular names, even while they frankly and openly despise them; sometimes ignoring them altogether; sometimes condescendingly translating the scientific name into alleged English, saying that it was good enough. How far all this is wrong and harmful to bird study, I hope you will allow me to point out.

The popular name of a bird must always be produced by the genius of the language, speaking usually through some personal genius who makes a happy hit. The name must be simple, easily said, descriptive, short, and is much stronger if in some way it ties up the bird's characteristics with familiar ideas.

For example, "Kingbird" is a success; is short, is of familiar elements, and describes the bird's character. Every farm boy in its region knows the Kingbird, and by that name, except in a few localities where the rival name 'Bee-martin' still fogs the issue.

If we pretend that the name of that species is "Tyrant Fly-catcher," as our scientists once insisted, our popular knowledge of the bird would disappear and with that all popular interest in it.

Another example, "Bronzed Grackle." For a hundred years, the scientists have been trying to force the people into believing that Bronzed Grackle was the English name of the bird, and have met with the unanswerable response of dumb silence; readers of the scientific bird books use the name, but the public do not. Everywhere to the farm boys the "Bronzed Grackle" is simply a "Big Blackbird." This is descriptive but far from satisfactory. Scores of times I have handed out this name "Bronzed Grackle" to inquiring boys, to find that it never reached their consciousness as a name; it had no appeal to ear or memory; it was hard to say; it was not backed by the genius of the language. I doubt if the word "Bronzed" ever could be; its really acceptable English representative is "Copper"; but the bird does n't look coppery to ordinary view; and the word "Grackle" is impossible, hard to say, meaningless, not striking any familiar chord in the memory.

"Blackbird" is the popular name. But a local genius in the northwest, a boy with instincts and eyes to see, described it and named it as a "Fantail Blackbird." Here was a real English name, descriptive, acceptable; and instantly it was a success. Everyone who heard it once remembered the name and remembered the bird.

Perhaps the best illustration of all is the name of the common American Robin. The scientists scolded the colonists fiercely for calling it a "Robin." It was not a "Robin," they maintained, it was a Thrush of the *Merula* section of the family; and they refused to use, print or sanction any English name for the bird except "Migratory Thrush." After a century of irascible attack, which was received in silent, ponderous apathy, the scientists were beaten. The cause of English triumphed and today actually even the scientific lists give the bird as the "American Robin," by which name it is known to every child in America, and loved because it is known.

For a hundred years, scientists had been trying to make us believe that Rice Troupial, Yellow-bellied Woodpecker, Carolina Nightjar, Virginia Goatsucker, Black-throated Bunting, Vociferous Plover, Golden-winged Woodpecker, Virginia Quail, Polyglot Thrush, Ferrugineous Thrush and Black-capped Titmouse, were the English names of certain American birds; but the genius of

the language was unconquerable, and at last it is admitted by the defeated scientists that the *trivial* names (as they called them) of these birds are really Bobolink, Sapsucker, Whippoorwill, Nighthawk, Dickcissel, Killdeer, Flicker, Bobwhite, Mockingbird, Thrasher and Chickadee; and with that admission public interest in these particular birds takes on a great and enduring growth.

A similar struggle is now going on between the Black-billed Cuckoo vs. Rain Crow, Snowflake vs. Snow Bird, Passenger Pigeon vs. Wild Pigeon, Goldfinch vs. Wild Canary, Junco vs. Slaty Snowbird or Tip, Cardinal vs. Redbird, Sand Martin vs. Bank Swallow, Spotted Sandpiper vs. Tip-up or Peetweet, Barred Owl vs. Hoot Owl, Virginia Horned Owl vs. Cat Owl, Acadian Owl vs. Saw-whet, Carolina Rail vs. Sora, Phalarope vs. Sea Goose, Vulture vs. Turkey-Buzzard, Pectoral Sandpiper vs. Jack Snipe, Gallinule vs. Mud Hen, Osprey vs. Fish Hawk, Peregrine Falcon vs. Duck Hawk, American Kestrel vs. Sparrowhawk.

A few names such as Bluebird, Crossbill, Chat, Wagtail, Sandpiper, etc., have long been such a success that one knows instinctively that they did not originate with the scientists.

Such clumsy names as White-throated Sparrow, Black-and-White Warbler, Red-shouldered Hawk, are, of course, not names at all, but cumbrous descriptions and doomed to failure, while absurd pedantries like Pileolated Warbler, Protonotary Warbler, Plumbeous Gnatcatcher, are worthy of the afore-mentioned pedants of the Jacobean classical epoch.

Names like Blackburnian Warbler, Nashville Warbler, Clay-colored Sparrow, Townsend's Solitaire, are utterly impossible. They are clumsy, meaningless, un-English and detrimental. I was showing the first of these birds to a group of lively children and said it was called Blackburnian Warbler. A bright boy, speaking wiser than he knew, said, "If it was 'Flaming Warbler' I'd remember it." "Nashville Warbler" is, of course, utterly misleading. We are told that the "Nashville" is a mere fortuitous word added for distinction. Then I say drop it as soon as possible, since it is no more a Nashville Warbler than it is a Virginia or Minnesota Warbler; while the word "Warbler" itself is open to grave suspicion. I wonder the clumsiness of "Clay-colored Sparrow" has not put it out long ago. I suppose the reason is it never was in.

Take the name "Western Grebe." Of course, it is n't a Western Grebe any more than several others; and, viewed from some stand-points, it is an Eastern Grebe, a Southern Grebe, a Northern Grebe, a Northeastern Grebe, a South-southwestern Grebe, or any other compass point you like to give it. But what popular ear, tongue, or imagination is ready to seize on such a name?

It has no point, power or appeal. How much better, for the present, the descriptive "Swan-Grebe," that does, in a small measure, do justice to the superb creature in question.

I suppose, if we are to be candid, the word "Grebe" has never taken root in America. I do not know why. It is, indeed, of French origin; but it has been thoroughly Englished in form. It is short, angular and individual. But the fact is that in the popular mind all "Grebes" are "Hell-divers," and we may as well admit it; although I do not see the word at all in the scientific list of popular names.

I can imagine some hearer objecting here that his ten-year-old boy or girl has all the names at his tongue's end — far better than grown-ups. Yes; I know you can teach a child to talk Latin if you do it at the language learning age and make it interesting; but you cannot thereby make it the language of the nation.

To sum up — I take it that the business of ornithology is, first, to accumulate correct information about birds and then to diffuse it among the people.

If the ornithologists had set out definitely to build an eternal barrier to popular interest in birds, they could not have done it better than by establishing such impossible names as are cited above. They never were, and never could be, English names.

The puzzle has been set forth; now what is the answer? I admit that scientists, describing a new bird, may suggest a name in pseudo-English. That seems necessary. But let them receive fair warning, that it is a temporary makeshift; tolerated, but barely respectable.

How are we to discover the acceptable name? Only by looking out for it, as a precious thing to be found, tested when found and accepted when proven. I shall never forget the little thrill that I got when I learned that, in some good and old writings, a Wood-

pecker was called a "Wood-wale." How gloriously that name would fit the so-called Pileated Woodpecker (whatever 'pileated' means; I don't know). How rhythmic — how simple! How beautifully descriptive. Does n't it make you hear that long, eerie wail in the woods?

Doctor Elliott Coues, with his usual far-sight, insight and literary appreciation, sensed this question, I think; and, in the last edition of the *Key*, made a move toward the solution by offering every name he could find or invent for each of our birds. Take Woodthrush for instance; he calls it Woodthrush, Wood Robin, Bell bird and Geraldine. Why "Geraldine"? I do not know, unless it is an imitation of its note, which is, of course, good. But all of these names seem to me of good origin and sound structure. At a guess, I would venture to say that, given equal publicity, Bell bird" would win over all the others, even granting the already considerable success of the word 'Woodthrush'; because it is so descriptive, so alliterative, so easy to say, so easy to remember and so rhythmic; in other words, it is good English.

At once, I hear the objection that that name belongs by priority to a wholly different bird in South America; and I reply that the genius of language does not know of the existence of South America or concern itself with priority, or with anything but getting the idea into the mind and the memory. As to priority, if that spectre be allowed to walk, it will surely eliminate every popular name on every list that ever was given to the public.

I would encourage all who meet them, to collect and send in the names that appear locally under pressure of the growing popular interest.

I would ask bird men of literary instinct to gather, make up, or invent good names to be submitted to the great test.

Last, for suggestions, I would ransack the pages of those outdoor poets and writers who have the two-fold gift — love of the birds and language-sense.

Thus I would gather the continual product of the popular attempts, until some day, for each bird, is discovered a happy solution that can stand the great and final tests:— Does it describe the bird? Is it short and pat? Is it a monosyllable? Or, if more than one syllable, is the accent on the first? Is it different from

other names? Is it easily said? Does it tie up the bird with existing ideas? Can it be used in writing verse? Does it win the popular attention and put both the bird and name in the memories of the children and of the farmers? If it does all these, it will have back of it all the power of the genius of English to fix it, make it nation-wide and carry with it clear knowledge of the bird.

This, it seems to me, is one of the greatest needs for the spread of bird knowledge in America today.

THE REALITY OF BIRD SPECIES.

BY LEVERETT MILLS LOOMIS.

IN 1858, in volume IX of the 'Reports of Explorations and Surveys . . . from the Mississippi River to the Pacific Ocean,' *Ammodromus samuelis* Baird and *Melospiza fallax* Baird appear as full-fledged species. In 1874, in 'A History of North American Birds,' Land Birds, volume II, these so-called species are reduced in rank, being designated respectively *Melospiza melodia*, var. *samuelis*, Baird and *Melospiza melodia*, var. *fallax*, Baird. In 1886, in the first edition of the A. O. U. 'Check-List,' these names are altered, in accordance with earlier lists by Mr. Ridgway and Dr. Coues, to *Melospiza fasciata samuelis* (Baird) and *Melospiza fasciata fallax* (Baird), pure trinomials and the term subspecies having come into vogue. In 1910, in the third edition of the A. O. U. 'Check-List,' the two names are amended to *Melospiza melodia samuelis* (Baird) and *Melospiza melodia fallax* (Baird).

Owing to his lack of knowledge of geographic variation, Professor Baird gave to each of these geographic variations of the Song Sparrow an entity which they did not possess, and this entity, having gained a foothold in the literature, is perpetuated to-day in the subspecies ('incipient species'). As no one can foresee the future of these variations of the Song Sparrow, it is not known whether they are the beginnings of species or not. Nevertheless, it may be urged that bird history repeats itself, and that the

record of past events warrants the conclusion that bird species are now in process of evolution through geographic variation. Theorize as we may, the fact remains that we do not know what part geographic variation or other agencies played, or did not play, in the origin of existing bird species, the *modus operandi* of the evolution being unknown. But we do know that geographic variation is one of the common variations occurring within the bounds of a bird species of to-day, and that it is not the only variation in which geography is a factor.

Independent of individualism, age, sex, season, or climatic conditions, there exists a type of variation known as dichromatism, which perhaps originated in mutations. It is well exemplified in the Jaegers, Albatrosses and Petrels, Herons, Hawks, and Owls. In some species there is a difference in the geographic range of the phases, but it does not correlate with environment as in geographic variation. Instances to the point are found in the Wedge-tailed Shearwater, Red-tailed Hawk, and Screech Owl.

More than thirty years ago, when our knowledge of variation was far less than it is now, Dr. Stejneger had the discernment to interpret *Colaptes auratus* (Linnæus), *Colaptes cafer* (Gmelin), and *Colaptes hybridus* Baird to be dichromatic or trichromatic phases of one species, and not two species that hybridize on a gigantic scale.¹ None of the characteristics of dichromatism are wanting in these extremes and intermediates. They are similar in general character to the extremes and intermediates of well-known dichromatic species, of the Wedge-tailed Shearwater, Neglected Petrel, and Rough-legged Hawk for example. They are not individual and are not dependent upon age, sex, season, or environmental conditions. Moreover, intermediates crop out sporadically in the Eastern States, where the *auratus* phase is dominant. It is well to bear in mind that these variations of the Flicker are not greater than certain other normal variations; as the age variation of the Western Gull, the sexual variation of Williamson's Sapsucker, the seasonal variation of the Marbled Murrelet, and the dichromatic variation of the Parasitic Jaeger.

The question naturally arises, whether dichromatism has often

¹ Riverside Nat. Hist., Vol. IV, pp. 8, 9.

been misinterpreted and made the basis of apocryphal species and their supposed hybridization on a grand scale. In the alleged Junco species, for instance, possibly dichromatism or polychromatism, originating in mutations, obtains along with geographic variation.

Vermivora leucobronchialis (Brewster) and *Vermivora lawrencei* (Herrick) are not overlooked in this discussion. The evidence thus far presented tends to prove that they are hybrids between two species rather than intermediates of one dichromatic species.¹ Be this as it may, hybridization between unquestionable species of birds is an abnormal and relatively rare occurrence.

To affirm that bird species are concepts, is to ignore the facts in the case. *Ammodromus samuelis* Baird and *Melospiza fallax* Baird are concepts, but *Melospiza melodia* with all its geographic variations is a reality. It is absolutely separated from *Melospiza lincolni* and *Melospiza georgiana* and all other existing bird species. *Colaptes auratus* is likewise a reality. In spite of its great dichromatic variation, it does not intergrade with any other woodpecker. It is confidently stated that the great majority of the A. O. U. 'Check-List' species are also realities, and the remainder time-honored concepts based on inconstant variations, like *Fulmarus rodgersi* Cassin, which is merely an extreme white phase of *Fulmarus glacialis* (Linnaeus).²

In a word, absence of intergradation among birds results in a definite entity, the existing bird species.

¹ Cf. Faxon, Mem. Mus. Comp. Zool., Vol. XL, 1911, pp. 57-78.

² Cf. Proc. Calif. Acad. Sci., 4th Ser., Vol. II, Pt. II, 1918, p. 88.

GEOGRAPHICAL VARIATION IN THE BLACK-
THROATED LOONS.

BY A. C. BENT.

DR. JONATHAN DWIGHT'S interesting paper in 'The Auk' for April, 1918, describing a new species of Loon from northeastern Siberia, has opened up a subject to which I have given considerable study without having been able to come to any satisfactory conclusion. After examining directly or indirectly some seventy specimens of Black-throated Loons, including the entire series in several of the largest collections in this country, I came to the conclusion that the necessary material was still lacking to settle satisfactorily the true status of this group.

I have long recognized the existence of a large, Green-throated Loon in the Bering Sea region; but I have postponed publishing anything on it until I could obtain enough breeding birds from somewhere in that region, to establish a more or less definite breeding range in which a more or less constant form is to be found. Now that Dr. Dwight has seen fit to open up the subject, I feel called upon to publish what incomplete data I have on the whole group.

It seems to me that there are only two alternative theories into which the known facts may be made to fit. The first and most likely theory is that there is but one circumpolar species, divided into three, or possibly four, subspecies, as hereinafter designated. To support this theory we need more material from Siberia and eastern Europe to show complete intergradation between the two intermediate subspecies, *arctica* and *suschkini*, though what material we have seems to indicate that such intergradation exists. An argument against this theory is the fact that the two extreme subspecies, *viridigularis* and *pacifica*, apparently breed side by side in northeastern Siberia and northwestern Alaska.

The second theory is that there are two species, *arctica* in Europe, with *viridigularis* as a Siberian subspecies occupying a subarctic area, and *pacifica* in North America, with *suschkini* as a Siberian subspecies occupying the Arctic coast. This theory would explain

the breeding of the two extreme forms in the same or in contiguous areas; but it would be upset by the discovery of more complete intergradation, unless such intergrades could be regarded as hybrids. A final choice between these two theories cannot be made until more material is available showing the distribution and relationships of the forms to be found in Siberia, a vast and little known region.

I will now attempt to state, roughly and in general terms, the main known facts in this complicated case and let the reader judge for himself how they fit in with the above theories. There are apparently three or four fairly well marked subspecies of Black-throated Loons, as follows:—

1. *Gavia arctica pacifica* (Lawrence), the smallest of all, in which the hind neck or nape is much lighter gray than the crown or forehead, nearly white in some cases, the black throat patch terminates below in a straight line and the metallic reflections of this patch almost always appear purplish in any light. This form occupies a breeding area which includes the whole of northern North America (which need not be more definitely outlined here), the Arctic Islands west of Greenland and the Arctic coast of Siberia for our unknown distance westward.

2. *Gavia arctica suschkini* (Sarudny), intermediate in size between *arctica* and *pacifica*, but nearer the latter, in which the colors are nearly as in *pacifica*, but with a slight tendency towards *arctica*. This form probably has a breeding range somewhere on the northern coast of Asia, but is known only from specimens taken in winter or on migrations in the Ural and Turkestan regions.

3. *Gavia arctica arctica* (Linnaeus), intermediate in size, but nearer *viridigularis* than *pacifica*, in which the crown and nape are uniform dark gray, the black throat patch terminates below in a point and the reflections of this patch appear either purplish when held away from the light and greenish when held towards it, or wholly purplish in any light, with considerable individual variation. This form inhabits northern Europe, and northern Asia for an unknown distance eastward and southward in Siberia.

4. *Gavia arctica viridigularis* (Dwight), the largest of all, but intergrading perfectly with *arctica*, in which the crown and nape are colored as in *arctica*, the black throat patch terminates below

in a point and the reflections of the throat are usually more greenish than in the others. I have yet to see a specimen in which more or less purple reflections could not be found. Even Dr. Dwight's type shows "slight purplish tints." This form, if it is a good subspecies, has no well defined habitat; but what specimens I have seen would seem to indicate a breeding range on both sides of Bering Sea, which may extend for a considerable distance westward into the interior of Siberia.

The above arrangement may appear satisfactory to the casual observer, but the trouble with it is that all of the above characters, particularly those on which Dr. Dwight bases his new species, are decidedly variable and inconstant. Size is the most satisfactory character but even this shows intergradation or overlapping and greater individual variation in each group than the differences in averages between the groups. The measurements, in inches, of the four forms, which I have taken or had sent to me, are as follows:—

Gavia arctica pacifica (Lawrence).

12 males from North America, east of the Mackenzie River,
 average, bill 2.14 wing 11.65
 largest, " 2.32 " 12.42
 smallest, " 1.93 " 10.80

13 males from North America, west of the Mackenzie River,
 average, bill 2.06 wing 11.66
 largest, " 2.20 " 12.50
 smallest, " 1.87 " 10.50

Gavia arctica suschkini (Sarudny)

5 males from Turkestan,
 average, bill 2.35 wing 12.40
 largest, " 2.60 " 13.35
 smallest, " 2.20 " 11.80

Gavia arctica arctica (Linnæus)

6 males from Europe,
 average, bill 2.44 wing 12.24
 largest, " 2.62 " 12.75
 smallest, " 2.30 " 12.

Gavia arctica viridigularis (Dwight)

4 males from Bering Sea region,
average, bill 2.63 wing 12.69
largest, " 2.87 " 13.
smallest, " 2.50 " 12.

The other characters are equally confusing. The nape is lightest and almost constantly so in North American *pacifica*; it is darkest in *viridigularis* and more or less intermediate in many specimens of the other two forms.

The black throat patch terminates below in a straight line almost invariably in North American *pacifica*; I have seen but one exception to this rule; but in Siberian *pacifica* this character is less constant. In *viridigularis* this patch terminates below in a decided point, in all specimens that I have seen. In European *arctica* about half of the specimens I have seen have the patch decidedly pointed below and the others have it nearly straight or only slightly pointed.

The colored reflections of the black throat-patch are the most variable and inconstant of all the characters. In *viridigularis* three of the specimens examined show mainly greenish colors but even these show some signs of purple; and in one, a bird in my own collection, the colors are about equally divided. In European *arctica* about half of the specimens show mainly purplish reflections, while fully half show both purplish and greenish. In North American *pacifica* the purplish reflections predominate, but five specimens out of twenty-two show more or less greenish in certain lights. Mr. Waldron DeWitt Miller, in sending me descriptions of Pacific Loons in the American Museum, used the following terms in designating the colors of the throats; greenish-blue, bluish-green, dark greenish-blue, violaceous and dark violet. It can be easily seen from the above that the colors are very variable.

Dr. Dwight says, in his diagnosis of *viridigularis*:—"The green coloration of the throat is the essential character that sets this species apart from *arctica* and its races, which all have purple throats." In the light of the facts stated above this "essential character" disappears and his new species must be reduced to the

rank of a subspecies at least. Even a subspecies must prove to be fairly constant in a more or less definite range. The range of *viridigularis* is very imperfectly known; the four specimens, referable to this form, that I have seen were taken at Nijni Kolymsk, Siberia, St. George Island, Bering Sea, Nome and Saint Michael, Alaska; Dr. Dwight's specimens all came from northeastern Siberia. The Nijni Kolymsk bird, referred to above, is somewhat intermediate between *viridigularis* and *arctica*; if it had been taken in Europe it would probably be referred to the latter. I also have a perfectly typical *pacifica* from the Kolyma River, Siberia.

I have seen birds from Victoria, B. C., from Finland and from Norway which closely approach this new form, *viridigularis*, in size and color characters. If we had a larger series of *arctica* from Europe and Asia available for comparison, we could perhaps match these birds exactly and we could certainly show, if I have not already demonstrated it, that *viridigularis* is merely a subspecies of *arctica*. To use Dr. Dwight's own terms, the green throat seems to be a quantitative rather than a qualitative character.

REASONS FOR DISCARDING A PROPOSED RACE OF THE GLAUCOUS GULL (*LARUS HYPERBOREUS*).

BY JONATHAN DWIGHT, M. D.

IN discussing the moults and plumages of the Glaucous Gull, a dozen years ago I took occasion to bury "*Larus barrovianus*" among the synonyms of *Larus hyperboreus* (then known as *glaucus*) because the alleged characters seemed to me to afford insufficient grounds for recognizing even a subspecies (Auk, XXIII, 1906, p. 29). Later, in the 1910 edition of the A. O. U. 'Check-List,' the Committee on Nomenclature and Classification adopted my view of the case and discarded "*barrovianus*"; but recently Dr. H. C. Oberholser has seen fit to dig it up and it is revived, somewhat impressively, as a subspecies of *hyperboreus* (Auk, XXXV, 1918, p. 472).

If it were not for certain aspects of the matter I would merely reaffirm my convictions of 1906; for it is a question whether Dr. Oberholser has added anything new to the original claims made by the describer, Mr. R. Ridgway (Auk, III, 1886, p. 330). This does not seem to be the case, for his diagnosis is virtually a restatement of Mr. Ridgway's, except that a supposed character of the bill is discarded on evidence I submitted in 1906. My measurements had shown that this character, namely, "depth through the angle never less and usually decidedly greater than through the base," was not diagnostic, but this was not my only "evident reason" then for rejecting "*barrovianus*" as Dr. Oberholser now wrongly assumes. What I said was that this form "is scarcely 3% smaller [than *glaucus*] in size and 4% smaller in bill" and furthermore, I said; "It is true that the largest specimens of *barrovianus* never quite reach the dimensions of the largest *glaucus*, but overlapping of size is so considerable even when careful comparison of sexes is made that without first reading the labels one cannot, except in a very few cases, tell whether a bird is from Greenland or Alaska. The variation in the size and shape of the bill in gulls is very great and a few millimeters difference in wings that are as long as one's arm is hardly ground on which to rest a subspecies, much less a full species."

These conclusions may be contrasted with Dr. Oberholser's recent diagnosis which reads, "Similar to *Larus hyperboreus hyperboreus*, but smaller, the bill particularly so and relatively as well as actually more slender; mantle decidedly darker; and the line of demarcation between the white tips to the primaries and the pale grayish basal portions usually more evident." I would here call attention to the fact that the "line of demarcation" is not a distinct character but a corollary of the preceding, for the color of the mantle in the Glaucous Gull regularly runs over, so to speak, into the wings, and a darker mantle would mean darker bases of the primaries and therefore greater contrast as a matter of course. Consequently, in the final analysis there are two characters and only two on which "*barrovianus*" rests,—(1) darker mantle and (2) smaller size, especially of the bill. I will invite attention to a new estimate of the value of these characters.

1. As for the color of the mantle, which Mr. Ridgway calls

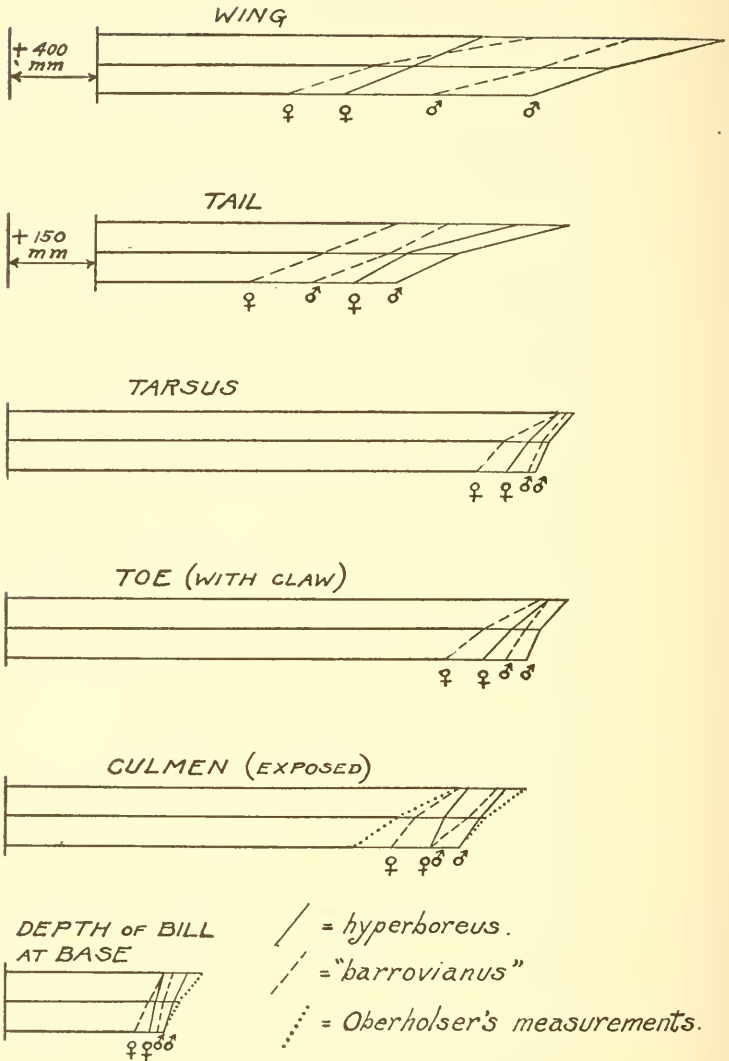


Fig. 1. Diagrams showing relative measurements in millimeters of 31 adult specimens of *Larus hyperboreus* and its alleged race. Top line shows actual length in largest birds, middle line shows average, and bottom line shows smallest of the series.

"somewhat" and Dr. Oberholser "decidedly" darker, I can only say that my series fails to support either of these statements. I find that if comparison of *like stages* of plumage be made, birds from Greenland are quite as dark as Alaska specimens and conversely Alaska birds are as pale as those from Greenland. It is, perhaps, a matter of more than passing interest that the majority of adult Greenland birds in the collections I have seen are in worn faded plumage while most of the Alaska material is in fresh dark plumage. One might easily get the impression that the darker birds represent a race unless due allowance is made.

It may not be generally known that the adult Glaucous Gull moults twice in the year, a complete postnuptial moult beginning toward the last of July and extending over nearly two months and a prenuptial in March and April which involves most of the body feathers but not the wings nor the tail. Between moults the mantle fades and looks even paler than it is in color because of the worn and whitened feather edges. There is some individual variation in the depth of color in freshly moulted specimens, whether from Greenland or Alaska, but both may be equally dark and they may become equally pale after the lapse of a few months. I have examined birds taken nearly every month in the year and I am at a loss to understand how Dr. Oberholser finds a "decidedly darker" race unless he has unwittingly compared birds of unlike stages of plumage.

2. As for size, this is a question of relative dimensions that permits some latitude of opinion, so that a new presentation of the facts seems desirable.

My early table of measurements (Auk, XXIII, 1906, p. 28) based on 31 adults (14 of them males and 17 females) is accepted by Dr. Oberholser "except for dimensions of the bill which have been remeasured for the present use." I have reproduced all of these measurements by the graphic method (Fig. 1) and anyone may see, almost at a glance, what the variations of size in the Glaucous Gull actually are. The diagrams are drawn to scale, the upper horizontal line representing the actual size of the largest specimens, males and females, the middle line the mean or average size and the lower line the smallest specimens. The oblique solid lines represent *hyperboreus*, the broken lines "*barrovianus*" and

the dotted lines Dr. Oberholser's remeasurements of the bill. His "depth of bill" for "*barrovianus*" is the same as mine and therefore cannot be separately plotted. He does not tell us from what series he made the remeasurements that do not tally with mine, but the figures suggest that it may have been a small one and with an unusual proportion of very large and very small birds, possibly wrongly sexed in some cases.

The original series that I measured was composed of breeding birds from Greenland and from Alaska which formed a small part of the 200 specimens I had then gathered together for comparison. Although they are now widely scattered, some of them (as well as new specimens) are still either in my collection or in that of the American Museum of Natural History. A reëxamination and remeasurement of them (68 in all, 39 being adults) confirms to a surprising degree my earlier measurements and conclusions. Individual variation is greater than the supposed subspecific values and the overlapping of size is marked. Birds as large as these Gulls, it must be remembered, may not be measured with unfailing accuracy, especially when different persons attempt it, for specimens are often greatly worn, the wings or tail are sometimes not quite grown and often the feathers are bent and broken. It is not unusual to find a variation of five to ten or more millimeters between the right and left wing of the same bird, due to the make-up of the skin, while tarsi and toes of opposite legs may be bent very much out of shape in drying. Where such variation exists, one may to advantage measure each wing or foot separately and strike an average as I have done in many cases.

Turning finally to the bill, I would call attention to the sketch (Fig. 2) which shows the average adult bill of the male of *hyperboreus* contrasted with that of "*barrovianus*." When one realizes that the variation in the bills of all female gulls is much greater than that of the males and that young birds only very slowly acquire adult dimensions, it becomes evident that "*barrovianus*" is *not* "very readily recognizable by its usually smaller size and particularly smaller bill." One may guess cleverly that large birds belong to one race and small ones to another, but without reference to the labels the guesses may be astray by a continent's width.

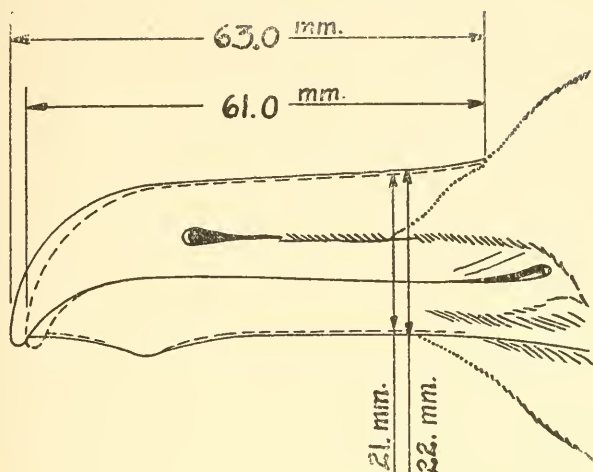


Fig. 2. Bill of average *Larus hyperboreus*, male, life size, drawn to scale. The broken line shows the bill of the alleged race.

So far as I can see the case of *barrovianus* stands where it did in 1906 and it is a pity that there should have been any need of reopening it. Fortunately the merits of this and similar cases do not rest upon individual bias, but they are determined by the A. O. U. Committee which, as far as North American birds are concerned, acts somewhat as a supreme court rendering verdicts according to evidence presented. Let us hope they will give us "safe and sane" subspecies rather than the shadowy indefinite groups of averages that too often are named as geographical races. It should be remembered that while a name is a handle to a fact, too many handles would make a door or a basket perfectly useless. Ornithology will become a wilderness of handles if every difference is named at sight,—a wilderness of subspecies founded more on hasty opinions than on digested facts. A step farther and we shall have the psychological subspecies in which the expectant mental attitude of the subspecialist (if I may be pardoned the word) will play the most important rôle. In our gropings after the truth it is wasteful of too much time to spend so much of it stumbling over names of groups so poorly defined that they convey only a vague meaning to a few specialists and none at all to every-

body else. Decking the subspecies in all the glittering panoply of diagnosis, dimension, and distribution makes of it an impressive spectacle, but this does not necessarily make of it a good subspecies.

THE BIRDS OF THE RED DEER RIVER, ALBERTA.

BY P. A. TAVERNER.¹

(Continued from p. 21.)

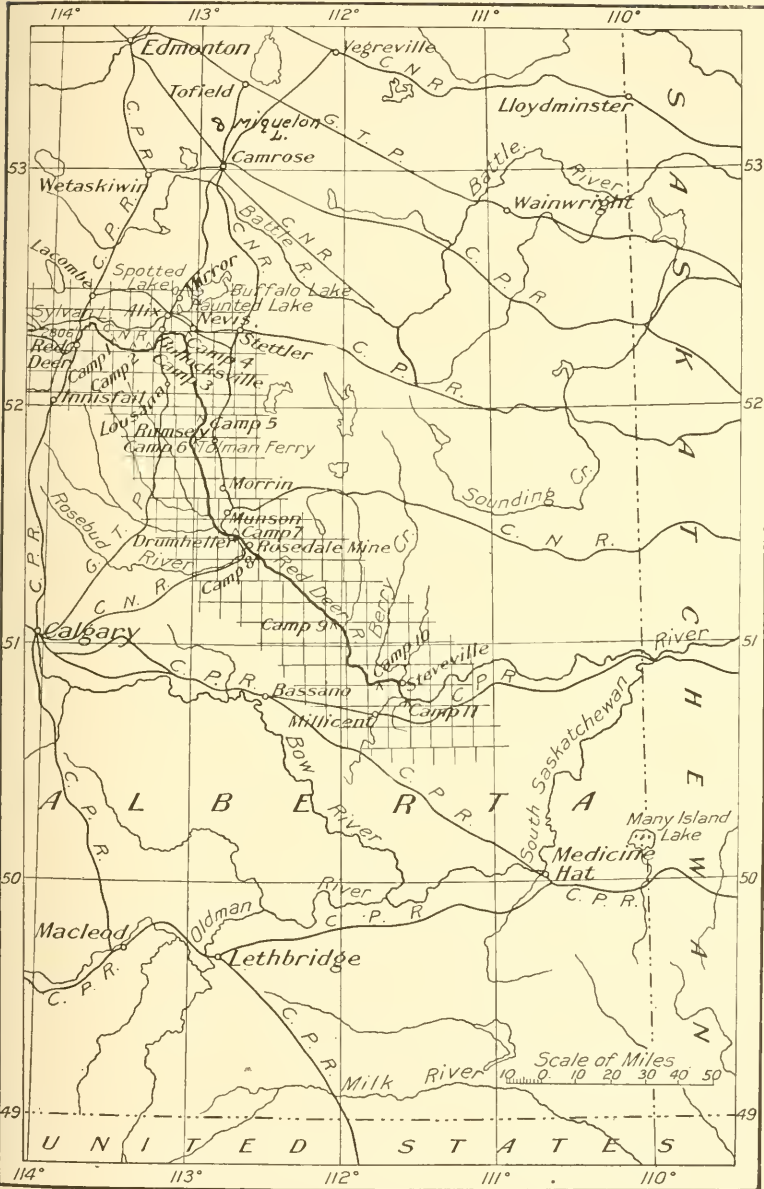
SINCE the first part of this paper went to press, I am in receipt of a series of notes from F. L. Farley, now of Camrose but formerly of Red Deer. His observations extend from 1892 to 1906 at the former locality and from then to date at the latter. They consist chiefly of lists of spring arrivals but have been supplemented by further details in correspondence. I have also received some comments upon the list as published from J. H. Fleming. The pertinent new information is embodied in the following continuation and the Addenda at the end.

80. **Ceryle alcyon.** BELTED KINGFISHER.—We found the species rather scarce on the river. This is probably accounted for by the cloudiness of the water which hides the fish. One bird was seen near Camp 4 near Nevis and Young recorded two at Camp 11 at Little Sandhill Creek. We have three birds taken by Geo. Sternberg at Morrin, August and September, 1915. Horsbrough records the Kingfisher nesting at Red Deer and Farley notes it occasionally at Camrose.

81. **Dryobates villosus.** HAIRY WOODPECKER.—Not very common anywhere but more seen in the upper parts of the river in the wooded sections than lower down. Singles or pairs seen at camps 1, 4, 6 and 8½. Specimen from Camp 1 also one from Rumsey, September 24, 1915, taken by Geo. Sternberg and another from Buffalo Lake, November 9, 1914, by Horsbrough who reports nest at Sylvan Lake. I ascribe them all by their large size to *leucomelas*. One specimen in Fleming's collection lately examined by me overmeasures any *D. v. leucomelas* I have previously seen, having a wing 140 mm. Our next largest specimen is but 132.

82. **Dryobates pubescens.** DOWNY WOODPECKER.—Not seen by us but both Horsbrough and Farley report it as a common resident and a

¹ Published by permission of the Geological Survey, Ottawa, Ont.



breeder. The former refers the local form to *D. p. nelsoni*, probably on geographical grounds for we have an Edmonton specimen, August 13, 1886, that has been identified by Oberholser as *homorus*. A female, Red Deer, April 19, 1916 in Fleming's collection agrees so closely with larger specimens from New Brunswick and eastern Ontario that I see no grounds for separating it from them and following Oberholser's determination of a Banff bird August 13, 1891, ascribe it to *D. p. medianus*.

83. **Picoides arcticus.** ARCTIC THREE-TOED WOODPECKER.— Under the subspecific designation, *P. a. arcticus*, Bangs lists five specimens, without date (collections of Wm. Brewster, and E. A. and O. Bangs) from Red Deer, Auk, XVII, 1900, -139.

84. **Picoides americanus.** AMERICAN THREE-TOED WOODPECKER.— Mr. Farley reports taking a specimen in winter at Red Deer. He makes no subspecific determination. Geographically *P. a. fasciatus* is the probability.

85.* **Sphyrapicus varius.** YELLOW-BELLIED SAPSUCKER.— Quite common on the upper parts of the river but as the country grew more arid it became scarcer and none were seen below Camp 5. One specimen, a female with black cap, Camp 1, June 30. Horsbrough records it breeding.

86. **Phlœotomus pileatus.** PILEATED WOODPECKER.— Farley says he knows of a few having been killed at Red Deer in winter.

87.* **Colaptes auratus.** FLICKER.— Common throughout the river as far as we travelled. Of the four birds taken by us and by Geo. Sternberg at Morrin but one is a pure *auratus*, the remaining specimens all having slight to strong traces of *cafer* blood indicated by the color of the large shafts, the graying of the throat or red in the black moustache. Near Camp 1, Young saw what he thought to be a red-shafted Flicker and doubtless birds that are more strongly *cafer* exist in the region, though *auratus* seems to be the predominating influence. Two birds, May 2 and July 17 Red Deer in Fleming's collection are pure *auratus*. Farley says he has seen nothing at either Red Deer or Camrose that he can ascribe to *cafer*. It would seem that the *cafer* influence is farther reaching on the lower than the upper parts of the river. Horsbrough on a guarded suggestion from Fleming refers his specimens to *C. a. borealis*.

88.* **Chordeiles virginianus.** NIGHTHAWK.— Though rather rare at Camp 1, the Nighthawk became more abundant as we descended the river. None could be collected however, until Camp 11 was reached, where breeding birds were also noted. Our single bird, July 30, is considerably lighter even than several *hesperis* as identified by Dr. Oberholser. I therefore tentatively refer it to *sennetti*. I suspect that this is the form of the arid southern sections, as a Red Deer Bird collected by Sternberg, June 4, 1915, is evidently *virginianus*, as is another from Banff determined by Oberholser.

89. **Archilochus or Selasphorus.** HUMMINGBIRD.— Mr. Farley reports having seen one Hummingbird at Red Deer the summer of 1892.

He thought it a Ruby-throat at the time, but this requires confirmation by specimens for confident acceptance.

90.* **Tyrannus tyrannus.** KINGBIRD.—Rather scarce on the upper parts of the river. At Camp 1, we noted but a single bird, and until Camp 4 but occasional individuals were glimpsed in the distance. Below Camp 4, near Nevis, however, Kingbirds became common. The last one seen was September 7. Two specimens, Camps 4½ and 11.

91.* **Tyrannus verticalis.** ARKANSAS KINGBIRD.—Only seen at Camp 11 after I left. Young says "Not as common as the Kingbird." Three taken July 31. Not listed by either Horsbrough or Farley. Probably an inhabitant of the more southern sections of the river.

92.* **Sayornis phœbe.** PHŒBE.—Not uncommon as far down the river as Camp 6, Tolman's Ferry, but not noted below. One specimen, Camp 2.

93.* **Sayornis sayus.** SAY'S PHŒBE.—One pair were nesting near the top of a cliff near Camp 2, and seen again the next day while en route. At Camp 6, Tolman's Ferry, Young found it nesting in the adjoining hills and took a specimen. From then on they were seen almost daily and at Camp 11, Little Sandhill Creek, they were quite common. It nests on small ledges on the cliff faces and seems rather more common in the arid than the humid country. Specimens from Camps 6, 8 and 11, the last being September 14. Not mentioned by either Farley or Horsbrough.

94. **Nuttallornis borealis.** OLIVE-SIDED FLYCATCHER.—Farley reports this species at Red Deer, May 22, 1905.

95.* **Myiochanes richardsoni.** WESTERN WOOD PEWEE.—Wood Pewee-like notes were heard constantly about Camp 1, but the birds were so shy that one was collected with difficulty. The notes were much like those of our eastern Wood Pewee but different enough in quality to be distinctive. They were not noted often thereafter but from August 6 to 25, Young took several at Camp 11, on Little Sandhill Creek.

96.* **Empidonax trailli.** TRAILL'S FLYCATCHER.—On the uplands about Camp 1, in the thickets adjoining sloughs, this species was recognized a number of times. Thereafter we were seldom in proper country for it. At Camp 11 on the Little Sandhill Creek, Young collected specimens, August 9 and 11, probably early migrants. Both are referable to *E. t. alnorum*. Farley lists it at Red Deer and Camrose.

97.* **Empidonax minimus.** LEAST FLYCATCHER.—Common all along the river. Specimens taken at Camps 3, 3½, 5 and 11.

98.* **Otocoris alpestris.** HORNED LARK.—We saw no Horned Larks until Camp 11 on the Little Sandhill Creek was reached, where Young reports that he found them common on the flats of the north side of the river feeding on wild buckwheat. Fourteen specimens were taken between July 26 and September 20. These are all *leucolæma* as recognized by the A. O. U. or *enthemia* according to Oberholser and Ridgway.

99.* **Pica pica.** MAGPIE.—One of the pleasures of the trip was acquaintanceship with this bird. We heard of occasional Magpies being

seen about Camp 1, but did not meet with them personally until between Camp 5 and 6 when we found a family party of partially fledged birds discussing the world and things in general in the Saskatoon bushes. "Chattering like a Magpie" hardly gives a clear idea of the performances. They keep it up continually in season and out, but the talk is deliberate rather than "chattering." They are never still for a minute and their curiosity is insatiable. Every morning our camp was the center of interest and conversation to a group of these long-tailed clowns, uniting the gravity of judges with the talkativeness of a debating society. At Camp 11 a nearby creek bed cut down some twelve feet below the general level and dry and parched in the sun was the repository of our empty cans and table scraps. Magpies were always in attendance and no sooner had the falling can ceased its noisy rattling and come to rest than a "Pie" was on hand to glean what it might from its depths. They seemed to go in small companies, probably original families though perhaps in some cases more than one brood had joined together and haunted the brush in the wooded river edges or the low dense tangle on hill tops sailing from clump to clump and furtively following one another from cover to cover. Their nests were conspicuous objects in the heavier bush. Great oval masses of sticks four or five feet high and two or three feet through with the nest in the center reached by openings in opposite sides for ingress and egress. The fact that we invariably found them in the neighborhood or not more than a hundred yards or so from nests of Red-tail or Swainson's Hawks may or may not have a meaning; nor is it clear, if it is more than accidental, which — the "Pie" or the hawk — was first to choose the locality. Specimens were obtained at Camps 5½ and 11 while we have others from Rumsey and Morrin collected by Geo. Sternberg.

Farley, Horsbrough and Dr. George of Red Deer, all declare that this species is increasing. Farley writes,—"No one knew this bird ten years ago and for the past few years a month does not pass that some one does not ask about it. I think this about its limit line as I never saw or heard of one farther north than ten miles from Camrose."

100.* **Cyanocitta cristata.** BLUE JAY.—Fairly common on the upper parts of the river but not seen below Camp 4, near Nevis. One specimen, Camp 1. Reported nesting by Horsbrough.

101. **Perisoreus canadensis.** CANADA JAY.—Spreadborough's hypothetical record of this species at Red Deer is substantiated by Farley who says he found two nests of the Canada Jay ten miles east of Red Deer, the eggs from which he sent to W. E. Saunders of London, Ont. According to Oberholser's determinations these birds should probably be referred to *P. c. canadensis*.

102. **Corvus corax.** RAVEN.—Farley says,—"The Raven is seen nearly every November at Red Deer. I have never seen them brought in except in early winter."

103.* **Corvus brachyrhynchos.** AMERICAN CROW.—Only fairly common in the narrow parts of the valley where the river is in closer

proximity to cultivation. Below, where the valley is wide, and more arid conditions prevail, it was but occasionally seen. Young reports, at Camp 11 on the Little Sandhill Creek after the middle of September, that they appeared in large flocks. The farmers about Camp 1 did not regard the crow as dangerous to crops but complained of the number of small chickens they kill and the duck nests they rob. Specimens from Camp 8½ and 11, also Morrin, October, 1916, Geo. Sternberg and Alix, April 24, 1914, Horsbrough. Amongst our prairie province specimens I can find little to substantiate the Western Crow, *hesperis*. The birds of smallest measurement in our collections come from Ottawa and Point Pelee, Ontario; Red Deer, Alberta; and Lillooet, British Columbia, whilst our largest specimens are from Ottawa and Indian Head, Saskatchewan. Even the averages from eastern and western Canadian specimens are too similar for the recognition of any subspecies. I therefore prefer to class these birds with the type form *brachyrhynchos*.

104.* **Melothrus ater.** COWBIRD.—Rather scarce. We saw but two at Camp 1. Young took a specimen at Camp 11 on the Little Sandhill Creek, August 2. We also have one bird from Morrin, July 1916, taken by Geo. Sternberg. The bird from Camp 11 is a juvenile but extraordinarily heavily striped below, almost as conspicuously so as a juvenile Red-wing. Above, every feather is bordered with sharp buffy edges. The Morrin bird is similar but does not depart from normal in so marked a degree. As these are both juveniles their measurements are not satisfactory for subspecific comparison. Examining our series of western Cowbird specimens I can only see that they average slightly larger than eastern ones. The bills are comparatively a little longer but the concave character shown by Grinnell as characteristic of *artemisiae* is not recognizable even though the sage brush *Artemisia tridentata* with which its range is supposed to coincide extends far north of here to the Peace River Valley. Without further data I can only regard these Red River birds as abnormal *ater*.

105. **Xanthocephalus xanthocephalus.** YELLOW-HEADED BLACKBIRD.—Not seen by us owing probably to the absence of extensive marshes in the localities visited. Geo. Sternberg reports having seen one at Camp 11 before our arrival. Mr. Farley lists it at Red Deer and Camrose.

106.* **Agelaius phoeniceus.** RED-WINGED BLACKBIRD.—Not very common but occurring in most of the suitable localities visited by us. More common on the prairie level where sloughs are more numerous than in the valley. Specimens from Camp 1 and 4. After comparing these and other prairie specimens with eastern birds I can only say that there is a larger percentage of oversized birds amongst them than in the East. I can see no constant difference in the bills and hence am not justified in referring them to anything but *phoeniceus*. Horsbrough refers his, probably on geographical considerations to *P. a. fortis*.

107.* **Sturnella neglecta.** WESTERN MEADOW LARK.—We did not find this bird very common in the river valley and not overly numerous

upon the prairie levels when they were visited. Later in the season, Young reports that they were common at Camp 11 in early morning when they came down from the Prairie level to drink at the river. Specimens from Camp 1 and 11, also two Morrin birds, August and July, Geo. Sternberg.

108. **Icterus galbula.** BALTIMORE ORIOLE.—Horsbrough records the nesting of the Baltimore Oriole at Red Deer and Farley pronounces it common. Neither seem to be acquainted with Bullock's. In our collections are specimens of *galbula* from Edmonton and *bullocki* from Medicine Hat where, however, Spreadborough also noted the former. Possibly the division between the two occurs somewhere between the two cities and the Baltimore is the form at Red Deer.

109.* **Icterus bullocki.** BULLOCK'S ORIOLE.—Only two orioles seen and these two of this species. Taken at Camp 11, Little Sandhill Creek, August 29.

110.* **Euphagus carolinus.** RUSTY BLACKBIRD.—One specimen, Alix, Alberta, April 22, 1914, by Horsbrough who infers in his annotations that it is only a migrant at Red Deer though Farley reports it as with Brewer's,—“a very common spring and fall migrant and quite plentiful breeding along the streams in the willows.” I was hardly prepared to regard this as a breeder in this locality.

111.* **Euphagus cyanocephalus.** BREWER'S BLACKBIRD.—Generally distributed throughout the river valley but nowhere exceedingly common. Young noted a large migrant flock at Camp 11, Little Sandhill Creek, the middle of September. Specimens, Camp 1 and 11. Farley reports it breeding along the streams in the willows.

112.* **Quiscalus quiscula.** CROW BLACKBIRD.—Only a few seen at Camp 1, about Brock's Lake where they were nesting in Flicker holes. One specimen, Camp 1, another Buffalo Lake, August, 1915.—Horsbrough. Regarded as common by all correspondents.

113. **Hesperiphona vespertina.** EVENING GROSBEAK.—Farley says,—“The Evening Grosbeak is not regular in winter. It comes for about a month about every other winter, always feeding on the seeds of the Manitoba Maple.” Red Deer Specimens, May 6, in Fleming's collection.

114. **Pinicola enucleator.** PINE GROSBEAK.—Farley says,—“Pine Grosbeaks are fairly common all winter especially along the rivers in the spruce,—never saw them after May 1.” Horsbrough lists them under *P. e. leucura* on J. H. Fleming's determination based upon a bird with an imperfect bill. I have examined this bird but the subspecific characters are so faintly indicated in our comparative series that I prefer to withhold judgment upon the determination.

115.* **Carpodacus purpureus.** PURPLE FINCH.—Not seen on the upper river at all and at Camp 11, Little Sandhill Creek, only after I left. Young reports that beginning August 18, he noted one to five daily to September 7. He observes that they were feeding on the seeds of the black birch. One specimen, Camp 11, August 18. Listed by Farley as

common at Red Deer though Horsbrough gives only individual records.

116.* **Loxia curvirostra.** AMERICAN CROSSBILL.—One specimen taken at Camp 11, Little Sandhill Creek, July 21. It is a juvenile with clear skull but with the red beginning to replace the yellow plumage. About the face and throat is a powder deposit similar to that on a Jasper Park bird that was feeding upon woolly aphides suggesting that this bird was subsisting upon a similar diet. Farley regards it as common all winter, and I infer regular, but "never noted after May."

117. **Leucosticte tephrocotis.** ROSY FINCH.—Farley says,— "I have seen the Leucosticte in November around the coal mines in the Red Deer valley where you go under the C. P. R. bridge. They were the tamest birds I ever saw and I suppose had just blown down from the tops of the mountains." He later informed me that he sent a specimen to W. E. Saunders, London, Ont., who pronounced it Gray-crowned *L. t. tephrocotis*.

118. **Acanthis linaria.** REDPOLL.—Both Horsbrough and Farley report Redpolls in winter. The former identifies them as *A. l. linaria* and the latter says he "cannot say that he has been sure of more than one kind," he thinks, "the smaller one."

119.* **Astragalinus tristis.** AMERICAN GOLDFINCH.—Seen in limited numbers all along the river. At Camp 11, Little Sandhill Creek, Young reports large flocks feeding on the seeds of the wild sunflower *Helianthus petiolaris* in early September. One specimen from Camp 1 and four from Camp 11. All these birds are of a slightly deeper and richer yellow than eastern ones. The difference, however, is very little and only appreciable when numbers are massed together. I do not think that individual specimens can be recognized. In size there are more large birds in the western series, but the extremes in size, east and west, exhibit little, if any, difference. Under such circumstances I cannot see that it is worth while recognizing the Pale Goldfinch, *pallidus* in these specimens. Horsbrough refers his specimen to "*A. t. tristis*. Pale Goldfinch" (sic). With this conflict between scientific and vernacular terminology, it is left to surmise which he intends.

120.* **Spinus pinus.** PINE SISKIN.—A small flock seen at Camp 3. One at Camp 11, Little Sandhill Creek, August 15 and 22. Specimens, Camp 3 and 11. Given as winter visitor by both Horsbrough and Farley.

121.* **Calcarius lapponicus.** LAPLAND LONGSPUR.—Seen at Camp 11, Little Sandhill Creek, between September 10 and 15. Specimens, September, 13 and 15. Farley gives many April dates for both Red Deer and Camrose.

122.* **Calcarius ornatus.** CHESTNUT-COLLARED LONGSPUR.—One seen, July 26 at Camp 11, Little Sandhill Creek, becoming fairly common September 10 to 13 then no more until the 20th when two were noted. Specimens Camp 11, July 26 and September 13. Farley reports them very common in May and in autumn but does not remember them in summer.

123.* **Poœcetes gramineus.** VESPER SPARROW.—Rare along the river valley but common whenever we visited the upper levels. Young reports it common up on the prairie and along the creek beds at Camp 11, Little Sandhill Creek. Nine specimens from Camps 1, 6, 8 and 11. They are obviously referable to *P. g. confinis*.

124.* **Passerculus sandwichensis.** SAVANNAH SPARROW.—Quite common in the more cultivated sections but scarce or absent over much of the river valley. At Camp 11, Little Sandhill Creek, very scarce at first, only two seen in August, but began to be numerous late in September. 13 specimens, Camps 1 and 11. Two types of coloration are exhibited in these specimens. Those from Camp 1 are all yellow eyed birds, while amongst those from Camp 11 occur yellow and white eyed birds. Until a detailed study is made of Canadian Savannah Sparrows I do not care to make subspecific determination. *P. s. alaudinus* is the generally accepted form in Canada west of Ontario.

125.* **Passerherbulus lecontei.** LECONTE'S SPARROW.—But one recognized near Camp 1, in a dry slough. Young found occasional scattered individuals at Camp 11, Little Sandhill Creek, two of which were in marshes on the upper levels, the remainder being in the desert lowlands. It is evident from the specimens obtained that the species has a distinct juvenile plumage composed of soft golden stripings quite different from the first winter plumage which is similar to that of the adult spring coloration. Specimens from Camp 1 and 11. Farley knows the species and does not regard it as rare.

126. **Passerherbulus nelsoni.** NELSON'S SHARP-TAIL.—Farley reports shooting this species for identification and finding it quite common in the open country around large flat sloughs.

127.* **Chondestes grammacus.** LARK SPARROW.—Fairly common at Camp 11, Little Sandhill Creek, not seen elsewhere or after August 17. Specimens from Camp 11. I am not prepared with eastern specimens to differentiate between the two races *grammacus* and *strigatus*. Neither Farley nor Horsbrough mentions this species at Red Deer and it probably does not occur there regularly.

128.* **Zonotrichia leucophrys.** WHITE-CROWNED SPARROW.—Not noted until September 3, Camp 11 on the Little Sandhill Creek. Young reports them quite common then along the river feeding on dogwood seeds and Buffalo berries. Four specimens Camp 11, September 3 to 12. Only one of these is in high plumage. It is obviously *Z. l. gambeli* and all are inferentially included under the same subspecies. Listed as a common migrant by Farley.

129.* **Zonotrichia albicollis.** WHITE-THROATED SPARROW.—Quite common and evidently breeding on the upper part of the river, but not noted below Camp 4 near Nevis, until they put in an appearance at Camp 11, on the Little Sandhill Creek, August 22, when Young met limited numbers with fair regularity. Specimens from Camp 1 and 11.

130. **Spizella monticola.** TREE SPARROW.—Listed as a common

migrant by Farley at Red Deer and Camrose. Horsbrough records spring birds under title of *S. m. ochracea*.

131.* **Spizella passerina.** CHIPPING SPARROW.—Unexpectedly absent from the upper parts of the river. Young reported one at Camp 4 but it was not until we reached Camp 11 on the Little Sandhill Creek that we met them again. Here they were quite common and remained so until the first week in September. Four specimens from Camp 11, July 20, 27 and 28. I refer them to *S. p. arizonæ*.

132.* **Spizella pallida.** CLAY-COLORED SPARROW.—Common everywhere along the river,—the only generally common sparrow. Specimens from Camps 1, 5 and 11.

133.* **Junco hyemalis.** SLATE-COLORED JUNCO.—Fairly common and breeding as far down the river as Camp 4, near Nevis. Below, they became less numerous and none were seen below Camp 6 at Tolman's Ferry, until the migrants came in September 17. Specimens from Camps 1 and 11. These birds show no tendency towards either pink sides or red backs and can only be referred to *J. h. hyemalis*.

134.* **Melospiza melodia.** SONG SPARROW.—Common throughout the entire trip. 15 specimens from Camps 1, 2, 3, 4, 5, 6, 8 and 11; also one July 20, Morrin,—Geo. Sternberg. Though much more worn and hardly comparable with other material on hand, these specimens are just what would be expected from much abraded *juddi*. Specimens from Camps 5, 8 and 11 and Morrin are considerably darker than the others, reversing the expectation that light not dark birds would be found in the more arid sections. Horsbrough lists his specimens as *M. m. melodia*. It is not evident whether he has considered *juddi* or not.

135.* **Melospiza lincolni.** LINCOLN'S SPARROW.—Not seen until August 25 at Camp 11 on the Little Sandhill Creek. They gradually grew more common until September 5 when they became very numerous in open woods and low lands and especially so on the prairie level. One specimen from Camp 11. Though not mentioned by Horsbrough, Farley regards Lincoln's Sparrow as a not uncommon breeder at both Red Deer and Camrose, saying,—“It appears to be regularly distributed but not thickly. I can always depend on hearing at least one every few miles in scrubby country and have watched a pair all through the summer in the same brush so am sure they breed.”

136. **Melospiza georgiana.** SWAMP SPARROW.—Reported by Farley from Red Deer as not common.

137.* **Passerella iliaca.** FOX SPARROW.—Reported by W. E. Saunders at Red Deer in June 1906, in ‘Catalogue Canadian Birds,’—J. and J. M. Macoun, 1909, not seen by us. Farley says,—“The Fox Sparrow is a regular breeder in localities. Have known several places where they breed regularly,—as many as a dozen pairs on a mile square. In such places their song is the commonest of any bird.” These are probably *P. i. iliaca*.

138.* **Pipilo maculatus.** SPOTTED TOWHEE.—Towhees were not

observed until we reached Camp 5, Ross's Ranch, where they suddenly became quite common, thus putting in an appearance with the first decidedly arid conditions. They remained common the rest of the trip. The spotted Towhee has a varied vocal repertoire. While many of its notes are strongly reminiscent of the Chewink, none are exactly similar and it has many peculiar to itself. The familiar Che-week was not heard but the "ya-ree-ee-e" song was quite recognizable with slight but obvious variation. Six specimens from Camps 5, 6, 8 and 11. Naturally all are referable to *P. m. arcticus*. Towhees are not mentioned by either Horsbrough or Farley. Probably this is another species whose limit is south of Red Deer.

139.* **Zamelodia ludoviciana.** ROSE-BREADED GROSBEEK.— One seen and taken at Camp 1 but not noted again until August 19 and 20 at Camp 11 on the Little Sandhill Creek when singles were observed. Juveniles and females seem to differ from those of the Black-headed Grosbeak only in the absence of traces of lemon yellow on the under parts. The Camp 1 specimen is peculiar in having a large bright red throat patch in addition to the usual breast spot. I have seen indications or suggestion of this in other specimens but in none others examined has it been entire and pronounced. Specimens from Camps 1 and 11. Reported nesting at Red Deer by Horsbrough.

140.* **Zamelodia melanocephala.** BLACK-HEADED GROSBEEK.— Only seen at Camp 11 during August where Young reports it as being not uncommon. Specimens from Camp 11, August 11. Not mentioned by any Red Deer correspondent, probably of more southern distribution.

141.* **Pirangaludoviciana.** WESTERN TANAGER.— Only a few seen by Young at Camp 11, on the Little Sandhill Creek the last of August and first of September. Specimens August 21 and 25. Dippie reports skins and eggs from Red Deer and Horsbrough records nests at the same place.

142. **Progne subis.** PURPLE MARTIN.— Horsbrough records occasional birds between Mirror and Buffalo Lake and nests in rotten stumps near Sylvan Lake but says they are not common. Specimen in Fleming collection.

143.* **Petrochelidon lunifrons.** CLIFF SWALLOW.— Very abundant along the whole river, nesting in large colonies under the overhangs of cliff ledges. In places the cliff face is covered solidly over many square yards with nests. Not all of these colonies are occupied, and I presume that they are used but a single season and that the colony seeks new location yearly until the old nests gradually weather away and make room for new ones. It was interesting to note that though many colonies seemed to be built in exposed situations, when rain came, all we observed remained dry while the surrounding cliff face was soaked with wet that would have instantly dissolved the frail clay structures. There is obviously more method in their choice of site than is evident on a casual survey. As it was, we noted many colonies that seemed to have been in situ for

several years, illustrating the discrimination of their judgment. In one such colony I found old swallow nests doing new service for House Wrens that had filled them with sticks and were rearing families within them. Rather unexpectedly we found many occupied nests in the immediate vicinity of Duck Hawk and Prairie Falcon eyries. See *antea* plate opp. p. 11. We often found them plastered right up to and on the very ledges so occupied and the swallows coming and going without the slightest hesitation in the presence of the Falcons. So often did we observe this, that it suggested that such vicinities were matters of choice rather than the accident of indifference. Specimens from Camp 2 and 11, none seen after August 11.

144. **Hirundo erythrogastra.** BARN SWALLOW.—Not noted on the upper parts of the river but a few were seen at Camp 6, Tolman's Ferry. At Camp 11, Little Sandhill Creek, Young observed a few each day until September 25. Reported from Red Deer by both Horsbrough and Farley but apparently not common.

145. **Iridoprocne bicolor.** TREE SWALLOW.—But two individuals noted at Camp 1, July 1 and 2. Farley seems to regard it as common and Horsbrough records nests at Buffalo and Haunted Lakes.

148. **Riparia riparia.** BANK SWALLOW.—Seen constantly all the way down the river and at Camp 11, Little Sandhill Creek, until the end of July after which none were noted. They nest in the many banks lining the river. As these are constantly caving in and sliding into the river, great numbers of birds and nests must be annually destroyed. They show less foresight in the choice of nesting sites than do the Cliff Swallows. Horsbrough records only a single nest and Farley refers to but a few. It probably keeps close to the river banks where it is not seen by the general observer.

147. **Bombycilla garrula.** BOHEMIAN WAXWING.—Horsbrough records this species as —“During the summer this species was common throughout the Alix district.” He records nests on the authority of Dr. George of Red Deer and Mr. Cook of Buffalo Lake. These observers seem perfectly familiar with the Cedar bird so this rather unexpected record can not be altogether disregarded on the grounds of confusion between similar appearing species.

148.* **Bombycilla cedrorum.** CEDAR WAXWING.—Fairly common throughout the river. Specimens, Camp 11, July 20 and August 14.

149. **Lanius borealis.** NORTHERN SHRIKE.—Farley notes the Northern Shrike at Camrose in November and December.

150.* **Lanius ludovicianus.** LOGGERHEAD SHRIKE.—Only seen at Camp 11 where one or perhaps two families were reared and I took a female with accompanying young and later Young took a single adult female. Specimens, July 21 and 28. Only one of these is subspecifically determinable, it has the extensive white rump typical of *L. l. excubitorides*. Farley gives spring dates for the species at both Red Deer and Camrose.

151.* **Vireosylva olivacea.** RED-EYED VIREO.—Seen fairly con-

stantly all the way down the river but less common below than above where the banks are more wooded. At Camp 11, Young did not meet it until August 20 nor after September 1; and never in any numbers. Specimens from Camps 1, 8 and 11.

152.* *Vireosylva philadelphia*. PHILADELPHIA VIREO.—Taken at Camps 1 and 3 but not recognized again. At Camp 11, Young saw a few small vireos but no Philadelphias were recognized. At Camp 1, a male and female were taken June 30 and July 3. The abdomens of both showed indications of incubations and doubtless it was an original pair of breeding birds. Horsbrough records a nest at Sylvan Lake he supposes to be of this species.

153.* *Vireosylva gilva*. WARBLING VIREO.—Small Vireos were not common anywhere on the river. The only ones positively identified by capture proved to be Philadelphias until August 16 when Young took a Warbling at Camp 11 on the Little Sandhill Creek. Occasional specimens were seen that he took to be the same species until September 5. I refer this specimen to *V. g. gilva*.

154.* *Lanivireo solitarius*. SOLITARY VIREO.—One seen and collected at Camp 11, Little Sandhill Creek, and six were noted the same place, September 1.

155.* *Mniotilta varia*. BLACK AND WHITE WARBLER.—Only seen at Camp 11, Little Sandhill Creek, between August 13 and September 1. Two specimens taken.

156.* *Vermivora celata*. ORANGE-CROWNED WARBLER.—One adult male taken at Camp 2. Its song was slightly reminiscent of a wren and I suspect it was nesting nearby. Occasional birds were seen and taken at Camp 11, Little Sandhill Creek, between August 25 and September 17. This specimen is colored light enough for *V. c. orestera*, its size is small for any race but *V. c. lutescens*, under which confiction of characters I prefer to leave its subspecific identity open, together with the four Camp 11 juveniles that accompany it.

157.* *Vermivora peregrina*. TENNESSEE WARBLER.—Seen at Camp 1, where I suspected it was nesting but received no corroborative evidence other than season and its uneasy actions. Seen for a few days after the middle of August at Camp 11 on the Little Sandhill Creek. Specimens from Camp 1 and 11, August 13, 15 and 21. From Farley's notes this appears to be quite a common species at both Red Deer and Camrose,—at least in spring.

158.* *Dendroica aestiva*. YELLOW WARBLER.—Not abundant but a few seen at nearly every camp. Not common at Camp 11, Little Sandhill Creek, except from August 9 to September 8 after which they decreased, disappearing altogether September 17. Specimens, Camp 2, 5, 7½, 8 and 11.

159.* *Dendroica coronata*. MYRTLE WARBLER.—One seen at Camp 2 was the only one observed until August 23 after which they gradually increased in numbers during Young's stay. Specimens from Camp

11, August 23 and September 8 and 18. The first one is in striped juvenile plumage and was probably raised nearby.

160.* **Dendroica magnolia.** MAGNOLIA WARBLER.—Two seen and taken, September 1, at Camp 11, Little Sandhill Creek.

161.* **Dendroica striata.** BLACK-POLLED WARBLER.—Only seen at Camp 11, Little Sandhill Creek, August 28 and September 1. Two specimens, the latter date.

162.* **Dendroica virens.** BLACK-THROATED GREEN WARBLER.—But one seen and collected at Camp 11, Little Sandhill Creek, August 17.

163. **Dendroica palmarum.** PALM WARBLER.—Two birds seen by Young at Camp 11, Little Sandhill Creek, September 1.

164.* **Seiurus aurocapillus.** OVENBIRD.—Heard nearly every day about Camp 1, but none noted again until Young secured two at Camp 11, Little Sandhill Creek, August 27 and September 1.

165.* **Seiurus noveboracensis.** NORTHERN WATER-THRUSH.—One or two seen nearly every day the last week in August at Camp 11, Little Sandhill Creek, specimens, August 20 and 21. These are referable to *S. n. notabilis*.

166.* **Oporoënis philadelphia.** MOURNING WARBLER.—At Camp 1, where warblers were scarce, this was the species most often met with. A mated pair were taken just below Camp 4 near Nevis. In all these birds the abdomen was bare and thickened so they were undoubtedly breeding. Young took another at Camp 11, Little Sandhill Creek, August 17. The male of the Camp 4 pair, is typical *philadelphia* but the female has the eyelid spots as pronounced as in many female Macgillivray's Warblers. It is evident that females of the two species may be difficult of separation. This specimen unaccompanied by its mate would almost unhesitatingly be referred to *O. tolmiei*. The Camp 11 specimen is also interesting. By skull structure it is a juvenile but is very different in coloration from any other specimen in our collection. It is Empire Yellow below warming to Primuline Yellow,¹ instead of Lemon Chrome changing to Sulphur Yellow on neck and throat as is shown by comparable August and September material from Point Pelee, Ontario. However, fall specimens of this species are scarce in collections and I have no fall juveniles of *tolmiei* for comparison and include it under *philadelphia* on the strength of accompanying specimens.

167.* **Geothlypis trichas.** MARYLAND YELLOW-THROAT.—Sparingly distributed but seen practically throughout the trip and becoming a little more common as we descended. The last week in August they were fairly common at Camp 11 on the Little Sandhill Creek but thinned out after the first of September. Specimens from Camps 4½, 8 and 11. In harmony with the findings of the A. O. U. C. committee as indicated in the 'Check-list,' I am inclined to refer our Canadian prairie Yellow-throats to *occidentalis* rather than to *trichas*, of *brachidactyla*, as some of them have been designated by Oberholser. In fact I find them easily distinguishable from

¹ Ridgway's Color Standards and Nomenclature. 1912.

birds of eastern Canada and almost if not quite inseparable from *B. C.* specimens determined as *arizela* by the same authority. For the present, I prefer to regard these birds as *G. t. occidentalis*.

168.* **Wilsonia pusilla.** WILSON WARBLER.—Not seen until August 21 at Camp 11 on the Little Sandhill Creek after which one or two were seen every other day until September 18. Specimens, August 21 to September 18. These were well marked *W. p. pileolata*. Some are rather small for this form but the colors are distinctive.

169. **Wilsonia canadensis.** CANADIAN WARBLER.—Reported by Young at Camp 1, but not noted again.

170.* **Setophaga ruticilla.** REDSTART.—Only seen at Camp 11 on the Little Sandhill Creek between August 26 and September 6. Specimen, Camp 11, August 27.

171.* **Anthus rubescens.** AMERICAN PIPIT.—Pipits appeared in large flocks on the prairie level near Camp 11, Little Sandhill Creek, September 12, but were not noted after the 17th.

172.* **Anthus spraguei.** SPRAGUE'S PIPIT.—Only seen once by Young at Camp 11, Little Sandhill Creek, September 13. He says it hid in the holes made by the feet of horses and cattle, allowed close approach, flushing like a grouse. Specimen Camp 11, September 13. From Farley's notes it evidently occurs at Red Deer but is more common in the vicinity of Camrose.

173.* **Dumetella carolinensis.** CATBIRD.—Fairly common along the whole river. At Camp 11, Little Sandhill Creek, they fed upon Buffalo berries. None were noted after September 7. Specimens, Camp 2 and 11.

174.* **Toxostoma rufum.** BROWN THRASHER.—Only seen occasionally at Camp 11 on the Little Sandhill Creek. None observed after September 1. Specimen, Camp 11, August 6.

175.* **Salpinctes obsoletus.** ROCK WREN.—Not seen until we reached Camp 11, on the Little Sandhill Creek. There they appeared fairly common, the greatest numbers being observed about the first of August, when fifteen were noted. The last was observed September 5. Specimens July 20 to 31.

176.* **Troglodytes aëdon.** HOUSE WREN.—Fairly common everywhere but very shy. I do not think the song of the western birds is such a spontaneous bubbling over as is the case of our eastern ones. It is thinner and more restrained. At Camp 2 we found it occupying old Cliff Swallow nests. Common at Camp 11, Little Sandhill Creek until after the first of September when it gradually became less numerous. Specimens 6, from Camps 1, 8, 11 all *T. a. parkmani*.

177. **Telmatodytes palustris.** LONG-BILLED MARSH WREN.—Farley lists it in May and June at Red Deer and Horsbrough reports numerous nests around Buffalo Lake.

178. **Sitta canadensis.** RED-BREADED NUTHATCH.—About Camp 1, we several times heard Nuthatch voices but were unable to trace them to their origin and we cannot be certain of the species. Young took one at Camp 11 on the Little Sandhill Creek, August 21, feeding on woolly

aphides on the cottonwoods. Neither Farley or Horsbrough report this species in the breeding season though Fleming has Red Deer specimens taken June 10.

179.* **Penthestes atricapillus.** BLACK-CAPPED CHICKADEE.—Chickadees were fairly common all along the river. In most cases they seemed to be cruising about in family groups not yet separated. Five specimens all juvenile, from Camps 1, 3, 8 and all have the extreme white feather margins and long tails of *P. a. septentrionalis*.

180. **Penthestes hudsonicus.** HUDSONIAN CHICKADEE.—Under *P. hudsonicus*, Horsbrough lists this species as a common resident and reports a nest. I have no further records for the vicinity.

181.* **Regulus calendula.** RUBY-CROWNED KINGLET.—Occasional birds seen at Camp 11 on the Little Sandhill Creek from the end of August to the end of Young's stay becoming more common latterly. Specimen, Camp 11, August 29.

182.* **Hylocichla fuscescens.** WILSON'S THRUSH.—Fairly common as far down the river as Camp 9 below Rosedale Mines. Most of the records are based upon their notes as all thrushes were exceedingly shy. Two specimens, Camp 7½. These are rather more richly colored than other birds from about Edmonton, less olive and more nearly like eastern specimens. I am doubtful as to the exact subspecific status of these specimens but refer them to *H. s. salicicola* with reservations.

183.* **Hylocichla ustulata.** OLIVE-BACKED THRUSH.—Thrushes though common enough were very difficult to identify as they were very shy and only fleeting glimpses were caught of them as they slunk away through the brush. One Olive-back was taken at Camp 11, Little Sandhill Creek, September 17. Horsbrough reports nests at Sylvan Lake.

184.* **Hylocichla guttata.** HERMIT THRUSH.—For the above reasons I only care to specifically pronounce upon the one bird taken at Camp 11, Little Sandhill Creek, September 22.

185.* **Planesticus migratorius.** AMERICAN ROBIN.—Common all along the river. At Camp 11, Little Sandhill Creek, Young says they fed extensively upon Buffalo berries. Specimens, Camp 11, September 7 to 21. Horsbrough refers his birds to the western form *P. m. propinquus*, a rather questionable decision.

186.* **Sialia currucoides.** MOUNTAIN BLUEBIRD.—Some Bluebirds glimpsed in the outskirts of the city of Red Deer and whilst driving from the river to Nevis, Camp 4, we attributed to this species. Several times below Camp 4 we noted individuals amongst the eroded cliffs and hills but could not get close enough to identify them satisfactorily. It was not until we reached Camp 11, on the Little Sandhill Creek that the species was certainly recognized. Here we found them common, feeding upon Saskatoon berries, and later according to Young on Buffalo berries. They remained common up to the time he left and he noted a flock of one hundred birds, September 8. Seven specimens Little Sandhill Creek, July 20 to September 8. Both Farley and Horsbrough report it common at Red Deer.

ADDENDA.

We have received in addition to the specimens already cited the following, collected by Dr. R. M. Anderson, Western Grebe, *Aechmophorus occidentalis*, Dried Meat Lake, near Camrose, September 20, 1918. Horned Grebe, *Colymbus auritus*; Greater and Lesser Yellow-legs, *Totanus melanoleucus* and *T. flavipes*; Ruffed Grouse, *Bonasa umbellus* from Miquelon Lake, near Camrose, September 29, 1918.

The following species and notes should be added to the previous list:

187.* **Larus philadelphia.** BONAPARTE'S GULL.—Farley reports this species May 1, 1900 at Red Deer and May 13 and 16, 1917 at Camrose. Anderson took a specimen, September 29, 1918 at Miquelon Lake.

(12). **Phalacrocorax auritus.** DOUBLE-CRESTED CORMORANT.—Farley reports that for many years this species bred on Miquelon Lake some 24 miles southeast of Edmonton where Anderson found evidence in September, 1918 of the current year's nesting in the form of nests said to be Cormorant's.

(13). **Pelecanus erythrorhynchus.** WHITE PELICAN.—Said by Farley to have nested in numbers at Miquelon Lake until of late years and it is not known as yet where they have removed to. At the height of their nesting from 300 to 500 nests were to be seen on an island of not three acres extent.

(25). **Clangula clangula.** GOLDENEYE.—Farley reports that for the past eight years Goldeneyes have nested in a blind brick chimney on the R. B. Price house in Camrose, about five feet down. The young clamber up the flue to the top, tumble off and roll down the roof to the ground where they are gathered up and conveyed to the water by human friends, where the mother invariably awaits to receive them. Every spring ducks visit many chimneys in town as if prospecting for nesting sites. My informant queries, "Would these be the young that have remembered a similar nesting home?" The facts suggest the affirmative.

(29). **Chen hyperboreus.** SNOW GOOSE.—Fleming informs me that he has examined the head of one of Horsbrough specimens, probably one of those he cites, and declares it to be the Lesser, *C. h. hyperboreus*.

(35). **Ardea herodias.** GREAT BLUE HERON.—Anderson on an island in Miquelon Lake, September, 1918 found nests of this species together with those of Cormorants on the ground. The specific identity was supplied by Mr. Farley and other good report.

(36). **Grus mexicana.** SANDHILL CRANE.—Farley reports finding a crane nest on Spotted Lake near Buffalo Lake in May 1895. Dr. George of Red Deer also informs me that he took crane eggs on a small pond near Innisfail May 24, 1896. Undoubtedly these were *G. mexicana*.

188. **Grus americana.** WHOOPING CRANE.—Dr. George of Red Deer informs me that he has not seen Whooping Cranes near Red Deer for some years, inferring their former presence but stating that he never found them breeding.

189. **Coturnicops noveboracensis.** YELLOW RAIL.—Mr. Farley says,—“I know of a swamp at Red Deer where a pair nested several years. Their note is just like two stones knocked together quickly. There is also a pair in a swamp just off our farm (Camrose) where I can depend upon hearing them every June.”

(42). **Macrorhamphus griseus.** DOWITCHER.—In the previously published part of the list, *antea*, p. 12, under this species heading I made an unfortunate slip of the pen when I said that Horsbrough ascribes this “probably incorrectly to the western race, *M. g. scolopaceus*.” It should have read “the eastern race, *M. g. griseus*, which makes my implied criticism more intelligible. Fleming sends me measurements of a Buffalo Lake bird, August 1915, which he refers to *griseus* though he says the color characters tend towards *scolopaceus*. I infer from his remarks that this is an adult and not a juvenile bird.

190.* **Pisobia bairdi.** BAIRD'S SANDPIPER.—We have a specimen taken by Anderson, Many Island Lake, September 18, 1918.

191. **Pelidna alpina.** RED-BACKED SANDPIPER.—Mr. Farley reports “Black-heart Plover” May 11, 1899 at Red Deer. This is an old South Ontario name for this species.

(47). **Bartramia longicauda.** UPLAND PLOVER.—Farley notes that this species is rapidly disappearing from this section, a condition he called attention to in the *Ottawa Naturalist* XXVII, 1913, p. 63. He now lays the blame upon the boys who find it a too easy object of sport through the summer.

(50). **Numenius longicauda.** LONG-BILLED CURLEW.—Farley substantiates the hypothetical identity of this species reported by Horsbrough and Sternberg, recording it from both Red Deer and Camrose.

(51). **Squatarola squatarola.** BLACK-BELLIED PLOVER.—**Charadrius dominicus.** GOLDEN PLOVER.—J. H. Fleming writes me that he has the specimens that Horsbrough records as Golden Plover and that they prove to be Black-bellies. Thus the Golden should be replaced by the Black-bellied in the authenticated list.

192. **Buteo platypterus.** BROAD-WINGED HAWK.—Fleming informs me he has a specimen, Little Hay Lake, (near Camrose) September 2, 1918.

Falco rusticolus. GYRFALCON.—J. H. Fleming tells me he has the specimen reported under this head by Horsbrough which he regards as *rusticolus*.

193. **Aquila chrysaëtos.** GOLDEN EAGLE.—Farley reports,—“seen nearly every November at Red Deer.

(78). **Bubo virginianus.** GREAT HORNED OWL.—Soncina, 5th line second paragraph should be “Louisiana.”

194. **Nyctea nyctea.** SNOWY OWL.—Farley remarks in letter of November 18, 1918, from Camrose,—“A friend saw a Snowy Owl yesterday,” thus giving evidence for the inclusion of this species of undoubted occurrence.

FOURTH ANNUAL LIST OF PROPOSED CHANGES IN
THE A. O. U. CHECK LIST OF NORTH AMERICAN
BIRDS.

BY HARRY C. OBERHOLSER.

THIS is the Fourth Annual List of proposed A. O. U. Check-List additions and changes in the names of North American birds. Like the First, Second, and Third,¹ the present list comprises only ornithological cases — *i. e.*, such as require specimens or the identification of descriptions for their determination — and consists of additions, eliminations, rejections, and changes of names due to various causes. However, only changes known to be the result of revisionary work are included; therefore no mention is here made of changes involved in names in local lists or elsewhere, used without sufficient explanation or not known to be based on original research, of changes or additions queried or but tentatively made, or of the elimination of subspecies by authors who, on general principles, recognize no subspecies.

This list is intended to include everything pertinent up to December 31, 1918, and nothing after that date has been taken. In view of the volume and widely scattered character of current ornithological literature, it is not at all unlikely that some names or changes have been overlooked, and the writer would be very thankful for reference to any omissions, in order that such may be duly given a place in next year's list.

ADDITIONS² AND CHANGES IN NAMES.

Gavia arctica (Linnaeus) becomes, so far as North American specimens are concerned, **Gavia viridigularis** Dwight, 'The Auk,' XXXV, No. 2, April, 1918, p. 198 (Giehega, northeastern Siberia). (Cf. Dwight, 'The Auk,' XXXV, No. 2, April, 1918, pp. 196-199.)

Gavia pacifica (Lawrence) becomes **Gavia arctica pacifica** (Lawrence). (Cf. Dwight, 'The Auk,' XXXV, No. 2, April, 1918, pp. 198-199.)

¹ For the three previous lists see, 'The Auk,' XXXIII, October, 1916, pp. 425-431; XXXIV, April, 1917, pp. 198-205; XXXV, April, 1918, pp. 200-217.

² Additions to the A. O. U. Check-List, the Sixteenth Supplement, and the First, Second, and Third Annual Lists, are marked with a dagger (†).

†**Larus hyperboreus barrovianus** Ridgway. *Larus barrovianus* Ridgway, 'The Auk,' III, No. 3, July, 1886, p. 330 (Point Barrow, Alaska). Reinstated as a subspecies. (Cf. Oberholser, 'The Auk,' XXXV, No. 4, Oct., 1918, p. 472.) Range: northwestern North America, south in winter to California.

Thalassogeron Ridgway becomes **Thalassarche** Reichenbach (Naturf. Syst. Vögel, 1852, p. V), because not considered generically separable. (Cf. Loomis, Proc. Calif. Acad. Sci., ser. 4, II, pt. II, No. 12, April 22, 1918, p. 44.)

Thalassogeron chrysostomus culminatus (Gould) becomes **Thalassarche culminata culminata** (Gould), because *Diomedea chrysostoma* Forster is considered not with certainty identifiable. (Cf. Loomis, Proc. Calif. Acad. Sci., ser. 4, II, pt. II, No. 12, April 22, 1918, p. 85.)

Fulmarus rodgersi Cassin becomes **Fulmarus glacialis rodgersii** Cassin, because not specifically distinct from *Fulmarus glacialis*. (Cf. Loomis, Proc. Calif. Acad. Sci., ser. 4, II, pt. II, No. 12, April 22, 1918, pp. 88-90.)

Thyelodroma cuneata (Salvin) becomes **Thyelodroma chlororhyncha** (Lesson) (*Puffinus chlororhynchus* Lesson, Traité d'Ornith., 1831, p. 613, no locality), because it is only a light color phase of the latter. (Cf. Loomis, Proc. Calif. Acad. Sci., ser. 4, II, pt. II, No. 12, April 22, 1918, pp. 141-145.)

†**Priofinus** Hombroen and Jacquinet. Recognized as a genus. (Cf. Loomis, Proc. Calif. Acad. Sci., ser. 4, II, pt. II, No. 12, April 22, 1918, pp. 59, 108.) The only species therefore should be called

Priofinus cinereus (Gmelin).

†**Pterodroma gularis** (Peale). *Procellaria gularis* Peale, U. S. Explor. Exped., VIII, 1848, p. 299 (Atlantic Ocean, lat. 68° S., long. 95° W.). Recorded from Alaska. (Cf. Bent, 'The Auk,' XXXV, No. 2, April, 1918, p. 221.)

Æstrelata gularis Peale becomes **Pterodroma inexpectata** (Forster) (*Procellaria inexpectata* Forster, Descript. Anim., 1844, p. 204, Antarctic Ocean), because the latter is identical and of earlier date. (Cf. Loomis, Proc. Calif. Acad. Sci., ser. 4, II, pt. II, No. 12, April 22, 1918, pp. 104-105.)

Pelecanus californicus Ridgway becomes **Pelecanus occidentalis californicus** Ridgway. (Cf. Oberholser, 'The Auk,' XXXV, No. 1, Jan., 1918, p. 62.)

Aristonetta Baird, Rep. Expl. & Surv. R. R. Pac., IX, 1858, p. 793 (type, *Anas valisineria* Wilson). Raised to generic rank. (Cf. Oberholser, Proc. Biol. Soc. Wash., XXXI, June 29, 1918, p. 98.) The only species therefore becomes

Aristonetta valisineria (Wilson).

† See previous footnote on page 266.

- Creciscus coturniculus** (Ridgway) becomes **Creciscus jamaicensis coturniculus** (Ridgway). (Cf. Oberholser, 'The Auk,' XXXV, No. 1, Jan., 1918, p. 63.)
- †**Numenius americanus occidentalis** Woodhouse. *Numineus occidentalis* Woodhouse, Proc. Acad. Nat. Sci. Phila., 1852, p. 194 (near Albuquerque, New Mexico). Revived as a subspecies. (Cf. Oberholser, 'The Auk,' XXXV, No. 2, April, 1918, p. 191.) Range: southwestern Canada and the northwestern United States, south in winter to Mexico and Jamaica.
- Ectopistes migratorius** (Linnæus) becomes **Ectopistes canadensis** (Linnæus) (*Columba canadensis* Linnæus, Syst. Nat., ed. 12, I, 1766, p. 284, Canada), because the latter has been identified as the same species, and has anteriority. (Cf. Oberholser, Science, N. S., XLVIII, No. 1244, Nov. 1, 1918, p. 445.)
- Polyborus cheriway** (Jacquin) becomes **Polyborus cheriway auduboni** Cassin (*Polyborus auduboni* Cassin, Proc. Acad. Nat. Sci. Phila., 1865, p. 2; Florida), because the North American bird is subspecifically distinct. (Cf. Bangs and Noble, 'The Auk,' XXXV, No. 4, Oct., 1918, p. 443.)
- Streptoceryle** Bonaparte becomes **Megaceryle** Kaup, because not regarded as generically distinct. (*Megaceryle* Kaup, Verh. Naturhist. Vereins Hessen, II, 1848, p. 68; type, *Alcedo guttatus* Vigors = *Alcedo lugubris* Temminck). (Cf. Miller, 'The Auk,' XXXV, No. 3, July, 1918, p. 352.)
- †**Cyanolæmus clemenciæ bessophilus** Oberholser. New subspecies. Oberholser, Condor, XX, No. 5, Sept. 27, 1918, p. 181 (Fly Park, Chiricahua Mts., Arizona). Range: southwestern border of United States to northern Mexico; in winter to southeastern Mexico.
- Empidonax traillii traillii** (Audubon) becomes **Empidonax traillii brewsteri** Oberholser, Ohio Journ. Sci., XVIII, No. 3, January, 1918, (published, Feb. 8, 1918), p. 93 (Cloverdale, Nye Co., Nevada). (Cf. Oberholser, Ohio Journ. Sci., XVIII, No. 3, Jan., 1918, pp. 93-98.)
- Empidonax traillii alnorum** Brewster becomes **Empidonax traillii traillii** (Audubon). (Cf. Oberholser, Ohio Journ. Sci., XVIII, No. 3, January, 1918 [published, Feb. 8, 1918], pp. 85-92.)
- †**Otocoris alpestris enertera** Oberholser, Proc. Biol. Soc. Wash., XX, March 27, 1907, p. 41 (Llano de Yrais, Lower California, Mexico). Revived as a subspecies. (Cf. Oberholser, Bird-Lore, XX, No. 5, pp. 346-347.) Range: central and southern Lower California.
- †**Otocoris alpestris ammophila** Oberholser, Proc. U. S. Nat. Mus., XXIV, June 9, 1902, pp. 806, 849 (Coso Valley, southeastern California). Revived as a subspecies. (Cf. Oberholser, Bird-Lore, XX, No. 5, Oct. 1, 1918, pp. 346-347.) Range: Mojave Desert to Owens Valley, southern California.
- †**Otocoris alpestris leucansiptila** Oberholser, Proc. U. S. Nat. Mus., XXIV, June 9, 1902, pp. 806, 864 (Yuma, Arizona). Revived as a

- subspecies. (Cf. Oberholser, *Bird-Lore*, XX, No. 5, Oct. 1, 1918, pp. 346-347.) Range: western edge of Arizona, southeastern border of California, southern Nevada, and northeastern Lower California.
- †**Otocoris alpestris aphrasta** Oberholser, *Proc. U. S. Nat. Mus.*, XXIV, June 9, 1902, pp. 806, 860 (Casas Grandes, Chihuahua, Mexico). Revived as a subspecies. (Cf. Oberholser, *Bird-Lore*, XX, No. 5, Oct. 1, 1918, pp. 346-347.) Range: central northern Mexico, north to southeastern Arizona and southwestern New Mexico.
- †**Otocoris alpestris enthyemia** Oberholser, *Proc. U. S. Nat. Mus.*, XXIV, June 9, 1902, pp. 807, 817 (St. Louis, Saskatchewan, Canada). Revived as a subspecies. (Cf. Oberholser, *Bird-Lore*, XX, No. 5, Oct. 1, 1918, pp. 345-346.) Range: Great Plains region from northwestern Texas to Saskatchewan.
- †**Aphelocoma californica oöcleptica** Swarth. New subspecies. Swarth, *Univ. Calif. Publ. Zool.*, XVII, No. 13, Feb. 23, 1918, p. 413 (Nicasio, Calif.). Range: coast region of northern California.
- †**Sieberocitta** Coues, *Key to North Amer. Birds*, 5th ed., I, 1903, pp. 497, 499 (type, *Cyanocitta ultramarina* var. *arizonæ* Ridgway). Recognized as a subgenus. (Cf. Swarth, *Univ. Calif. Pub. Zool.*, XVII, No. 13, Feb. 23, 1918, pp. 406-407.) Includes the following North American forms:
- Aphelocoma sieberi arizonæ** (Ridgway).
Aphelocoma sieberi couchii (Baird).
- †**Corvus corax euophilus** Oberholser. New subspecies. Oberholser, *Ohio Journ. Sci.*, XVIII, No. 6, April, 1918 (published, May 6, 1918), p. 215 (Ardell, Alabama). Range: eastern United States and southeastern Canada.
- †**Agelaius phoeniceus arctolegus** Oberholser, 'The Auk,' XXIV, No. 3, July, 1907, p. 332 (Fort Simpson, Mackenzie, Canada). Reinstated as a subspecies. (Cf. Oberholser, 'The Auk,' XXXV, No. 1, Jan., 1918, p. 64.) Range: middle Canada and central northern United States, wintering in the southeastern United States.
- †**Icterus icterus** (Linnæus). *Oriolus icterus* Linnæus, *Syst. Nat.*, ed. 12, I, 1766, p. 161 (warmer parts of America). Recorded from a specimen taken at Santa Barbara, Calif. (Cf. Bowles, 'The Auk,' XXVIII, No. 3, July, 1911, pp. 368-369.)
- Quiscalus quiscula quiscula** (Linnæus) becomes **Quiscalus quiscula versicolor** Vieillot (*Quiscalus versicolor* Vieillot, *Nouv. Dict. d'Hist. Nat.*, XXVIII, 1819, p. 488, North America), because *Quiscalus quiscula quiscula* is applicable only to *Quiscalus quiscula aglæus* Baird. (Cf. Wayne, 'The Auk,' XXXV, No. 4, Oct., 1918, p. 440.)
- Quiscalus quiscula aglæus** Baird becomes **Quiscalus quiscula quiscula** (Linnæus) because the latter is based on the same bird. (Cf. Wayne, 'The Auk,' XXXV, No. 4, Oct., 1918, p. 440.)
- †**Passerculus sandwichensis bradburyi** Figgins. New subspecies.

Figgins, Proc. Colorado Mus. Nat. Hist., April, 1918, p. 2 (James Island, South Carolina).

†**Nemospiza henslowii susurrans** (Brewster). New subspecies. *Pas-scherbulus henslowi susurrans* Brewster, Proc. New Engl. Zoöl. Club, VI, Feb. 6, 1918, p. 78 (Falls Church, Va.). Range: United States east of the Allegheny Mountains.

Junco oreganus shufeldti Coale becomes **Junco oreganus couesi** Dwight (*Junco oreganus couesi* Dwight, Bull. Amer. Mus. Nat. Hist., XXXVIII, June 1, 1918, p. 291; Okanagan, British Columbia), because *Junco oreganus shufeldti* Coale is regarded as a synonym of *Junco oreganus oreganus* (Townsend). (Cf. Dwight, Bull. Amer. Mus. Nat. Hist., XXXVIII, June 1, 1918, pp. 289-295.)

Junco oreganus mearnsi Ridgway becomes **Junco mearnsi mearnsi** Ridgway, because a distinct species. (Cf. Dwight, Bull. Amer. Mus. Nat. Hist., XXXVIII, June 1, 1918, pp. 296-298.)

Junco oreganus townsendi Anthony becomes **Junco mearnsi townsendi** Anthony, because regarded a subspecies of *Junco mearnsi* instead of *Junco oreganus*. (Cf. Dwight, Bull. Amer. Mus. Nat. Hist., XXXVIII, June 1, 1918, pp. 296-297.)

Junco insularis Ridgway becomes **Junco mearnsi insularis** Ridgway, because regarded as a subspecies. (Cf. Dwight, Bull. Amer. Mus. Nat. Hist., XXXVIII, June 1, 1918, pp. 296-297.)

†**Passerella iliaca canescens** Swarth. New subspecies. Swarth, Proc. Biol. Soc. Wash., XXXI, Dec. 30, 1918, p. 163 (Wyman Creek, White Mts., Inyo Co., Calif.). Range: White Mountains, California, south in winter to southern California.

†**Passerella iliaca fulva** Swarth. New subspecies. Swarth, Proc. Biol. Soc. Wash., XXXI, Dec. 30, 1918, p. 162 (Warner Mts., Calif.). Range: Warner Mountains, California.

†**Passerella iliaca mariposæ** Swarth. New subspecies. Swarth, Proc. Biol. Soc. Wash., XXXI, Dec. 30, 1918, p. 161 (near Chinquapin, Yosemite Park, Calif.). Range: central and northern Sierra Nevada, California; south in winter to southwestern California.

†**Passerella iliaca brevicauda** Mailliard. New subspecies. Mailliard, Condor, XX, No. 4, July 22, 1918, p. 139 (one-half mile south of South Yolla Bolly Mountain, Trinity Co., Calif.). Range: Yolla Bolly Mountains, California; south in winter to southern California.

†**Lanius ludovicianus nelsoni** Oberholser. New subspecies. Oberholser, Condor, XX, No. 6, December 12, 1918, p. 209 (Todos Santos, Lower Calif., Mexico). Range: southern two-thirds of Lower California, including adjacent islands.

†**Dendroica æstiva amnicola** Batchelder. New subspecies. Batchelder, Proc. New Engl. Zoöl. Club, VI, Feb. 6, 1918, p. 82 (Curslet, Newfoundland). Range: Newfoundland.

†**Dendroica virens waynei** Bangs. New subspecies. Bangs, Proc.

- New Engl. Zoöl. Club, VI, Oct. 31, 1918, p. 94 (near Mount Pleasant, South Carolina). Range: eastern South Carolina.
- †**Seiurus auropellus furvior** Batchelder. New subspecies. Batchelder, Proc. New Engl. Zoöl. Club, VI, Feb. 6, 1918, p. 81 (Deer Pond, Newfoundland). Range: Newfoundland.
- †**Toxostoma redivivum helvum** Thayer and Bangs. *Toxostoma rediviva helva* Thayer and Bangs, Proc. New Engl. Zoöl. Club, IV, April 30, 1907, p. 17 (Rosario, Lower Calif.). Revived as a subspecies. (Cf. Oberholser, 'The Auk,' XXXV, No. 1, Jan., 1918, p. 60.) Range: northwestern Lower California.
- †**Sitta carolinensis tenuissima** Grinnell. New subspecies. Grinnell, Condor, XX, No. 2, March 20, 1918, p. 88 (Hanaupah Canyon, Panamint Mts., Inyo Co., Calif.). Range: Panamint Mountains and White Mountains, California.
- †**Penthestes gambeli abbreviatus** Grinnell. New subspecies. Grinnell, Univ. Calif. Publ. Zool., XVII, No. 17, May 4, 1918, p. 510 (Horse Creek, Siskiyou Mts., Calif.). Range: central California to southern Oregon and northwestern Nevada.
- †**Penthestes gambeli inyoensis** Grinnell. New subspecies. Grinnell, Univ. Calif. Publ. Zool., XVII, No. 17, May 4, 1918, p. 509 (three miles east of Jackass Spring, Panamint Mts., Inyo Co., Calif.) Range: mountains of southeastern California, from Mono County to Inyo County.
- †**Hylocichla guttata polionota** Grinnell. New subspecies. Grinnell, Condor, XX, No. 2, March 20, 1918, p. 89 (Wyman Creek, White Mts., Inyo Co., Calif.). Range: White Mountains, California.

REJECTIONS AND ELIMINATIONS.¹

- Gavia arctica** (Linnaeus) vs. **Gavia arctica suschkini** Sarudny (cf. Hersey, 'The Auk,' XXXIV, No. 3, July, 1917, pp. 289-290). Change of name rejected. (Cf. Dwight, 'The Auk,' XXXV, No. 2, April, 1918, pp. 196-199.)
- ***Fulmarus glacialis glupischa** Stejneger = **Fulmarus glacialis rogersii** Cassin, because the latter is merely a color phase of the species. (Cf. Loomis, Proc. Calif. Acad. Sci., ser. 4, II, pt. II, No. 12, April 22, 1918, pp. 87-90.)
- ***Æstrelata scalaris** Brewster = **Pterodroma inexpectata** (Forster). (Cf. Loomis, Proc. Calif. Acad. Sci., ser. 4, II, pt. II, No. 12, April 22, 1918, p. 106.)
- ***Æstrelata fisheri** Ridgway = **Pterodroma inexpectata** (Forster).

¹ Eliminations of forms already in the A. O. U. Check-List, the Sixteenth Supplement, the First, Second or Third Annual Lists, are designated by an asterisk (*).

* See above footnote.

(Cf. Loomis, Proc. Calif. Acad. Sci., ser. 4, II, pt. II, No. 12, April 22, 1918, p. 106.)

- ***Buteo platypterus iowensis** Bailey = *Buteo platypterus platypterus* (Vieillot). (Cf. Oberholser, 'The Auk,' XXXV, No. 4, Oct., 1918, p. 478.)
- Thrasaetos harpyia** (Linnæus). The recent Colorado record (cf. Lowe, 'The Auk,' XXXIV, No. 4, Oct., 1917, p. 454) proves to be a mis-identification of *Haliæetus leucocephalus*. (Cf. Lincoln, 'The Auk,' XXXV, No. 1, Jan., 1918, pp. 78-79.)
- Tyto alba pratincola** (Bonaparte) vs. **Tyto perlata pratincola** (Bonaparte). Proposed change (cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. VI, 1914, pp. 601, 605) rejected. (Cf. Oberholser, 'The Auk,' XXXV, No. 4, Oct., 1918, p. 464.)
- Streptoceryle alcyon caurina** (Grinnell) vs. **Streptoceryle alcyon** (Linnæus). Proposed elimination (cf. Taverner, Summary Rep. Geol. Surv. Dept. Mines Canada for 1916 [1917], p. 361) rejected. (Cf. Oberholser, 'The Auk,' XXXV, No. 4, Oct., 1918, p. 463.)
- Aphelocoma californica woodhouseii** (Baird) vs. **Aphelocoma woodhouseii** (Baird). Proposed change to full species (cf. Swarth, Univ. Calif. Pub. Zool., XVII, No. 13, Feb. 23, 1918, pp. 406-408, 416-418) rejected. Cf. Oberholser, Science, N. S., XLVIII, No. 1233, Aug. 16, 1918, pp. 165-167.)
- Aphelocoma californica hypoleuca** Ridgway vs. **Aphelocoma hypoleuca** Ridgway (cf. Swarth, Univ. Calif. Publ. Zool., XVII, No. 13, Feb. 23, 1918, pp. 420-421). Change rejected. (Cf. Oberholser, 'The Auk,' XXXV, No. 4, Oct., 1918, p. 481.)
- Aphelocoma californica obscura** Anthony vs. **Aphelocoma californica californica** (Vigors). (Cf. Swarth, Univ. Calif. Publ. Zool., XVII, No. 13, Feb. 23, 1918, p. 412.) Proposed elimination rejected. (Cf. Oberholser, 'The Auk,' XXXV, No. 4, Oct., 1918, p. 481.)
- Acanthis hornemanni exilipes** (Coues) vs. **Acanthis linaria exilipes** (Coues). Proposed change (cf. Brooks, 'The Auk,' XXXIV, No. 1, Jan., 1917, p. 44) rejected. (Cf. Oberholser, 'The Auk,' XXXV, No. 4, Oct., 1918, pp. 466-467.)
- Spizella monticola** (Gmelin) vs. **Spizella canadensis** (Boddaert). Proposed change of name (cf. Mathews and Iredale, Austral Avian Record, III, No. 2, Nov. 19, 1915, p. 41) rejected because *Spizella canadensis* (Boddaert) (*Fringilla canadensis* Boddaert, Tabl. Planch. Enlum., 783, p. 13) is a synonym of *Zonotrichia leucophrys*. (Cf. Oberholser, Proc. Biol. Soc. Wash., XXXI, June 29, 1918, p. 98.)
- ***Junco oreganus montanus** Ridgway. Regarded as a hybrid between *Junco oreganus* and *Junco mearnsi*. (Cf. Dwight, Bull. Amer. Mus. Nat. Hist., XXXVIII, June 1, 1918, p. 295; 297-298.)
- ***Junco oreganus annectens** Baird. Regarded as a hybrid between *Junco mearnsi* and *Junco caniceps*. (Cf. Dwight, Bull. Amer. Mus. Nat. Hist., XXXVIII, June 1, 1918, p. 298.)

- ***Junco phæonotus dorsalis** Henry. Regarded as a hybrid between *Junco caniceps* and *Junco phæonotus*. (Cf. Dwight, Bull. Amer. Mus. Nat. Hist., XXXVIII, June 1, 1918, pp. 299-300.)
- Dendroica coronata hooveri** McGregor vs. **Dendroica coronata coronata** (Linnæus). Proposed elimination as a subspecies (cf. Riley, Canadian Alpine Journal, Special Number, 1912 [February 17, 1913] pp. 70-71) rejected. (Cf. Oberholser, 'The Auk,' XXXV, No. 4, Oct., 1918, pp. 465-466.)
- Certhia familiaris americana** Bonaparte vs. **Certhia brachydactyla americana** Bonaparte. Change of status (cf. Hellmayr, Genera Avium, XV, 1911, p. 8) rejected. (Cf. Oberholser, 'The Auk,' XXXV, No. 4, Oct., 1918, pp. 464-465.)
- Penthestes carolinensis** (Audubon) vs. **Penthestes atricapillus carolinensis** (Audubon). Proposed change (cf. Hellmayr, Genera Avium, XVIII, 1911, p. 34) rejected. (Cf. Oberholser, 'The Auk,' XXXV, No. 4, Oct., 1918, p. 465.)

NEW FORMS OF SOUTH AMERICAN BIRDS AND PROPOSED NEW SUBGENERA.¹

BY CHARLES B. CORY.

Xenicopsoides subgenus nov.

Characters.—Similar to *Xenicopsis* Cabanis, but with much less graduated and relatively shorter tail (tail less than $\frac{2}{3}$ of wing), relatively shorter tarsus and plain under parts. (Type *Anabazenops variegaticeps* Sclater).

This new subgenus includes the following: *Anabazenops variegaticeps* Sclater; *Anabates temporalis* Sclater; *Philydor montanus* Tschudi; *Anabates striaticollis* Sclater; *Xenicopsis anxius* Bangs and *Philydor venezuelensis* Hellmayr.

Euphilydor subgenus nov.

Characters.—Similar to *Philydor* Spix, but shape of bill different, the terminal half of under mandible (gonys) being decidedly elevated (nearly as in *Xenicopsis*) and the end of the culmen more curved. (Type *Philydor lichtensteini* Cabanis and Heine).

¹The writer does not sympathize with the increasing tendency to elevate subgenera (which are often based largely on color characters) to genera, unless diagnostic structural characters are also indicated. A well-marked and useful subgenus may represent a questionable genus.

This group comprises the following forms: *Philydor lichtensteini* Cabanis and Heine; *Anabates amaurotis* Temminck and *Anabates dimidiatus* Pelzeln.

***Synallaxis frontalis juæ* subsp. nov.**

Type from Jua, near Iguatu, Ceara, Brazil. Adult male, No. 45618, Field Museum of Natural History. Collected by R. H. Becker, September 2, 1913.

Characters.— Similar to *S. f. frontalis* Pelzeln, but differs chiefly in the brighter and more cinnamon rufous coloration of the crown, wings and tail. The primaries have the outer webs bright cinnamon rufous nearly to the tips, quite different than in *S. f. frontalis*.

Measurements.— Wing, 55; tail, 80 m.

***Synallaxis gujanensis huallagæ* subsp. nov.**

Type from Lagunas, Lower Huallaga River, Peru. Adult male, No. 50561, Field Museum of Natural History. Collected by M. P. Anderson, October 12, 1912.

Characters.— Similar to *S. gujanensis inornata* Pelzeln from the Rio Madeira region, Brazil, but differs in having the upper parts and most of under parts (chest and sides) darker (less buffy brown and more grayish brown), and sides of head and sides of throat brownish gray (not pale buffy as in allied forms); coloration of wings and tail darker and more chestnut brown, wing averaging longer.

Measurements.— Wing, 65; tail, 70; culmen, 14 mm.

***Synallaxis peruviana* sp. nov.**

Type from Moyobamba, northern Peru. Female, No. 50564, Field Museum of Natural History. Collected by W. H. Osgood and M. P. Anderson, July 15, 1912.

Characters.— Back and rump grayish olive brown, the feathers of the nape and upper back with narrow whitish shafts; crown feathers with tawny shaft streaks (giving a streaked appearance to the crown) most pronounced on the forehead; under parts tawny buff shading into olive buff on the belly and flanks; breast feathers with blackish streaks and dots; sides of the head streaked with tawny buff and blackish; remiges with outer webs and greater portion of inner webs rufous; terminal third of the inner webs blackish; tail chestnut rufous; under wing coverts bright ochraceous tawny.

Measurements.— Wing, 64; tail, 55; culmen, 13 mm.

Remarks.— This new form is apparently not very closely allied to any known species. It somewhat resembles *S. stictothorax* from Ecuador and extreme northwestern Peru in size and in having the sides of the neck, and breast, streaked with blackish, but it is otherwise very different.

***Synallaxis semicinerea pallidiceps* subsp. nov.**

Type from Serra Baturite, Ceara, N. E. Brazil. Adult male, No. 45327, Field Museum of Natural History. Collected by R. H. Becker, July 16, 1913.

Characters.— Similar to *S. s. semicinerea* (Reichenbach) from Bahia, but differs in having the general plumage decidedly paler; crown between drab gray and light drab becoming olive drab on the nape; back cinnamon rufous; wings and tail cinnamon rufous, but somewhat more distinctly rufous and slightly less cinnamon than the back; under parts like *S. s. semicinerea*, but more tinged with isabella color; flanks and under tail coverts more tinged with olive buff.

Measurements.— Wing, 67; tail, 77; culmen, 14 mm.

***Synallaxis scutata neglecta* subsp. nov.**

Type from Jua, near Iguatu, Ceara, Brazil. Adult female, No. 50562, Field Museum of Natural History. Collected by R. H. Becker, August 28, 1913.

Characters.— Similar to *S. s. scutata* Selater from Bahia, Goyaz and Matto Grosso (Chapada), but differs in having the rufous coloration very much paler (cinnamon rufous, not chestnut rufous as in *scutata scutata*); crown brownish gray, superciliary stripe behind whitish (not tawny buff); sides of throat, bordering the black patch, buffy white (not rufous buff); under parts much more whitish; wings and tail near cinnamon rufous.

Measurements.— Wing, 54; tail, 68; bill, 13 mm.

***Pseudocolaptes boissoneautii oberholseri* subsp. nov.**

Type from Quito, Ecuador. Adult male, No. 30945, United States National Museum, Washington, D. C. Collected by C. R. Buckalew.

Characters.— Similar to *P. b. boissoneautii* (Lafresnaye) from Bogota, but differs in having the throat and ear tufts quite white and the "scale" marking on the breast larger and more pronounced; belly and flanks more olive rusty; tail darker and more brownish chestnut rufous.

Measurements.— Wing, 107; tail, 99; bill, 20 mm.

Remarks.— An immature specimen from Nanegal, Ecuador, in the collection of the Museum of Comparative Zoölogy has the

whole top of the head blackish and the belly and flanks bright rusty rufous. A specimen labelled Guayaquil (locality probably not correct) in the U. S. National Museum, agrees fairly well with the type, but has the sides of the belly and flanks more olive rufous. I have dedicated this new form to Dr. Harry C. Oberholser.

GENERAL NOTES.

Procellariidæ versus Hydrobatidæ.—The discovery that the generic name *Procellaria* Linnaeus belongs to the group commonly called *Majaqucus* Reichenbach (cf. Mathews, Novit. Zool., XVII, December, 1910, p. 497) makes necessary a change in the family name *Procellariidæ*. On account of the adoption of *Thalassidroma* Vigors for *Procellaria* auct. nec Linnaeus, the family name *Thalassidromidæ* has been used (Committee of Brit. Ornith. Union, List Brit. Birds, ed. 2, 1915, p. 281). Since, however, the generic name *Thalassidroma* has been properly retired in favor of *Hydrobatcs* Boie, the family name *Thalassidromidæ* must accordingly be altered to *Hydrobatidæ*, as has already been done by Mr. Mathews in his 'Birds of Australia,' (Vol. 2, No. 1, May 30, 1912, p. 9).—HARRY C. OBERHOLSER, *Washington, D. C.*

Long-tailed Jaeger in Indiana.—A beautiful specimen of the Long-tailed Jaeger (*Stercorarius longicaudus*), taken at Millers, Ind., November 30, 1918, was seen by me in a Chicago taxidermist's shop. Knowing of only three previous records of the bird's appearance in the Chicago area, I purchased the bird and it is now in my collection. The first record was made by Mr. Stoddard of the Field Museum and the other two by Mr. Woodruff of the Chicago Academy of Sciences (Auk, Vol. 35, p. 234). Mr. Cory of the Field Museum kindly verified its identity and as this forms the fourth instance of the bird's occurrence within our boundaries it should be of interest. It is in the immature plumage with the tail-feathers only partially developed.—NATHAN F. LEOPOLD JR., *Chicago, Ill.*

***Larus canus brachyrhynchus* in Wyoming.**—A Wyoming specimen of *Larus canus brachyrhynchus*, a male in juvenal plumage, has for many years been in the collection of the Biological Survey, in the United States National Museum. It is No. 141395, U. S. Nat. Mus., and was taken on Lake Fork, a tributary of the Green River, at an altitude of 10,000 feet in the Wind River Mountains, Wyoming, on August 28, 1893, by Mr.

Vernon Bailey. It has already been recorded incidentally (Cooke, Bull. U. S. Dept. Agric., No. 292, October 25, 1915, p. 47), but owing to its importance it seems worthy of special notice in a place more accessible to ornithologists generally. It represents the easternmost record of *Larus canus brachyrhynchus*, and the only really interior occurrence of the species in the United States. For the change of the name of this bird from *Larus brachyrhynchus* to *Larus canus brachyrhynchus* see 'The Auk,' XXXVI, No. 1, January, 1919, p. 83.—HARRY C. OBERHOLSER, *Washington, D. C.*

***Polysticta Eyton* versus *Stelleria Bonaparte*.**—Mr. G. M. Mathews has recently (Austral Avian Record, III, No. 5, December 28, 1917, p. 123) advocated the use of the generic name *Stelleria* Bonaparte for the species now known as *Polysticta stelleri* (Pallas). The term *Stelleria* is, of course, as he shows, not debarred from employment in zoölogy by the previous use of *Stelleria* in botany; but he has apparently overlooked the fact that *Polysticta* is not preoccupied, since *Polysticta* Smith (Illust. South Afr. Zool.), June [or later], 1836, does not invalidate *Polysticta* Eyton (Catal. Brit. Birds), April, 1836, a fact to which Dr. C. W. Richmond long ago (Proc. Biol. Soc. Wash. XVI, September 30, 1903, p. 128) called attention. It is evident, therefore, that the name of Steller's Eider should remain *Polysticta stelleri* (Pallas).—HARRY C. OBERHOLSER, *Washington, D. C.*

Further Record of the European Widgeon at Madison, Wis.—On April 14, 1918, in the wide-water at the head of Lake Waubesa, four miles south of Madison, I was able to identify unmistakably a typical specimen of the European Widgeon (*Mareca penelope*) that was in the company of seventeen Baldpates (*Mareca americana*). The bird was drawn so close by my 40-power telescope that it covered one-third of the field and allowed close study.

It may be of further interest to restate the substance of a note submitted by Mr. A. W. Schorger to the January, 1918 issue of 'The Auk' in regard to the recent appearance of the European Widgeon in the vicinity of Madison. On April 22, 1917, a specimen was discovered by Mr. Schorger on the Hammersley Marsh in company with about thirty Baldpates and a few other ducks. It remained at least four days and was seen by me at close range on three occasions, the last being on the 26th. On the 28th Mr. George H. Jenkins observed a specimen, perhaps the same, among a flock of Baldpates on the Yahara Marshes ten miles distant.—WARNER TAYLOR, *Madison, Wisconsin*.

A Late Record for *Rallus elegans* for Maine.—November 22, 1909, Mr. A. G. Dorr, Bucksport, Me., collected and sent me in the flesh a fine male specimen of the King Rail. It measured as follows: length, 16.30; wing, 6.75; tail, 2.10; tarsus, 2.34 and bill, 2.40 inches. It was marked above with brownish-black and olive-brown feather edging; light throat and rufous-cinnamon, breast and flanks fuscous, distinctly barred with

white. It was in good physical condition and apparently well able to join the majority of its species in the South had it so chosen.

Mr. Dorr considered this a rare bird for Maine, especially so in the fall. There are a number of fall and winter records for Massachusetts and Maine, but I consider the occurrence sufficiently unusual to be worth recording.—C. L. PHILLIPS, *Taunton, Mass.*

The Proper Generic Name of the Ruff.—The generic name now used for the European Ruff is *Machetes* Cuvier (Regne Animal, I, 1817, p. 490; type by monotypy, *Tringa pugnax* Linnæus). This name has been preferred over *Pavoncella* Leach (Syst. Cat. Indig. Mamm. and Birds Brit. Mus., 1816, p. 29), because the latter was supposed to be a nomen nudum. It was introduced by Leach, however, in combination with the specific term *pugnax*, which is, of course, readily identifiable and of undoubted application to the Ruff. The name is on exactly the same basis as *Spatula* Boie (Isis, X, 1822, col. 564) and several other names proposed by him and by other authors at various times. All these names have hitherto been accepted without question as entirely warranted by both the International and A. O. U. Codes of Nomenclature; and there is no more reason for rejecting *Pavoncella* than any of the other names.

The name *Pavoncella*, however, will not become the generic name of the Ruff, as Dr. C. W. Richmond has already shown (Proc. U. S. Nat. Mus., LIII, August 16, 1917, p. 581), and Mr. G. M. Mathews emphasized (Austral Avian Record, III, No. 5, Dec. 28, 1917, p. 117). There is an earlier name, *Philomachus*, proposed by an anonymous reviewer of Bechstein's Ornithologische Taschenbuch (Allgem. Lit.-Zeitung, 1804, Vol. II, No. 168, June 8, 1804, col. 542), the type of which is, by monotypy, *Tringa pugnax* Linnæus. This name is proposed in a perfectly legitimate way with a diagnosis and citation of species, and is, of course, not to be rejected because anonymous. The name of the Ruff will, therefore, become *Philomachus pugnax* (Linnæus).—HARRY C. OBERHOLSER, *Washington, D. C.*

***Heteractitis* versus *Heteroscelus*.**—The generic name now in use for the Wandering Tattler is *Heteractitis* Stejneger.¹ This term was proposed as a substitute for *Heteroscelus* Baird,² because the latter was considered invalid on account of the prior *Heteroscelis* Latreille, instituted in 1829 for a genus of Coleoptera. According to our present rules of nomenclature, however, *Heteroscelis* does not preoccupy *Heteroscelus*, since the two words differ not merely in grammatical termination, but have different classical endings. Mr. G. M. Mathews a few years ago called attention³ to the desirability of using *Heteroscelus*, but other authors seem generally

¹ 'The Auk,' I, No. 3, July, 1884, p. 236.

² Rep. Expl. and Surv. R. R. Pac., IX, 1858, p. 734 (type by monotypy, *Tolanus brevipes* Vieillot).

³ Birds of Australia, III, part 3, 1913, p. 206.

to have overlooked the matter. In view of the facts in this case it will apparently now be necessary to reinstate Baird's name *Heteroscelus* as as the generic designation of the Wandering Tattler. The two species of the genus will therefore stand as follows:

Heteroscelus brevipes (Vieillot).

Heteroscelus incanus (Gmelin).

HARRY C. OBERHOLSER, *Washington, D. C.*

The Status of *Charadrius rubricollis* Gmelin.—A good service has been performed by Mr. G. M. Mathews in the identification of *Charadrius rubricollis* Gmelin. Unfortunately, however, he neglects to employ this name for the species to which he has shown that it belongs (Birds of Australia, III, pt. 2, May 2, 1913, pp. 130-132). It was originally based by Gmelin (Syst. Nat., I, pt. 2, 1789, p. 687) on the "Red-necked Plover" of Latham, from Adventure Bay, Tasmania. As Mr. Mathews has proved, Latham's description (Syn. Birds, III, pt. 1, p. 212, No. 19) was taken from the Ellis drawings in the British Museum, and is found to fit the species currently called *Charadrius cucullatus* Vieillot, except for the statement that there is "on each side of the neck a large square chestnut spot, the size of a silver penny, almost meeting together at the back part," and "a little mixture of white about the bastard wing," which two characters evidently were taken by mistake from the drawing of *Steganopus tricolor*. This is, therefore, a case of two species confused under the same name; or of a species described with partly erroneous characters; or, in fact, of both, according to the point of view. If we consider only that the characters given have been taken from two species, the name *Charadrius rubricollis* must be used for one of the species involved if the name can be identified, and that it can, Mr. Mathews has shown. Such adoption is sanctioned by both the International and A. O. U. Codes of Nomenclature, and by common usage as well. The name, therefore, should apply to the species to which the greater or most pertinent part of the description refers, which in this case is, of course, *Charadrius cucullatus*. If, however, we take the view that it is erroneously described, neither current usage nor the commonly accepted codes of nomenclature allow its rejection because of indefinite or even erroneous characters, if the description can be positively determined as pertaining to a certain species. Thus, in any case, we should call the species ordinarily known as *Charadrius cucullatus* Vieillot by the name *Charadrius rubricollis* Gmelin. Its two forms will, therefore, stand as *Charadrius rubricollis rubricollis* Gmelin and *Charadrius rubricollis tregellasi* Mathews.—HARRY C. OBERHOLSER, *Washington, D. C.*

A Self-tamed Ruffed Grouse.—The following is an account of a tame Ruffed Grouse: the first statement is by Miss Torrey. In the spring of 1914, probably in April, as I was driving back and forth to the village to High School, I first noticed a rustling in the leaves and bushes by the

side of the road and watched until I found out that it was caused by a Partridge or Ruffed Grouse. After that I always let the horse walk past the spot, and the bird would walk under cover of the trees for about a hundred yards or more, but never would go any farther. I never tried to tame the bird, only keeping quiet as I liked to have it follow me. It seemed as if it was always watching for me night and morning.

My father first noticed the Partridge in May, when he was plowing, which was on the opposite side of the road, quite a distance from where the bird followed me. As my father is fond of all animals he quickly made a pet of this one and, if I remember rightly, fed it. The bird would follow him while he was plowing but never went with him to the barn.

I think this Partridge must have been left alone, as at that time there were no others about. I should say it was lonely and finding that I did not hurt it, it followed me, until it made friends with others. We never knew of anyone having a tame Partridge or being able to tame one before. The continuation of the account of this bird is by Miss Knight as follows: On returning to Deer Isle, Maine, my home town, to spend the summer of 1914, I heard the neighbors talking about a tame Partridge. They told me that Miss Torrey, as she drove through the woods during the latter part of the winter and early spring, had often seen a Partridge following the team.

My own experience with the bird began a few days later when we went into the woods after strawberries. As we walked along the road a Partridge followed us closely, possibly three or four rods away, in the edge of the wood. We crossed the road and went into the woods on the other side and I forgot all about the bird until suddenly he flew out from under my very feet. When I came home the Partridge walked down the wood road, flew across the highway road, and followed me fifteen or twenty rods on the side on which I had first seen him.

A few days after this, when father and I were driving to the village we saw the bird again following us for a few rods.

Accidentally we discovered that we could call him at any time we wished by going to the section of wood which he frequented, and whistling. After we had whistled a few minutes he always appeared, never on the wing but walking, coming from various directions but always on the same side of the road, although later if we crossed the road he crossed also. As the summer passed he became more and more friendly, often hopping up into our laps. As he strutted around us he frequently made a soft cooing sound in his throat. He never liked to be caught and held, but would allow himself to be petted. He would feed from our hands. He did not care for corn, but enjoyed berries, especially huckleberries. During the summer he shed out all his long tail feathers, as may be seen in some of the photographs, and we kept several of these feathers as souvenirs.

The bird seemed to have a fondness for the color blue, for he would hop up into the lap of anyone dressed in that color. One day I tested this several times as follows. I wore a blue skirt under a pink skirt. So long

as the pink skirt was prominent he would not come into my lap. As soon as I folded that back he came up onto the blue skirt.

Throughout the summer we showed the bird to many of our friends. In the fall, father talked of taking him home; but I, thinking that he might be unhappy if confined, urged that he be left in his natural surroundings. Late in the fall some workmen who did not know the story of the tame Partridge were driving through the woods and the bird flew on the horse's back and then down into the road. One of the workmen seized a tool from his kit and threw it, striking the bird and killing him."—
F. M. TORREY AND MARTHA G. KNIGHT, *Deer Isle, Maine*.

Unusual Contents of a Mourning Dove's Nest.—On May 5, 1917 while passing a clump of thorns, a Mourning Dove flushed from her nest therein, and was almost immediately followed by a young bird, nearly full grown and able to fly fairly well, which awkwardly alighted near by. As it was rainy and cold, and had been so for a week past, I would have passed on without further disturbing them had I not noticed that another young bird remained in the nest and seemed to be very wet and apparently dead with head hanging over the rim. I determined to remove it, as the other bird might wish to return.

The bush was very thorny and I had trouble in forcing my head and shoulders up through the tangle for the few feet necessary. I found that the bird was alive but very wet and weak as though the old bird had not been able to protect both young through such a long stretch of bad weather. My surprise came, however, when I discovered that the nest also contained three eggs, which, held to the light, seemed well along in incubation. They could not have been placed there by boys as the nest situation was such that had it been tampered with, broken twigs would have told the story, for I had to break and force a passage through to the base of the tree as well as to break one for my head as I climbed up a few feet. Returning on May 8 I found the nest deserted, the young bird dead and one of the eggs broken. I have heard before of sets of three of the Mourning Dove, but never heard of them being laid before the first brood had left the nest.

This clump of thorn was on a river flat, several acres of which is thickly grown up with several varieties of haws, wild crab, and wild apples and is used by Robins, Cowbirds, Grackles and Mourning Doves as a roost. Some 2000 Robins use this roost, the males and non-breeders even resorting to it nightly during the nesting season. During the migrations and after the Blackbirds flock it is also used by about 1000 Bronzed Grackles and several hundred Cowbirds. The Mourning Doves use it not only as a roost, but also as a nesting place. Their numbers, however, are comparatively small; probably not over 150 after the breeding season is over. About ten days after finding the nest described in this note, I made a survey of the thicket and found twenty-two occupied nests of the Mourning Dove,—and one of them contained three eggs.—E. A. DOOLITTLE, *Painesville, Ohio*.

Mourning Dove wintering in Vermont.— I have never known of a Mourning Dove wintering in this state, but on January 8, 1919, one was taken alive in Shaftsbury, Vt. It died the following day but was mounted and is now in the collection of Henry Bradford, Bennington, Vt.

Robins, Meadow Larks, and Sparrow Hawks are wintering in Bennington — a very unusual thing — due, I suppose, to the mildness of the winter and to the lack of snow.— LUCRETIVS H. ROSS, *Bennington, Vt.*

***Thrasaetos* versus *Harpia*.**— The generic name currently used for the Harpy Eagle is *Thrasaetos* Gray, because *Harpya* Vieillot is preoccupied by *Harpya* Illiger (Prod. Syst. Mamm. et Avium, 1811, pp. 118–119) for a mammal. Vieillot's name, however, was first spelled *Harpia* (Analyse Nouv. Ornith. Elém., 1816, p. 24; type by monotypy, *Vultur harpyja* (Linnæus), in which form, with one less syllable, it is according to the International Code of Nomenclature, not invalidated by *Harpya*. Furthermore, the original spelling of the specific name of this species is *harpyja* (*Vultur harpyja* Linnæus, Syst. Nat., ed. 10, I, 1758, p. 86; Mexico); and the Harpy Eagle should, therefore, now stand as *Harpia harpyja* (Linnæus).

It may be worth while also to call attention to the fact that Swainson in 1827 spelled this generic name *Harpya* (Philos. Mag., new ser. I, No. V, May, 1827, p. 366); and that the generic name *Thrasaetos*, commonly attributed to G. R. Gray, is merely a manuscript name of Gray's, originally published by Bonaparte (*Thrasaetos* Bonaparte, Proc. Zool. Soc. Lond., 1837 (June 14, 1838), p. 108 [ex G. R. Gray MS.], type by monotypy, *Vultur harpyja* Linnæus).— HARRY C. OBERHOLSER, *Washington, D. C.*

The Status of the Generic Name *Archibuteo*.— The generic name *Archibuteo* Brehm has for long been in use for the Rough-legged Hawks. This name, proposed in 1828 by Brehm (Isis, XXI, No. 12, December, 1828, col. 1269), was based solely on the "Rauchfussbussard" and two nomina nuda, *Archibuteo planiceps* Brehm and *Archibuteo alticeps* Brehm; hence *Falco lagopus* Brünnich, to which from Brehm's later publications all these evidently must be referred, has been commonly considered the type of *Archibuteo*. In the original description, however, aside from the two pure nomina nuda, only the vernacular name without citation of authority or anything else that would serve to identify it, is given. The generic term *Archibuteo* is, therefore, certainly a nomen nudum at this place, as is clearly indicated by the International Code of Nomenclature and current practice. The earliest tenable citation for *Archibuteo* is in 1831 (Brehm, Handb. Naturg. Vog. Deutschlands, 1831, p. 38), when Brehm gives as the two included species, *Archibuteo planiceps* Brehm and *Archibuteo alticeps* Brehm, here fully described, both of which are synonyms of *Falco lagopus* Brünnich. Meanwhile, however, two other names were introduced for the group — *Triorchis* Kaup (Skizz. Entw.-Gesch. Natürl. Syst. Eur. Thierw.,

1829, p. 84; type by monotypy, *Falco lagopus* Brünnich); and *Buteo* Lesson (Traité d'Ornith., May 8, 1830, p. 83; type, by monotypy, *Falco lagopus* Gmelin). The first of these becomes, therefore, the tenable name for the Rough-legged Hawks, since it is not preoccupied by *Triorches* Leach (Syst. Cat. Indig. Mamm. and Birds Brit. Mus., 1816, p. 10; type, by monotypy, *Pandion fluvialis* Savigny = *Falco haliaetus* Linnæus), for the latter must be regarded as a different word from a nomenclatural standpoint because of its different classical ending. By reason of this the two forms of the Rough-legged Hawk will stand as follows:

Triorchis lagopus lagopus (Brünnich).

Triorchis lagopus sanctijohannis (Gmelin).

HARRY C. OBERHOLSER, *Washington, D. C.*

Harris's Hawk (*Parabuteo unicinctus harrisi*) in Kansas.—A fine specimen of a female Harris's Hawk was killed seven and one half miles southwest of Lawrence, Kansas, December 25, 1918, by Fred Hastie and is now in the skin collection of the University of Kansas Museum.

So far as I know this Hawk has not been reported before from the state.—
C. D. BUNKER, *Lawrence, Kansas.*

The Proper Name for the Texas Barred Owl.—Some time ago ('The Auk,' XXV, No. 3, July, 1908, page 316) Mr. Outram Bangs renamed his *Syrnium nebulosum helveolum* (Proc. New Engl. Zoöl. Club, I, March 31, 1899, page 31) because, when transferred to the genus *Strix*, it was supposedly preoccupied by *Strix helvola* Lichtenstein (Verz. Samml. Säugeth. und Vögelh Kafferlande, 1842, page 11). Since, however, both *helveola* and *helvola* are classical Latin adjectives differing in the possession of an additional syllable, they are to be regarded as different words, and therefore by neither the International Code of Nomenclature nor the A. O. U. Code would they conflict when employed in the same genus. It thus becomes necessary to return to the earlier name for the Texas Barred Owl, and it will consequently stand as *Strix varia helveola* (Bangs).—HARRY C. OBERHOLSER, *Washington, D. C.*

Concerning a Note of the Long-eared Owl (*Asio wilsonianus*).—I was interested in the note of Mr. G. Clyde Fisher in the last number of 'The Auk,' with similar heading to the above. I can furnish information which will help to verify the conclusions which Mr. Fisher reached as to the source of the sound he heard. On August 9, 1914, while camped near Red Eagle Lake, in the Glacier National Park, I heard a sound of some night bird, which was very similar to the sound described by Mr. Fisher, and for which I could give no better description than the phrase he uses, I tried to investigate the source of the sound, and soon found several owls, at least four being seen at once. It was moonlight at the time. The country consisted of a mountain meadow, dotted with clumps of fir trees, and the Owls were easily seen as they flew from one clump to another at

my approach. I followed, and soon got a good view of one silhouetted against the sky, as it sat in the top of a fir. The bird was evidently watching my approach, and its ear tufts could be plainly seen. From their position, rising from the center of the head, rather than the sides, as well as from the size of the bird, I felt sure that it was a Long-eared Owl. I believe that the birds were a family containing both adults and young, and that they had been attracted by the light of our camp fire. This is the third time that I have known these Owls to be attracted by the light of a camp fire in the mountains of Montana.—ARETAS A. SAUNDERS, *Norwalk, Conn.*

The Short-eared Owl Breeding on Nantucket.—In 'The Auk' for January, 1919, Mr. Francis H. Allen, reporting the occurrence of the Short-eared Owl (*Asio flammeus*) at Nantucket in August, 1918, speaks of the somewhat doubtful status of this Owl as a breeding bird in Massachusetts, and quotes the opinion of Mr. George H. Mackay that at one time it doubtless bred quite regularly on Nantucket and more rarely on Muskeget Island.

There is, I think, good reason to believe that this Owl has nested on Nantucket in recent years not less regularly than in the past. In the years 1908 to 1912 when, in the month of June, I explored the island intent on its plants, but always with a side eye to birds, the Short-eared Owl was frequently met with, this and the Marsh Hawk appearing to be the only raptorial birds of the island at that season. In 1912 it was more numerous than at any time before, or else chance made it so appear, and between June 27 and July 14 not less than twelve were observed. On June 10, 1908, a nest containing two eggs, evidently fresh, was found in Trot's swamp on the western side of the island. The locality was a dryish open part of the swamp less than an acre in extent hemmed about on all sides by thickets that were in many places swampy and impassable. The nest, a slight structure of grasses and other light material, was set in a cluster of hay-scented fern (*Dennstaedtia punctilobula*) whose delicate fronds rising around the margin of the nest gave less protection than concealment and, indeed, little concealment from above, for down within the encircling ferns the eggs were in open view. At this spot the ground was slightly raised above the level of the swamp, and the unrestrained growth of this fern attested that here, even in a wet season, the soil must be free from saturation. The sitting bird left the nest at my near approach, when its mate almost immediately appeared, both birds ranging widely about well in the air at no time coming very near and, at intervals, almost pausing in their flight directly overhead. One or both birds continually repeated a weak and expressionless guttural note — as memory now recalls it. The eggs, measured at the nest and replaced, were 1.37 and 1.44 inches in length — small for the species according to published measurements.

South of Nantucket the Short-eared Owl has not often been reported in its breeding season. There are several records of its having nested

along the New Jersey coast, even as far south as the Cape May region, but I do not know that it has ever been found breeding on Long Island. There would seem to be little doubt, however, that it has recently nested there at Long Beach. At that place, on May 25, 1917, I watched a pair of these owls, evidently, from the disparity in their size, a male and female, repeatedly attacking a single Crow. The birds were flying about over a tract of dunes and thickets flanking a salt marsh inaccessible to me across a broad creek. The Crow, perhaps to escape the Owls, perhaps intent on depredation of their nest, several times swept down to the ground about a certain spot, the Owls pursuing it or awaiting its return into the air when attack and counter-attack were renewed. The following year at the same place a pair were observed on February 22, attacking a Marsh Hawk, one was seen on April 12, a pair on May 17, and again a single one on August 9.—EUGENE P. BICKNELL, *New York City*.

Early Occurrence of the Snowy Owl and the Pine Grosbeak in Monroe County, New York.—On November 3, 1918, while riding on a trolley car toward the lake, my attention was called by the motorman, to a large Snowy Owl (*Nyctea nyctea*) which was sitting on the top of a wooden pole in a gravel bed and about 150 feet from the tracks.

He also informed me that the bird had been in the same place while on a previous trip an hour and a half before. Later it was seen to fly into a nearby vineyard. The locality was in the town of Irondequoit, a mile and a half from Lake Ontario. On the same afternoon at 3.30 o'clock, while walking along the border of the woods at Durand-Eastman Park, near the lake, I observed three Pine Grosbeaks (*Pinicola enucleator leucura*). There were two females and one male, they were feeding in some bushes close to the roadway and were very tame, allowing me to approach within ten feet of them, when they would fly into the nearby bushes. This is the earliest record that I can find of their occurrence in Monroe County.—LUCIUS H. PAUL, *Rochester, N. Y.*

The Deep Plantar Tendons in the Puff-birds, Jacamars and their Allies.—One of the most distinct and peculiar types of the deep plantar tendons in birds is that known as the *antiopelmous*, characterizing certain zygodactyl groups such as the Woodpeckers, Toucans and their allies. In this arrangement of the simple *flexor perforans digitorum* runs to the third toe, while the trifurcate *flexor longus hallucis* supplies the first, second and fourth toes. The two tendons are connected by a vinculum which runs from the *flexor longus* to the *flexor perforans*.

The nature of these tendons in the Puff-birds (*Bucconidae*) and Jacamars (*Galbulidae*) is of special importance in determining the systematic position of these families. Both are commonly given as antiopelmous, perhaps on the sole authority of Garrod (cf. *P. Z. S.*, 1875, p. 345; also Selater's Monograph of the Jacamars and Puff-birds, p. XXVIII). The following species were examined by Garrod: *Galbula rufoviridis*, *G. albirostris*, and

Urogalba paradisea of the Galbulidæ, and *Monasa flavirostris*, *Malacoptila fusca* and *Bucco maculatus* of the Bucconidæ. Of allied groups the following were determined: *Ramphastos ariel* (Ramphastidæ), *Megalæma asiatica* (Capitonidæ), *Gccinus viridis* and *Tiga javanensis* (Picidæ).

Descriptions of the plantar tendons in other groups have so often proven erroneous that the verification of all such statements is desirable. This is my excuse for the present note which merely confirms the observations of Garrod; however the species, with one exception, and three of the genera are different and I am able to point out one or two minor variations.

I have made careful dissections of specimens of *Monasa grandior* and *Malacoptila inornata* (Bucconidæ), *Galbula melanogenia* (Galbulidæ), *Ramphastos ariel* (Ramphastidæ), *Chloronerpes yucatanensis*, *Dryobates villosus* and *Campephilus malherbii* (Picidæ). The essential antiopelmous arrangement is the same in all, but several variations occur that are worthy of note.

In *Chloronerpes*, *Megalaima*, *Ramphastos*, *Malacoptila* and probably *Monasa*, the distance between the first and second bifurcations of the *flexor longus* is much greater than in *Dryobates* and *Galbula*; in *Campephilus*, on the other hand, the three slips spring from practically the same point. The position of the vinculum is somewhat variable. In *Ramphastos*, *Megalæma* (Garrod), *Dryobates*, and *Campephilus* the vinculum leaves the *flexor longus* decidedly above the primary bifurcation of the latter; in *Malacoptila*, *Galbula* and *Chloronerpes* at the extreme lower end of the main tendon, just as it divides, while in *Monasa* (as recorded by Garrod also) it originates from the upper ends of the two branches.

Stejneger states (on what authority I do not know) that the Honey Guides (Indicatoridæ) are antiopelmous. There is every reason to believe this statement correct and also to assume that the Wrynecks (Jyngidæ) and Piculets (Picumnidæ) have the same arrangement.

This close agreement in the deep plantar tendons is, as remarked by Dr. Stejneger, strong evidence of the mutual relationships of the families possessing this unique arrangement. As this character is not neutralized or overbalanced by any of equal or greater value we may regard these families as forming a natural group, an order or suborder, characterized essentially by their antiopelmous, zygodactyl feet. In other zygodactyl birds, the Parrots and Cuckoos, the tendons are of the wholly different desmopelmous type, and moreover the ambiens muscle, absent in the antiopelmous group, is here present.—W. DEW. MILLER, *American Museum of Natural History, New York City.*

The Status of the Genus *Hypocentor* Cabanis.—The genus *Hypocentor* was originally instituted by Cabanis (Mus. Heim, I, 1851, p. 131) for three species of Buntings, *Emberiza aureola* Pallas, *Emberiza fucata* Pallas, and *Emberiza rustica* Pallas. Its type was soon afterward designated by Gray (Cat. Gen. and Subgen. Birds Brit. Mus., 1855, p. 79) as *Emberiza aureola* Pallas. Modern authors have commonly synonymized

it with *Emberiza* Brisson, but an examination of its type and comparison with typical species of *Emberiza* shows that it is well differentiated as a generic group. It differs from *Emberiza* Brisson (type, by tautonymy, *Emberiza citrinella* Linnæus) as follows; bill slenderer, more compressed, more sharply pointed, thus less conical; basal two-thirds of culmen straight or even somewhat concave, instead of convex; maxillar and mandibular tomia vertically not so strongly concave, thus not giving the closed commissure the somewhat open appearance that it has in typical species of *Emberiza*; palatal surface of maxilla lacking the peculiar rounded protuberances of *Emberiza*; mandible more rounded (less squarish) basally; gonys very long, its length much more than the height of the bill at base (instead of about equal to that dimension), and not strongly ascending, the gonydeal angle therefore not so prominent; tertials and tail much shorter.

The species to be included in this genus are at least the three originally indicated by Cabanis, the last one of which is North American by reason of its accidental occurrence on Kiska Island in the Aleutian Islands, Alaska. These are:

Hypocentor aureolus (Pallas).

Hypocentor fucatus (Pallas).

Hypocentor rusticus (Pallas).

HARRY C. OBERHOLSER, *Washington, D. C.*

A Correction Involving Some Juncos.—An error that may be explained as due to oversight, inadvertence, plain stupidity or all three combined, crept into my paper on the Juncos (*Bull. Am. Mus. Nat. Hist.* XXXVIII, 1918, p. 296) and Mr. Todd has called my attention to it. In placing *insularis* under *mearnsi* as a race, I quite forgot that the former name has many years priority. Therefore the Pink-sided Juncos should stand as follows:—

Junco insularis mearnsi

Junco insularis insularis

Junco insularis townsendi

JONATHAN DWIGHT, *M. D. New York City.*

An Additional Record of *Ammodramus savannarum bimaculatus* in Eastern Washington.—Although the breeding range of the Western Grasshopper Sparrow is stated by the Check List (*A. O. U. Check-List of North American Birds*, 1910, p. 257) to embrace "Transition and Austral zones from southeastern British Columbia, northwestern Montana, and southern Minnesota south to southern California and southern Texas," it appears that only one actual record of occurrence in eastern Washington has been published to date. Dr. Lee R. Dice took two adult males in breeding plumage in a wheat field in the Touchet Valley, near Prescott, Walla Walla County, on June 16, 1908 (*Auk*, Vol. XXVII, 1910, p. 217).

On May 29, 1918, a bird which I am practically certain was of this species was encountered in a grassy swale not far from Pullman, Whitman County. When first sighted it was perched on a grassy tussock near the bottom of the swale. When flushed it flew to a grass clump some distance up a gentle hill slope, disappearing from view in the usual slinking fashion. Too much reliance cannot, of course, be placed on this record, since the bird was not secured.

On June 13 I noted the song of a Grasshopper Sparrow in a grain field near Six Mile Ranch, six miles south of Sprague, just over the line in Adams County. The bird was pursued for some time before it was finally taken. Its actions were as usually described, the bird characteristically dropping behind a grass tussock, ledge of earth or pile of brush, and then, with bill low, body in crouching position, and tail drooping, sneaking off through the grassy vegetation, refusing to flush until one was too close to shoot.

The bird is now No. 262090, U. S. National Museum, Biological Survey Collection. It is a male in much worn plumage.

These experiences during the past field season indicate that the Grasshopper Sparrow is probably more common in eastern Washington than has previously been supposed.—WALTER P. TAYLOR, *Biological Survey, Washington, D. C.*

The Dickcissel in New Hampshire.—At Concord, New Hampshire, on October 13, 1918 I shot a male Dickcissel (*Spiza americana*) in immature plumage. It was alone at the moment, in birches at the edge of woods that bordered extensive fields of corn and stubble, the autumnal resort of sparrows of several kinds, which were then swarming there among the weeds. The only records of the bird from north and east of Massachusetts with which I am acquainted are as follows:

Maine, September 29, 1884. C. W. Townsend (Auk, 1885, p. 106).

Maine, October 10, 1888. A. H. Norton (Auk, 1893, p. 302).

Nova Scotia, September 13, 1902. J. Dwight, Jr. (Auk, 1903, p. 440).

FRANCIS BEACH WHITE, *Concord, N. H.*

Early Nesting of the Loggerhead Shrike *Lanius ludovicianus ludovicianus* at Savannah, Ga.—I am indebted to Mr. Gilbert R. Rossignol, of Savannah, Ga., for the privilege of announcing the taking by him on February 15, 1919, at Savannah, of a nest and five eggs of the Loggerhead Shrike. Mr. Rossignol first discovered the birds building the nest in a live oak tree, among a cluster of vertical shoots, on January 16. The eggs were all fresh and the nest was approximately twenty feet from the ground.

In the vicinity of Charleston, S. C., the earliest dates upon which I have found eggs were on March 24, 1916, six eggs almost hatched, and March 13, 1917, five fresh eggs, both nests being found in the same live oak tree and doubtless belonging to the same pair of birds.—ARTHUR T. WAYNE, *Mt. Pleasant, S. C.*

A Note on the Decrease of the Carolina Wren near Washington.—

The winter of 1917-1918 in the vicinity of Washington, D. C., with its prolonged cold and unusual fall of snow, was a severe one for many birds, a fact that was manifested especially in the case of the Carolina Wren (*Thryothorus l. ludovicianus*). Near Washington Carolina Wrens increased steadily in numbers in the period extending from 1912 to 1917, and during the last two years of this time were common. Their abundance at Plummer's Island, Maryland, was noticeable, and birds were seen or heard on practically every visit to that vicinity. Through December, 1917, and January, 1918 they remained in their usual numbers. February 1, during a visit made to Plummers' Island immediately after a heavy snowfall I found that the snow in the woods where it had not been drifted was sixteen inches deep. Several Carolina Wrens were seen on this day. One was observed climbing up the trunk of a red birch, where the bird broke open the curling rolls of bark, in search for food, making a rattling, rustling noise audible for some distance. Another was clambering about the eaves of the cabin. Both of these feeding habits were more or less unusual. This heavy snow covered the ground for a considerable period after this and must have rendered food difficult to find. Immediately after February 1 the Carolina Wrens in the area under consideration disappeared, and the supposition was that the greater part of them had perished. Only three or four pairs were known to remain in the region between the end of the carline at Cabin John's Bridge and Plummer's Island, while none were left on the island property. The same decrease in number among these birds was observed throughout the entire Washington region and when spring opened it was found that there were only scattered pairs in a few areas.

In a former note (published in 'The Condor,' 1913, pp. 120-121) I have called attention to a similar occurrence in eastern Kansas, where other species of birds in addition to Carolina Wrens were concerned. These observations and others of a similar nature seem to show that the Carolina Wren is a bird that may be considered resident in the strictest sense of the word in regions where it is found. In many so-called resident species, though the species as a whole is represented at all seasons individuals are migratory and perform regular journeys each year. With the Carolina Wren however, this does not seem to be true, as adult individuals (in pairs) frequent certain restricted areas throughout the year without reference to season. The immature birds that have not yet become settled, wander somewhat during spring and fall, and individuals may occur at this time in cities or elsewhere outside of their normal haunts. These movements however, are irregular, and seem at most to be restricted to short distances when compared with the regular spring and fall movement found among other birds of recognized migratory habits. It is by these restricted movements that these Wrens extend their local range.

At Plummer's Island one of these wanderers visited the island and adjacent parts of the mainland on April 7 and worked restlessly about, singing loudly. No others were observed during the spring and summer

months and the species did not occur again until December 8 when one was observed skulking in a brush pile below the cabin. One bird (presumably the same one) is still present on the island at present writing (January 12, 1919).

The instances given here are indications of the conditions limiting the range of the Carolina Wren, in one direction at least and show, too, how readily a species apparently common may be reduced or even exterminated in a given region in a very short period of time. In the case of the Carolina Wren the heavy blanket of snow covering the food supply would seem to be the direct cause of extermination rather than prolonged cold, as here at Washington these birds were able to survive a low temperature for a considerable period but were killed when deep snow covered the greater part of their normal feeding ground. It is to the comparatively few that are able to survive that we must look for the perpetuation of the species. The increase in numbers however, seems to be a slow process, as following their decrease in 1912, I found the species still comparatively rare near Lawrence, Kansas, in 1914, 1916 and as late as November, 1918.—ALEXANDER WETMORE, *Biological Survey, Washington, D. C.*

The Affinities of *Chamathlypis*.—As generic distinctions become more and more refined the need of a supergeneric group intermediate between the family or subfamily and the genus, corresponding approximately to the former genus, becomes increasingly evident.

In his great work on the 'Birds of North and Middle America' Mr. Ridgway has supplied this want in many families. In the Warblers (Mniotiltidae) the grouping does not appear to be so successful as in most cases. Not only is the old genus *Geothlypis* broken up into three genera but these are distributed in as many supergeneric groups. *Oporornis* is banded with *Dendroica* and its allies in the Dendroiceæ, while *Chamathlypis* is placed in the Ieteriæ.

We cannot help feeling that this arrangement is artificial, and that too much importance has been placed on the length of the wing-tip (easily modified by habits and migration), and insufficient weight given to coloration, nesting and even song.

Also, the distinctions are partially invalidated by exceptions. Thus the sections including *Geothlypis* and *Chamathlypis* are separated by differences in the length of the tail and form of the bill; but *Geothlypis nelsoni* agrees with *Chamathlypis* in having the tail longer than the wing. Again the Geothlypeæ are separated from the Dendroiceæ by having the rictal bristles obsolete and the wing-tip shorter, but in *Geothlypis æquinoctialis* and *G. cucullata*, at least, the rictal bristles are well-developed.

The particular point of criticism is in regard to the affinities of *Chamathlypis* which is distinguished from *Geothlypis* by its stouter bill, with strongly curved culmen, and its longer, graduated tail.

Mr. Ridgway expresses the opinion that while "this genus is very much like *Geothlypis* as to its general appearance" it is "quite distinct struc-

turally, in which respect it comes much nearer to *Icteria*." I have carefully tabulated the structural differences between these three genera, and the result to my mind unquestionably indicates a nearer relationship of *Chamæthlypis* with *Geothlypis*.

Sharpe (Hand-List of Birds) while recognizing *Chamæthlypis*, included in this genus two South American species of *Geothlypis*, *G. æquinoctialis* and *G. auricularis*. These two species and *G. cucullata* are intermediate between *Chamæthlypis* and the typical species of *Geothlypis* in coloration and in the form of the bill and have well developed rictal bristles as in *Chamæthlypis*. They do not, however, approach the latter genus in the length of the tail, as do certain Mexican species of *Geothlypis*, notably *G. nelsoni*.

While in Nicaragua in the spring of 1917 I had the opportunity of hearing the song of the 'Ground-chat' on several occasions. It is a highly musical warble resembling that of *Geothlypis semiflava bairdi* but even superior; the songs of both these species much excel that of *G. trichas*. The song of *Chamæthlypis* possesses nothing whatever of the eccentric qualities of the Yellow-breasted Chat's vocal performance.

In conclusion, the evidence of size, coloration, external structure and song, strongly indicate the near relationship of *Chamæthlypis* with *Geothlypis* and the more remote affinity of the former with *Icteria*. The first two genera are, in fact, practically connected by intermediate species.—W. DEW. MILLER, *American Museum of Natural History, New York City.*

Blue-winged Warbler Feeding a Young Field Sparrow.—On June 16, 1918, I was passing through a brushy area near Norwalk, Conn., when my attention was attracted by a Blue-winged Warbler (*Vermivora pinus*) evidently much excited at my presence as though it had a nest or young in the vicinity. It carried a green caterpillar about with it, as though wishing to feed young, so I sat down to watch it. A Field Sparrow (*Spizella pusilla*) soon appeared and also manifested excitement at my presence. After some waiting the Blue-wing approached a certain point in the bushes so frequently, that I got suspicious and searched it, finding to my surprise a young Field Sparrow, evidently just out of the nest and unable to fly. I waited some time longer, hoping to find the young of the Blue-wing, and finally the latter got over its fear, and approached the young Field Sparrow, and fed it the caterpillar it had been carrying. The adult Field Sparrow remained near-by but would not go to the young bird.

This incident seems rather surprising, but I believe it is explained by supposing that the two species nested near each other; that the young of the Blue-wing were destroyed by a natural enemy just as they were about to leave the nest; and that the adult Blue-wing, finding a young Field Sparrow of about the same age nearby, fed it, perhaps not realizing that it was not its own offspring, and in any event, satisfying its natural instinct to feed and care for young at that time.—ARETAS A. SAUNDERS, *Norwalk, Conn.*

The Blue-winged Warbler near Boston.—Walking in dry, scrubby woods in the town of Brookline, Mass., May 19, 1918, Dr. Charles W. Townsend and I found a Blue-winged Warbler (*Vermivora pinus*) singing the typical song of the Golden-winged Warbler (*V. chrysoptera*). The bird had the bright-yellow throat, breast, belly, and crown and the black line through the eye, and we had no hesitation in pronouncing it a Blue-winged Warbler. As this species is regarded as extremely rare in Massachusetts (see note by Mr. Horace W. Wright, Auk, 1917, pp. 482, 483), the bird was afterwards visited by other observers, some of whom saw it to better advantage than we did and discovered that its wing-bars were yellow, not white as in typical examples of the species. Among these observers were Mr. Charles J. Maynard, Judge Charles F. Jenney, Dr. John B. Brainerd, Mr. Barron Brainerd, and Mr. Henry S. Shaw. Mr. Maynard, who visited the locality June 15 in company with Judge Jenney and Mr. Shaw, wrote me under date of July 31, 1918: "I saw the bird very distinctly a number of times and clearly saw that it had decidedly yellow wing-bands, not as yellow as those of the Golden-winged, yet decidedly yellow, and we heard no other song than the one indistinguishable from that of the Golden-wing. . . . I was interested in trying to find whether the bird was mated, but we did not succeed in finding any mate." None of the observers saw anything of a mate, and none heard any other song from the bird than the Golden-winged Warbler song. Illness in my family prevented my visiting the locality again until July 10, when the bird was not to be found, and the Golden-winged Warblers, two of which had been found there before had also stopped singing.

Forms of the Blue-winged Warbler with yellow or yellowish wing-bars are not very rare in collections, and Dr. Louis B. Bishop, who has a large series of this species, makes particular mention of them in his paper on 'The Status of *Helminthophila leucobronchialis* and *Helminthophila lawrencei*' in 'The Auk,' 1905, XXII, p. 21-24. In the light, however, of Dr. Walter Faxon's discovery of the hybrid nature of Brewster's Warbler it seems probable that these non-typical examples are really of mixed ancestry and possess a modicum of *chrysoptera* blood. This seems the more likely in the case of our Brookline bird because it sang the *chrysoptera* song, as do most, if not all, of the *leucobronchialis* found in this region. Mr. William Brewster permits me to cite him in support of this theory, and Dr. Bishop writes me, "I think it quite possible your bird had a '*lawrencei*' as a more or less remote ancestor, which means *chrysoptera* of course farther back, added to its predominant *pinus* blood."

Though our bird was found, as I have stated, in the town of Brookline, the cities of Boston and Newton also corner near by, and, as Judge Jenney has pointed out to me, it doubtless had in its daily range not only these three municipalities but also the three counties of Norfolk, Suffolk, and Middlesex to which they severally belong.—FRANCIS H. ALLEN, *West Roxbury, Mass.*

Nashville Warbler (*Vermivora ruficapilla*) in New York in Winter.— This is not merely a winter record for New York City but for a backyard garden on Broadway. This bird was first seen by Mrs. Chubb on December 16, 1918. It was feeding on aphids which were still very abundant on some brussels sprouts in a very small garden patch.

Up to the present date, January 9, I have seen the bird frequently. Apparently it visits the garden daily where the aphids still survive the mild winter. The bird is in perfect flight and apparently normal in every way. It was also identified today by Mr. W. DeW. Miller.— S. HARMSTED CHUBB, *New York City*.

Four Rare Birds in Sussex County, New Jersey.— In the fall of 1918 the American Museum of Natural History received in the flesh a female Northern Pileated Woodpecker (*Phlaeotomus pileatus abieticola*) shot in the Kittatinny Mountains, three miles southwest of Culver's Gap, Sussex Co., New Jersey, on Oct. 12, and an adult female Golden Eagle (*Aquila chrysaetos*) killed in the same locality on November 23.

On a visit to this region from October 19 to November 3, I was gratified to find that the Pileated Woodpecker still exists in the larger woodlands of Sussex County. Many characteristic examples of their work, both old and fresh, were found and several birds were seen.

Through the kindness of Mr. Justus von Lengerke, I am able to record a Raven (*Corvus corax europhilus*) also from the vicinity of Culver's Gap. This bird, which was accompanied by another individual of the same species, was secured by this gentleman on September 21 and is now in his possession.

Mr. von Lengerke tells me that the Goshawk (*Astur atricapillus atricapillus*) is a regular winter visitor in northwestern New Jersey, but usually rare. In the fall and winter of 1916-17 and again in 1917-18 there were, for the first time in his experience, large flights of the Goshawk two years in succession. In the former season Mr. von Lengerke, who makes special efforts to kill these destructive birds, secured about nine Goshawks; in the latter he personally killed sixteen (fifteen at Stag Lake, Sussex Co., and one about ten miles from this locality), and knows of two more shot in the same county. In the fall of 1918 he handled eight individuals, five of which were killed by himself and his son.— W. DEW. MILLER, *American Museum of Natural History, New York City*.

Notes from a Connecticut Pine Swamp.— The pine swamp of which I write is situated in the township of Ledyard, Connecticut, two miles east of Gales Ferry and the Thames River, and about eight miles north of Fisher's Island sound. It runs north and south for about half a mile, and is three hundred feet above sea level. In it grow tall white pines, though many which formerly grew along the edges of the swamp have been cut down. It is a wild place, containing the usual "Bottomless Pit," the old time farmers, with their longest poles, being unable to find a bottom. Once upon a time, also, a wildcat inhabited it— so sayeth tradition!

The native Rhododendron (*R. maximum*) grows here in profusion attaining a height of twenty-five, or more, feet, and is a wonderful sight when in blossom in July. There is also much laurel and many hardwood trees on the edge of the swamp. On July 5, 1918, walking here among the Rhododendrons, listening to the songs of the Hooded Warbler, I made a discovery. The Hooded Warbler is quite common in this locality and sings freely. I heard the two songs on this day — one of which seems to say "you're it, you're it, you're it, you're it yourself" sung rapidly and varying in the number of "you're its." The other song seems to say "Nobody can touch me-ë," a rising inflection on the end. They made me think of children playing tag. Suddenly a strange distant song drew my attention and I hastened along listening intently — then as I stood on a rock surrounded by Rhododendrons out flew a beautiful Black-throated Blue Warbler, which alighted on a tree and sang. It flew about from tree to tree quite near and sang over and over again, and was answered by the same song from a more distant bird. The song was much finer than the books lead one to suppose. About six zees — the first three seeming to have a sort of double resonance and the last longer drawn out and higher. Of course the birds were nesting here, but although I visited the spot every few days and heard and saw the bird near the same locality, I could never locate the nest, in the wild tangle of growth. The last time that I heard the song was on August 1. In Dr. Bishop's 'List of Connecticut Birds' the Black-throated Blue is given as nesting at Eastford in 1874 and 1881, in Kent in 1905 and in Litchfield in 1905. Near this same place some Broad-winged Hawks were nesting and every time I visited the spot one of them would perch in a tall tree and whistle — a shrill penetrating whistle, although at times they could do it quite softly. They seemed to be unafraid and it was amusing to see one of them watching my dog as he ran among the bushes; it would stretch its neck and twist its head from side to side in a very funny way. For two years now the Solitary Vireo has nested in this vicinity and delighted us with its song all summer.

Still another rarity has been found nesting in this swamp, the Canada Warbler. Dr. Graves found it there on June 25, 1884, and again thirteen years later on July 17, 1897; at this later date he saw and heard a number of them singing. Although looking for it here for the last ten years I have yet to find it nesting.—FRANCES MINER GRAVES, *New London, Conn.*

The Name "erythrogaster."—I have been interested in the discussion about *erythrogaster*, *erythrogastra*, *erythrogastris*, etc. in recent numbers of 'The Auk.' From analogy, both in the Greek and Latin tongues, I make no question of this being an adjective. Thus in Latin, from *longus* and *manus* comes the adjective *longimanus* -a, -um, long-handed. In Greek form (using the Roman alphabet) *leukos* and *lithos*, *leukolithos*, -on. The older naturalists, as many botanists still do, printed specific names that are nouns with an initial capital, those that are adjectives with a lower-case initial. Linnaeus, for instance, who observed this distinction, wrote *Anas*

erythropus, *Hirundo fissipes*, *Fringilla erythrophthalma*, *Parus atricapillus*, etc., showing that he rightly considered these specific names to be adjectives.

From *erythros* and *melas* comes the adjective *erythromelas*, fem. *erythromelaena*, neut. *erythromelan*, red and black. Now if *Piranga* is considered feminine, as it is (*Piranga rubra*), the Scarlet Tanager's name is *Piranga erythromelaena*. There is no escape from this except for those who refuse to make an adjectival specific name conform in gender to the generic name with which it is associated.¹—WALTER FAXON, *Lexington, Mass.*

Constant Difference in Relative Proportions of Parts as a Specific Character.—In the oft-recurring discussions of what constitutes a species and the difference between subspecies and species, one interesting kind of intergradation which might be termed "pseudo-intergradation" had not been mentioned.

This is well illustrated by certain of the Guadalupe Island forms, notably the Rock Wren (*Salpinctes*) which has at times been regarded as a species and again as a subspecies even by the same authority.

The Guadalupe bird, together with its near ally of San Martin Island, differs from its relatives of other islands and the mainland in its longer bill, relatively shorter wing and darker coloration. The difference in proportions is constant so far as known; only exceptionally short-billed specimens agree in the length of this member with the longest billed individuals of other forms, while only very long-winged examples fail to differ from short-winged birds of the related races. This, however, has been held to be intergradation and on these grounds the Guadalupe bird, *S. guadeloupenensis*, was degraded to subspecific rank by Ridgway in 1904, even before the somewhat intermediate race *S. g. proximus* was discovered.

Individuals agreeing in the length of the bill, however, naturally exhibit the maximum difference in the length of the wing, while those agreeing in the wing can be distinguished by the length of the bill. In other words the ratio of bill to wing length in the two species *S. obsoletus* and *S. guadeloupenensis* is constantly different and furnishes a diagnostic character by which the species may always be distinguished. In the former the wing is more than three and a half times the length of the bill, in the latter less than three and a half. In addition there is a well-marked difference in color.

It seems reasonable to consider such differentiation in proportions when developed to the point where there is constant difference in ratio as of specific value. Measurements appear to indicate that this point has been reached in the Rock Wrens, and that the dark, long-billed forms should therefore be regarded as specifically distinct from the paler, shorter billed races. The same conclusion was arrived at by Swarth in 1914 (*Condor*, XVI, p. 216).

¹ It is interesting in this connection to note that Ridgway (*Bird N. and Mid. Amer.*, II, p. 101) rejects *P. erythromelaena* Salv. 1868 because of *P. erythromelas* Vieill. 1819 but does not alter the latter! — Ed.

The Guadalupe Junco (*Junco insularis*) easily fulfills the above requirements of a species. Indeed as it averages 10 mm. less in length of wing than its nearest relative *J. townsendi*, and its bill is nearly 2 mm. longer, there is small likelihood even of ordinary intergradation. There are also well-defined color characters.

In Dr. Dwight's recent paper on the Juncos (Bull. Amer. Mus. Nat. Hist., XXXVIII, 1918, p. 269) he has reduced this Junco as well as *Junco townsendi* to subspecies, on the grounds that their characters are *quantitative* rather than *qualitative*. But are their peculiarities merely *quantitative*, and do not the differences exhibited by these forms more nearly approach the characters commonly regarded as of generic value than do the "*qualitative*" color differences between the forms regarded by Dr. Dwight as species?—W. DEW. MILLER, *American Museum of Natural History, New York City.*

"**Off**" **Flavors of Wildfowl.**—Following is an extract from a letter on this subject by Dr. L. C. Jones of Falmouth, Mass., who has been quoted in a previous article¹ on this subject. It will be noted that one of Dr. Jones' theories is much the same as that advanced by the writer in the last sentence of his first communication on fishy flavor.²

"I would like to advance a new theory which I think may explain the cause in many cases. I refer to the possibility of "fatigue toxins" in the flesh of birds which have taken long flights and are thin or emaciated and obviously out of condition. The same might hold in those birds which have been shot previously but not wholly disabled. Many of these have intestines agglutinated with peritonitis, local abscesses, or suppurating wounds in the skin or muscles where shot has entered. Unpleasant as it may be to think of this, practically all of these birds reach the market and are undoubtedly eaten, chiefly of course by those who do not dress their own game.

"The more you consider this explanation, the more points you will find to support it. For instance, I have eaten many ducks in the beginning of the season, Redheads, Bluebills and Black Ducks, birds which have just arrived from the north and I think without question that most of them have been comparatively unpalatable. Birds from the same flocks, shot a fortnight or so later, even when the diet has consisted almost entirely of eelgrass seed from the salt water bays and estuaries, have been plump and delicious. May not fatigue with starvation, or rest with repletion, be the great determining factors in the flavor of migrating fowl? You may readily conceive that in certain instances of excessive fatigue or when the abdominal organs were badly infected, the flesh of such birds might be distinctly poisonous. . . ." L. C. Jones, M. D.—W. L. McATEE, *U. S. Biological Survey, Washington, D. C.*

¹ Auk, Vol. 36, No. 1, Jan., 1919, pp. 101-101.

² Auk, Vol. 35, No. 4, Oct., 1918, p. 476.

RECENT LITERATURE.

'**The Game Birds of California.**'— One of the most notable of recent American bird books is the handsome work on 'The Game Birds of California'¹ by Grinnell, Bryant and Storer issued by the University of California, as one of its Semicentennial publications. The life histories of game birds have never been so well studied and written up as those of certain other species, because those who have had the best opportunities have been more interested in killing the birds than in studying them. We may search the columns of the sporting journals and while we find an abundance of information on how to shoot game birds, how they act in reference to the gunner, and what fine times the gunner had when shooting them, there is a lamentable lack of careful observation on the life and habits of the birds. State Game Commissions are usually made up of hunters rather than of trained ornithologists and consequently their activities are directed along the same lines and their publications are mainly of the same nature though there are notable exceptions. The supervision of the enforcement of the Migratory Bird Law and the succeeding Treaty with Canada, by a committee of the Biological Survey at Washington, has opened the eyes of the public to the importance of entrusting this sort of work to trained experts and the present volume is an example of a state game publication prepared by just such experts. We have had some similar publications by state or local authorities, notably Mr. E. H. Forbush's admirable 'History of the Game Birds, Wild Fowl and Shore Birds of Massachusetts and Adjacent States,' issued by the Massachusetts State Board of Agriculture, but they are few, and some State Boards unfortunately adopt an attitude of hostility to the Biological Survey and to scientific research, which is unfortunate and deplorable.

The attitude of the University of California, through its Museum of Vertebrate Zoölogy, in turning to practical advantage the information accumulated through the researches of its trained experts is most commendable. We go to the universities for expert information on all sorts of subjects and why not go to their zoölogical departments or to the great museums for information on wild life and its preservation?

Dr. Grinnell and his associates have had the advantage of Mr. Forbush inasmuch as they have been engaged in the personal study of game birds along with their other field work for many years, and consequently have accumulated a vast store of original information, while he was forced to compile a large part of his data in a very short period of time. Their

¹The Game Birds of California. Contributions from the University of California Museum of Vertebrate Zoölogy. By Joseph Grinnell, Harold Child Bryant and Tracy Irwin Storer. University of California Press, Berkeley, 1918. Large 8vo., pp. i-x + 1-642, 16 colored plates and 94 text figures. Price cloth \$6.00 net.

report is therefore an advance over his and is undoubtedly the best work on game birds that has yet appeared in America.

The preliminary chapters treat of the decrease of game, natural enemies of game, gun clubs, introduction of non-native game, game propagation and legislation. From these we learn that the serious decrease in game birds, especially the waterfowl, in California, was first noticed about 1880, since which time it has increased at an alarming rate. In the Fresno region in 1912 flocks of geese were still to be seen in certain sections but ten to twenty years earlier the whole San Joaquin Valley literally swarmed with wild geese during midwinter. "From the windows of a moving train myriads of geese were to be observed, reaching as far as the eye could see on either side of the railroad from Fresno to Stockton — certainly a thousand fold more geese than can be seen today along the same route." The number of ducks sold in the markets of San Francisco according to careful estimates has decreased from 350,000 in 1911-12 to 125,000 in 1915-16. These are but a couple of illustrations from the many facts collected by the authors of this work. Their conclusions are set forth as follows: "The causes of this decrease are many and diverse but all are due in last analysis to the settlement of the state by the white man. Some of these factors, such as excessive hunting and sale of game, are subject to control; but others such as reclamation of land, and overhead wires are inevitable. . . . The game supply of the future must rely upon correct inductions based upon careful study of the entire problem, and final adoption of those means which it is found feasible to employ."

What will be the eventual outcome of the game situation it is hard to foretell. Certainly in our Eastern States the outlook is not encouraging. With the constant decrease in wild land and the issuing of innumerable hunters' licenses, 295,000 in Pennsylvania last year, the native-bred game will surely disappear — indeed even now Quail have to be imported and many states restocked. When the same conditions prevail in the states from which Quail are now obtainable the species will be practically extinct. And so with the game that comes to us from breeding grounds far to the north. When these grounds are all reclaimed the supply will end and in future we shall be dependent upon game propagated especially for liberation on the shooting grounds, as is the case in England.

It is well worth while to have this matter placed before us in all its seriousness as has been done in the present volume, so that the public may realize with what sort of a problem they have to deal and see the necessity of securing expert advice.

In speaking of gun clubs the authors give due credit to the importance of the preserves which they establish and the care that is taken to limit shooting days and stop illegal gunning on the grounds. At the same time they point out that the preserves prove so attractive to the birds that practically all individuals normally scattered over large areas are congregated there, where they are exposed to regular slaughter by the most skilful shots and the ultimate destruction is probably hastened. As to the introduc-

tion of non-native species the author's verdict is strongly opposed to the practice. They rightly assert that the native species are better adapted to our country and it is our duty to use all our efforts toward their conservation.

The systematic account of the various species naturally occupies most of the text and is admirably done. Under each heading come paragraphs on: other names; description; marks for field identification; voice; nest; eggs; general distribution; and distribution in California. Then follows in larger type a general account of the habits and history of the species and its relative importance as a game bird. The birds included are the Geese, Ducks and Swan; Spoonbill and Ibises; Cranes, Rail, Gallinules and Coots; Shorebirds; Quail and Grouse; Pigeons and Doves, 108 species in all. The technical nomenclature follows the A. O. U. 'Check-List' and so do the vernacular names except where they are not in accord with Californian usage. This is perfectly proper in a work of this kind especially as the other names are usually mentioned as well. It is rather amusing however to the eastern ornithologist to read of the Mud-hen "known in booklore as the Coot." The authors would find that along the Atlantic Coast "Mud-hen" means the Clapper Rail while "Coot" is by no means a book name in the Eastern States. A little further information on this point might save some of their readers no little trouble, especially as they refer in one place to the "Mud Hen in the east, meaning the Coot." Twelve of the colored plates are by Fuertes and represent that artist at his best while four are by Major Allan Brooks. They form a valuable addition to the published portraits of American birds and add materially to the attractiveness of this well printed volume.

This work will prove of great importance to many different classes of readers: the sportsman will learn more about the game birds of the state than can be found in any other volume and will find the important recognition characters of each species clearly set forth; the bird student, be he amateur or professional, will find it an invaluable work of reference and the conservationist will find in it the facts and suggestions for which he has been seeking. The bibliographies will also prove of the greatest help to those who wish to carry their studies farther and to consult the other works on the subject.

It is encouraging to know that one of the authors of this work, Dr. Bryant, was called, before his task was completed, to fill an important position in the California Fish and Game Commission, and we wish that all the State Game Commissions might be induced to seek men of this type to carry on their activities — surely that is a most important point in game conservation.— W. S.

Mathews' 'The Birds of Australia.'—Part IV of Vol. VII of Mr. Mathews' great work¹ brings us almost to the end of the Cuckoos, only a

¹ *The Birds of Australia.* By Gregory M. Mathews. Vol. VII, Part IV, December 19, 1918, pp. 321-384.

portion of the text of the Coucal remaining to be completed, so that the next part after considering the Lyre Bird will begin the Passeres.

The present number treats of the genera *Cacomantis*, *Vidgenia*, *Owenavis*, *Chalcites*, *Lamprocoocyx*, *Eudynamis*, *Scythrops* and *Polophilus*. The most interesting species among these is the giant "Channel-bill," *Scythrops*, which lays its eggs in the nests of Crows and Crow-Shrikes, birds of about its own size. It has a remarkably loud call and is often active at night, resembling in the latter particular our American Black-billed Cuckoo, while curiously enough its appearance is considered to indicate approaching storms and it is known as "Stormbird" and "Rainbird" just as our own Cuckoos are named "Rain Crows." Further investigation of the origin of this belief would be well worth while for those interested in the "folk-lore" of ornithology. There are eleven plates of the various species and one of the tails of Bronze Cuckoos, all by Grönvold, and among the best that have appeared.

We notice one new genus, *Vidgenia* (p. 327), type *Cuculus castaneiventris* Gould, and one new race *Cacomantis pyrrhophanus vidgeni* (p. 326).—W. S.

De Fenis on Bird Song in its Relation to Music.—This paper¹ is one of the most important and carefully prepared contributions to the study of bird song that has recently appeared. M. de Fenis has considered his subject systematically, under various headings and the results of his investigations are summed up in his conclusion that "The laws of musical development are the same for the music of man as for the song of birds," which corresponds essentially with Mr. Henry Oldys' views on the subject.

The topics which are discussed in the paper are: song of birds in its relation to habits and habitat; difficulties encountered in the notation of bird song; birds which repeat their song regularly; birds which vary their melody but preserve the same rhythm; birds which imitate; birds which improvise.

Many musical and syllabic representations of songs are presented showing some original methods of notation, and illustrating the variation in the song of a single species, especially of the Wren and the Nightingale. An interesting table also shows the relative pitch of the songs of various species of birds in comparison with the range of the human voice and other sounds. In this there seems to be a fairly regular correspondence between the weight of the bird and the pitch of the voice; the highest notes belonging to the smallest and lightest birds.

Those interested in this fascinating subject, which demands considerable musical as well as ornithological knowledge, will do well to read M. de Fenis's valuable paper.—W. S.

¹ Contribution a L'Etude des Cris et Chant des Oiseaux dans ses Rapports avec la Musique. par M. F. de Fenis. Bull. Institut General Psychologique July-December, 1917, pp. 87-130. Paris, at the Office of the Society, 143 Boulevard St. Michel.

Dwight on a New Gull.¹— In an examination of a series of upwards of fifty specimens of the Western Gull (*Larus occidentalis*) Dr. Dwight shows that the species is clearly divisible into two races, the typical bird of Audubon ranging south at least to Trinidad, California, and a darker mantled form with less gray on the primaries, ranging along both coasts of Lower California north to the Farallon Islands. This latter race Dr. Dwight describes as *Larus occidentalis livens* (p. 11).— W. S.

McAtee on the Food Habits of the Mallard Ducks.— The latest 'Bulletin' issuing from Biological Survey treats of the food of the Mallard and Black Ducks.² A very large amount of data is presented showing what a great variety of animal and vegetable species go to make up the bill of fare of these birds.

Ninety per cent of the Mallard's food we learn consists of vegetable matter, more than a third of which is made up of the seeds, roots, leaves and tubers of sedges and grasses, and about a fifth, of similar portions of smart-weeds and pond weeds. Of the ten per cent of animal matter mollusks contribute 5.73 and insects 2.67.

The food of the Black Duck differs materially from that of the Mallard, largely owing to its frequenting the salt marshes and bays along the coast. Only about three fourths of its food is vegetable and fully half of this consists of pond weeds and other submerged plants. Half of the animal food is composed of mollusks, the edible mussel being the favorite, while crustacea furnish eight per cent.

The Southern Black Duck (*Anas fulvigula*) living in a region where the food supply is not affected by cold winters, feeds more largely upon animal matter, forty per cent of its food being of this nature, the greater portion consisting of mollusks. Its vegetable food is largely grasses and smart-weeds.

This report is of especial interest on account of the extensive propagation of these ducks in a semi-domesticated condition and it is another illustration of the thoroughness of Mr. McAtee's researches along these lines. A half-tone plate of the Mallard and Black Duck from a drawing by Fuertes illustrates the pamphlet. In connection with duck food attention should be called to a recent note by Mr. Alex. Wetmore³ on lead poisoning among water fowl, in which he states that the shot gathered up by ducks in the neighborhood of shooting stands proves fatal to many individuals. It is ground up in the stomachs by the pebbles therein contained and causes severe diarrhoea followed by slow paralysis. By experiment it was found that six number six shot, when swallowed, were fatal in every case.— W. S.

¹ Description of a New Race of the Western Gull. By Jonathan Dwight, M. D. Proc. Biol. Soc. Washington, Vol. 32, pp. 11-13. February 14, 1919.

² Food Habits of the Mallard Ducks of the United States. By W. L. McAtee, U. S. Dept. of Agriculture, Bulletin No. 720, pp. 1-35 and one plate. December 23, 1918.

³ Journal Washington Acad. Sci., Vol. VIII, No. 11, pp. 375-376, June 4, 1918.

Stone on Birds of the Canal Zone.— In 'The Auk' for 1913, pp. 422-429, there was published a list of North American birds observed in the Panama Canal Zone by Lindsey L. Jewel. Mr. Jewel died before he was able to prepare a report on the main portion of his collection. His birds later became the property of the Academy of Natural Sciences of Philadelphia and have been identified by Dr. Stone, who has reported upon them in the present paper.¹ In order to make the list of more general use he has added the names of all other species which had been reported from the Zone by previous writers. The list therefore includes 432 species of which 236 are represented in Mr. Jewel's collection.

An introduction calls attention to the collections which had been made in the Zone in previous years, while the list proper contains numerous field notes on the various birds, taken from Mr. Jewel's manuscript memoranda, including accounts of the nest and eggs of a number of species. The South American Swift *Chetura chapmani* Hellmayr, is recorded from the isthmus for the first time on the basis of two specimens secured at Gatun, July 9, 1911, while the capture of a specimen of *Stelgidopteryx serripennis* (Aud.) Gatun, December 18, 1910, would seem to extend its range somewhat to at the southward.

Under the note on Reiffer's Hummingbird, Dr. Stone presents reasons for reverting to the name *Amazilia* for this and other species recently called *Amizilis* and designates *Ornismia cinnamomea* Less, as the type of the former genus. Besides containing much original data the paper will be a convenient hand list for future students of Panama bird life.— S. T.

Shufeldt on the Young Hoatzin.— Dr. Shufeldt² has studied the skeleton and pterylosis of some young Hoatzins submitted to him by Mr. Robert C. Murphy. While his observations seem simply to confirm those of previous writers he has presented some good photographs of both the external appearance of the young bird and the skeleton and has compiled a useful bibliography of papers relating to this interesting species.— W. S.

Riley on Celebes Birds.— In studying a collection of Celebes birds obtained by Mr. H. C. Raven in the north peninsula and the mountains of the middle part of the Island, and presented to the National Museum by Dr. W. L. Abbott, Mr. Riley³ found a number of new forms which are described in the present paper in advance of the complete catalogue of the collection.

¹ Birds of the Panama Canal Zone, with Special Reference to a Collection Made by Mr. Lindsey L. Jewel. By Witmer Stone. Proc. Acad. Nat. Sciences Philadelphia, 1918, pp. 239-280, November 30, 1918.

² Notes on the Osteology of the Young of the Hoatzin (*Opisthocomus cristatus*) and other Points on its Morphology. By R. W. Shufeldt. Jour. of Morphology, Vol. 31, No. 3, December, 1918, pp. 599-606, plates 1-4.

³ Two New Genera and eight New Birds from Celebes. By J. H. Riley. Proc. Biol. Soc. Washington, Vol. 31, pp. 155-159, December 30, 1918.

A Thickhead apparently allied to *Pachycephala* is regarded as representing a new genus is described as *Coracornis raveni* (p. 157), while a Cuckoo Shrike related to *Malindangia* of the Philippines also becomes the type of a new genus and is named *Celebesia abbotti* (p. 158). The other new forms are, *Caprimulgus affinis propinquus* (p. 155); *Collocalia vestita aenigma* (p. 156); *Rhamphococcyx centralis* (p. 156); *Lophozosterops striaticeps* (p. 157); *Cataponera abditiva* (p. 158); and *Cryptolopha nesophila* (p. 158).—W. S.

Oberholser's 'Mutanda Ornithologica V.'—This¹ is the fifth of a series of papers which Dr. Oberholser has been issuing calling attention to necessary changes in the nomenclature of birds in various parts of the world. The species here treated are all Woodpeckers. *Yungipicus pygmaeus* (Vig.) he shows must hereafter be known as *Yungipicus mitchellii* (Mahl.), the specific name being preoccupied and the generic name not following the original spelling. *I. auritus* (Eyton) becomes *Y. moluccensis* (Gmel.), the latter specific name being earlier. *Dendropicops minutus* (Temm.) is preoccupied and is renamed *D. elachus* (p. 8) while *Campethera punctata* (Valencien.) becomes *C. punctuligera* (Wagl.), for the same reason. *Gecinus striolatus* (Blyth) is in like case and becomes *Picus xanthopygius* (Bonap.), *Gecinus* giving way to *Picus* as explained by Hartert (Vogel Palaarkt. Fauna VII p. 889).—W. S.

Miller's 'Birds of Lewiston-Auburn and Vicinity.'—Well prepared local lists have a very definite value and when they are prepared in a way to help the bird student their value is doubled. Such a list is Miss Miller's well printed brochure on the birds of Lewiston-Auburn, Maine.² It consists of notes on 161 species which have been observed in recent times in the region covered, together with 40 additional species of water birds seen by others in the vicinity. Not only is the nature of the occurrence and relative abundance of each species in the main list given, but there are interesting accounts of their habits from personal observation and appropriate quotations from standard works and popular writings on nature, which make the text attractive and readable. Preliminary pages treat of the bird-life of the four seasons and there are some supplementary suggestions to bird students and a table of migrants in the order of their spring arrival. The dedication is to Prof. J. Y. Stanton at whose suggestion the list was prepared and who "was the author's inspiration in all her bird study." His death occurred while the work was in press and the addition of the portraits makes it in a measure a memorial to him. We might call attention to the fact that this excellent list does not contain a

¹ *Mutanda Ornithologica V.* By Harry C. Oberholser. Proc. Biol. Soc. Washington, Vol. 32, pp. 7-8, February 14, 1919.

² *Birds of Lewiston-Auburn and Vicinity.* by Carrie Ella Miller. With an Introduction by Professor J. Y. Stanton. Lewiston Journal Co., Lewiston, Maine [Spring, 1918], pp. 1-80 and two portraits of Prof. Stanton. Papers cover 50 cts., cloth \$1.

scientific name except in a reference to the origin of the domestic pigeon. The A. O. U. numbers are given in parentheses and the A. O. U. vernacular names are used with the addition of others when necessary. Thus is a matter that seems to trouble many bird students, easily disposed of! If the use of scientific names were limited to scientific publications there would be far less criticism of the changes in them. Miss Miller's little book is an excellent model for a present day local list for the use of the amateur bird student who wishes a reliable and helpful hand book.—W. S.

Recent Papers by Bangs.—In 'The Auk' 1918, p. 441, Mr. Arthur T. Wayne states that on two occasions he saw Black-throated Green Warblers, in the maritime region of South Carolina, building a nest and carrying nesting materials during April. Mr. Bangs¹ now describes one of these April birds as a new subspecies and states that Mr. Wayne sent him a series of seven specimens all of which differed from northern birds in the same way — *i. e.*, in duller coloration and smaller bill. The new form is named *D. virens waynei* (p. 94). In another paper² he discusses the species of the genus *Paecilonitta* as it is now to be spelled, following the original publication. He recognizes *P. bahamensis bahamensis* (Linn.), Florida to Brazil; *P. b. rubrirostris* (Vieill.), from southern South America; *P. galapagensis* Ridgw., Galapagos Isls.; *P. spinicauda* (Vieill.) southern South America; and *P. erythrorhyncha* (Gmel.), Madagascar and Africa.

Peles (p. 92) is proposed³ by Mr. Bangs as a new genus for *Caprimulgus binotatus* Bp.—A review of the South American Short-eared Owls⁴ leads him to recognize three neotropical races. These are *Asio f. brevicauris* (Schlegel) from southern South America; *A. f. bogotensis* Chapman, from the Bogota Savanna, and *A. f. sanfordi* (p. 97) subsp. nov., from the Falkland Islands.

Another paper⁵ deals with the races of *Dendroica vitellina* Cory, and a new form is described from Swan Island which Mr. Bangs names *D. v. nelsoni* (p. 494). It is somewhat intermediate between the other forms — the typical race of Grand Cayman and *D. v. crawfordi* Nicoll, from Little Cayman and Cayman Brac.—W. S.

Economic Ornithology in Recent Entomological Publications.—Items pertaining to this subject continue to accumulate slowly. Those on hand pertain to the following insects:

¹ A New Race of the Black-throated Wood Warbler. By Outram Bangs. Proc. N. E. Zool. Club., Vol. VI, pp. 93-94, October 31, 1918.

² Notes on the Species and Subspecies of *Paecilonitta* Eyton. By Outram Bangs. *Ibid.*, pp. 87-89. October 31, 1918.

³ A New Genus of Caprimulgidae. By Outram Bangs. *Ibid.*, pp. 91-92. October 31, 1918.

⁴ Notes on South American Short-eared Owls. By Outram Bangs. *Ibid.*, pp. 95-98. February 8, 1919.

⁵ The Races of *Dendroica vitellina* Cory. By Outram Bangs. Bull. Mus. Compar. Zool. Vol. LXII, No. 11, pp. 493-495. January, 1919.

Larch bark-beetles and borers.—In a general account of insects affecting the Larch in Erie County, N. Y., is the following interesting information, relating to the work of woodpeckers.¹

“The work of woodpeckers is much in evidence and seems to be an efficient agency in reducing to some extent the numbers of the brood of several of the more numerous bark-boring insects. The birds seem to work in two ways — first by making small conical holes through the bark into the sapwood to obtain the larvæ of the larger species of beetles which have gone there to hibernate or to pupate, and secondly by removing practically all of the bark on large areas of the trunk to uncover the brood (larvæ, pupæ and young adults) of the bark beetles.

“In some cases this work reached an unusual degree of efficiency. For instance one particular tree forty or fifty feet high and about 14 inches in diameter, had had nearly all of the bark removed from the ground to the very tip. This tree had been heavily infested with *Dendroctonus simplex*, *Polygraphus rufipennis* and other borers, but only a small per cent of the original infestation had survived the woodpeckers' thorough search for food. Of course all of the infested trees had not been so thoroughly gone over by the birds and a number of such trees had apparently not been found by them at all. However, it is safe to say that the woodpeckers were an efficient force, working toward the return of the normal balance of nature which had been upset by the girdling, season after season, of a number of the larches by farmers. It is not believed that the woodpeckers will be able unaided to reduce the numbers below the danger level, as long as more trees are girdled each year, but should this practice cease it is possible that they would be able eventually to obtain the upper hand and that conditions would return to normal.”

Lepidopterous root-borers.—The grape root-borer (*Memythus politiformis*) for which no parasites are known was seen to be eaten in the adult stage by the Crested Flycatcher (*Myiarchus crinitus*).² Two other Flycatchers, the Kingbird and Phoebe, are recorded as enemies of both the greater and lesser peach-tree borers (*Sannenoidea exitiosa* and *Synanthedon pictipes*).³ All of these insects are not only seriously destructive, but from their secluded habits in the larval stage, have few parasite enemies and are difficult to control by man. They belong to a family of moths all of which in the adult condition more or less closely mimic wasps and other hymenoptera and which have been supposed, probably mistakenly, to derive some advantage from this resemblance, in the way of immunity from predatory enemies.

Cankerworms.—An investigation of the relation of birds to canker-

¹ Blackman, M. W. and Stage, Harry H. Tech. Publ. No 10, N. Y. State College of Forestry, May, 1918, pp. 16-17.

² Brooks, L. E. Bull. 730, U. S. Dept. Agr., Dec. 24, 1918, p. 27.

³ Gossard, H. A. and King, J. L., Bull. 329, Ohio Agr. Exp. Sta. Sept., 1918, p. 70.

worms near Lawrence, Kansas, has had the same result as those made by several previous students, among whom were Riley, Forbes and Forbush. The following summary of the matter is quoted and abstracted from a report¹ by Mr. Walter H. Wellhouse.

"Next to unfavorable weather, the birds are the most important natural enemies of the cankerworms. Probably no insect is a favorite food of more species of birds than the cankerworm larva. It lives exposed on the outside of twigs and leaves where the birds can easily secure it, and is without distasteful hairs or spines on its integument. The English Sparrow, which is said to have been imported into America to check the ravages of this insect, is no doubt our most efficient cankerworm eater in the cities. We have watched these much-despised birds picking larvæ from the elms at all hours of the day from early morning to twilight, and even during rains. The Robin is also an efficient destroyer of cankerworms, especially of the moths which are found at the base of the tree. The writer has seen flocks of Bronzed Grackles alight in the tall elms in Lawrence, and, moving from branch to branch, noisily devour great numbers of larvæ. Having exhausted the supply on one tree they moved in concert to another tree to continue the feast.

"Many of the more timid birds which are not found in the cities so commonly as the English Sparrow and Robin are just as efficient enemies in the country.

"Mr. C. D. Bunker, curator of mammals in the Dyche Museum, secured a hundred birds from a grove four miles from Lawrence and carefully estimated the percentage of cankerworm larvæ found in their stomachs. They were taken near the edge of the timber where they could easily have returned from the surrounding fields with other food, and the grove is composed of several species of trees, only a small per cent being elms infested with cankerworms."

The hundred bird stomachs reported upon represent 39 species of birds, all but three of which had eaten cankerworms. Eighteen of the species had at least one individual which had eaten 100% cankerworms. Including birds previously mentioned in the literature as enemies of cankerworms the list now totals 75 species.

White Grubs.—Mr. Norman Criddle has an extremely interesting note on the bird enemies of white grubs (larvæ of *Phyllophaga* spp.) in a recent article² on these pests in Manitoba. He notes that

"Robins are eager seekers after White Grubs, and have been known to frequent infested fields for weeks. Crows, apart from their habit of following the plough, are also very useful as grub searchers; the same may be said of Flickers."

The following extract contains a specific recommendation that farm

¹ Bull. Univ. Kans. Vol. 18, No. 1, Oct., 1917, pp. 301-302, Wellhouse, Walter H.

² Agr. Gaz. Can. Vol. 5, No. 5, May, 1918, pp. 449-454.

practice be planned chiefly with a view of best utilizing the services of birds in destroying white grubs; a remarkable tribute to the effectiveness of practical economic ornithology:

"Birds are most persistent followers of the plough during their breeding season or while migrating; gulls and terns from May 16th to June 22d, and for a short time late in July; crows and blackbirds, including grackles, from the time grubs appear in May until July 1st.

"From the foregoing we reach the conclusion that to attain the best possible results under conditions existing in Manitoba, ploughing should be done between May 14th and July 1st, and at an average depth of five inches. The idea is, of course, to turn up as many grubs, eggs, or pupæ as possible, a majority of which will, in all probability, be picked up by birds. Many eggs will be destroyed by the plough alone, but it is advisable to harrow as soon as possible after ploughing, as by this means numerous egg cells will be broken, causing a large percentage of deaths among the eggs and newly-hatched young, besides exposing them to attack by birds. Exposed pupæ will also be destroyed by this method.

"So far as the interests of farming is concerned, it will be observed that the above recommendations do not in any way clash with the best cultural methods. There is good reason for believing, too, that they will prove of value in the destruction of wireworms.

"With reference to the large part birds are expected to play in this work, it may be claimed that birds are not always present in sufficient numbers, and that their capacity is, after all, limited. Granting this to be true in certain districts, we must remember that white grubs are only found within comparatively close range of trees, and that their principal habitats coincide with the haunts of Crows, the most persistent of all plough followers. Thus, if there are no Crows present the farmer and sportsman are probably largely to blame, and the question then resolves itself into the economic one as to which does most harm, the Crows or the white grubs. We do not think there can be much doubt on this point in grub-infested localities. The writer has personally seen fully ninety per cent of white grubs exposed picked up by Crows when he was himself the ploughman.

"Blackbirds are more dependent upon water than Crows, hence are not so evenly distributed, but when present prove very efficient grub destroyers. Cowbirds (*Molothrus ater*) are also extremely useful in this respect, and probably largely compensate for their parasitic habits by this means." — W. L. M.

The Ornithological Journals.

Bird-Lore. XXI, No. 1. January-February, 1919.

When the North Wind Blows. By A. A. Allen.—Excellent photographs of winter birds and account of the actions of the White-breasted Nuthatch.

Our Responsibility. By Mabel Osgood Wright.—Another admirable account of winter bird life, in Connecticut.

Notes from a Traveller in the Tropics. Cuba to Panama. By Frank M. Chapman.

An Evening with Birds in Florida. By J. W. Lippincott.

The Great Horned Owl. By F. N. Whitman.—Account of nest and young.

Under 'Migration and Plumages of North American Birds' the Ravens are considered, and there is the usual large collection of Christmas lists.

The Condor. XX, No. 6. November–December, 1918.

Nesting of the Rocky Mountain Jay. By W. C. Bradbury.—A valuable account with numerous illustrations of the bird, its nest, eggs, and haunts.

Description of a new *Lanius* from Lower California. By Harry C. Oberholser.—*Lanius ludovicianus nelsoni* (p. 209), Todos Santos.

Mr. P. A. Taverner has a letter explaining his practice of employing only binomial nomenclature until the necessary specimens and comparisons are available to ensure beyond a doubt to which race the bird in question belongs (see beyond p. 316).

The Condor. XXI, No. 1. January–February, 1919.

A Return to the Dakota Lake Region. By Florence Merriam Bailey.—A continuation of this delightful article.

The Solitaires of Shasta. By W. Leon Dawson.—Good account of the bird and its nesting, with illustrations from photographs.

Nesting of the Short-eared Owl in Western Washington. By E. A. Kitchin.—Good illustrations of nest and young.

Problem: Do Birds Mate for Life? By J. Eugene Law.—The same suggestion is made, among others, as is offered in 'The Auk,' p. 138, in comment on a paper of similar title by F. C. Willard. A further extended comment on the same paper follows Mr. Law's, which is by N. K. Carpenter and supports Mr. Willard, although the evidence except in one instance is no more convincing than was his.

Parasitism of Nestling Birds by Fly Larvæ. By O. E. Plath.—This is a valuable account of the same parasites referred to in a letter of Dr. W. W. Arnold in 'The Auk' for January, 1919, p. 147, giving a much fuller history of the insect.

Wilson Bulletin. XXX, No. 4. December, 1918.

Finding the Nest of the Knot. By W. Elmer Erklblaw.—On the Crocker Land Expedition, in 1916. Eggs now in the American Museum of Natural History.

Migration Records for Kansas Birds. By Bessie P. Douthitt.—This instalment covers the water birds only. The nomenclature does not follow the A. O. U. List but seems to be a compilation from various authors who have ideas of their own on this subject. The result is rather startling. In the Cranes for instance, the author divides our three species, which everyone has regarded as congeneric, into two groups *Limnogeranus* and

Grus, names which by the way are synonyms. As we have stated before we can see no result but confusion in departing from the generally recognized A. O. U. names in local lists of North American species.

Revisory Notes on the List of the Birds of Nebraska. By Myron W. Swenk.—In this list too we find names which have not been authorized by the A. O. U. 'Check-List.'

The Oölogist. XXXV, No. 12. December, 1918.

Observations on a Family of Winter Wrens. By Alex. D. McGrew.—Data on the feeding of the young, with photographs of the female, at Endeavor, Pa.

The Oölogist. XXXVI, No. 1. January, 1919.

Some Nesting Birds of the Palisades Interstate Park. By P. M. Silloway.

The Ibis. (XI Series), I, No. 1. January, 1919.

Notes on Collections of Birds in the British Museum, from Ecuador, Peru, Bolivia, and Argentina. Part I. Tinamidae—Rallidae. By Charles Chubb.—This report covers collections made by Perry O. Simonds in the countries mentioned which have been presented to the Museum by Mr. Oldfield Thomas; as well as the Goodfellow Ecuador Collection and one made by the late Lord Brabourne in northwestern Peru.

The following new forms are described. *Crypturus garleppi affinis* (p. 8), Rio Blanca, Bolivia; *Chamæpetes goudotii antioquiensis* (p. 22), Valdivia, Antioquia, Colombia; *Odontophorus guianensis simonsi* (p. 26), San Ernesto, Mapiri, Bolivia; *O. g. panamensis* (p. 26), Panama; *O. g. buckleyi* (p. 27), Sarayacu, eastern Ecuador; *Zenaida auriculata noronha* (p. 36), Fernando Noronha Island; *Leptoptila verreauxi brevipennis* (p. 45), Trinidad; *Paridicallus rityrhynchus tschudii* (p. 50), Junin, central Peru; *Aramides cajanea grahami* (p. 53); Para.

Birds from the North of France. By Capt. A. W. Boyd.—An annotated list covering a year's service in the British Army in the departments of Pas de Calais, Somme and Nord.

On One of the Four Original Pictures from Life of the Reunion or White Dodo. By Lord Rothschild.—An interesting historical sketch with reproduction of the picture.

A Note on Capt. Beebe's Monograph of the Pheasants. By H. J. Elwes.—A tribute to the work, with some important criticism on the value of certain races there recognized.

On the Eclipse Plumage of *Sporophila pileata*. By F. E. Blaauw.—Has distinct winter and summer plumages.

List of the Birds of the Canary Islands, with Detailed Reference to the Migratory Species and the Accidental Visitors.—Part I. Corvidæ—Sylviidæ. By David A. Bannerman.—This is a remarkably complete treatment of the subject, the author having made an exhaustive study of the literature and taken a number of trips to the islands. The present publication is preliminary to a proposed book on the subject.

In the reviews the editor of 'The Ibis' honors us by crediting 'The Auk' with some 300 more pages than actually appeared in the 1918 volume; we

hope however that ere long we may be able to live up to his generous allowance!

Bulletin of the British Ornithologists' Club. CCXXXVII. November 30, 1918.

This number contains the annual review of ornithological activities by the Chairman, Mr. W. L. Selater.

There are also descriptions of a number of new species, as follows: By W. L. Selater; *Buteo jakal archeri* (p. 17), Waghar, Somaliland. By E. C. Stuart Baker; *Bhringa remifer peracensis* (p. 18), Telom, Malay Peninsula; *Picus canus gyldestolpei* (p. 19); Sadiya, Assam; *Therecerix lineatus intermedius* (p. 19), Pahpoon, Burma; *Cyanops dwaceli robinsoni* (p. 20), Klang, Malay Peninsula; *Pitta cerulea hosei* (p. 20), Mt. Dulit, Borneo. By Dr. Hartert; *Corvus rhipidurus* as a substitute for *Corvus affinis* Ruppell (p. 210). By Charles Chubb; *Gampsonyx swainsonii magnus* (p. 21), Amotape, Peru; *G. s. leonæ* (p. 22), Leon, Nicaragua; *Falco rufigularis petoensis* (p. 22), Peto, Yucatan; *F. r. paz* (p. 22), Charuplaya, Bolivia. By G. M. Mathews: *Diomedea exulans westralis* (p. 23), W. Australia, off Albany; *Acanthiza pusilla peroni* (p. 23), Peron Peninsula, Australia; *Leggeornis lamberti hartogi* (p. 24), Dirk Hartog Island, Australia; *Uodynamis taitensis belli* (p. 24); Norfolk Island.

Bulletin of the British Ornithologists' Club. CCXXXVIII. January 3, 1919.

Mr. Chas. Oldham gave an extended account of the breeding of the Black-necked Grebe (*Podiceps nigricollis*).

Mr. E. C. Stuart Baker discusses the races of *Alcedo meninting* of which he recognizes six. *A. m. coltarti* (p. 39), from Saddy, Assam and *A. m. scintillans* (p. 38), Bankasoon, are described as new.

Dr. Hartert proposed *Aegithalos caudatus pyrenaicus* for a new race recently described in 'Novitates Zoologicae' but inadvertently not named.

Mr. Chas. Chubb described: *Sclerurus mexicanus certus* (p. 41) Guatemala, Volcan de Agua; *S. m. macconnelli* (p. 41), Ituribisi River, British Guiana; *S. m. peruvianus* (p. 41), Yurimaguas, east Peru; *S. m. bahiæ* (p. 42), Bahia, Brazil; and the new genus *Poliolæma* (p. 42), for *Myrmotherula cinereiventris* (Scl. & Salv.).

Bulletin of the British Ornithologists' Club. CCXXXIX. January 29, 1919.

Mr. Stuart Baker described as new, *Penthoceryx sonnerati waiti* (p. 47), Ceylon. Dr. Hartert; *Serinus buchanani* (p. 50), Maktan, East Africa. Mr. Chas. Chubb; *Dendrocincla bartletti* (p. 50), Chamicuros, east Peru; *D. fuliginosa wallacci* (p. 52), Para, Brazil; *Xenops genibarbis cayoensis* (p. 52), Cayo, British Honduras.

British Birds. XI, No. 7. December, 1918.

The Moults and Sequence of Plumages of the British Waders. By Annie C. Jackson.—Northern Phalarope, Stilt, Avocet and Godwit. Concluded in the next number, which contains the Curlew, Snipe and Woodchuck.

Avicultural Magazine. X, No. 3. January, 1919.

Colour Change in the Plumage of Birds. By Dr. V. G. L. Van Someren. — A most important reply to a paper by Dr. A. G. Butler which claimed color change in a Weaver Bird (*Pyromelana*) and referred to *Turacus* as a good illustration of the passing of pigment up the vanes of fully formed feathers. The author states that numerous experiments with the crimson feathers of the latter genus from both skins and living birds failed to show any loss of color. Similar experiments in the Philadelphia Zoölogical Garden, it might be added, resulted in the same way. In regard to the Weaver, all Dr. Van Someren's birds effected the change by molt as might be expected, and they ate many of the feathers which accounts for the lack of cast feathers in many accounts of supposed color change. These observations should settle this vexed question.

Avicultural Magazine. X, No. 2. December, 1918.

The Pigeons of the Gambia. By E. Hopkinson.

The Emu. XVIII, Part III. January, 1919.

Haunts of the Letter-winged Kite (*Elanus scriptus* Gould). By Sidney W. Jackson.

An interesting account of a trip through Western Queensland with a list of the birds observed. Illustrations of the nest, eggs and young of the Kite.

Notes on Birds from the Gouldian-Gilbert Type Locality, North Australia. By A. J. Campbell.— This paper is an account of a collection made by Wm. McLennan near Port Essington, the spot where Gilbert collected so many of the birds described by Gould. In commenting on the type localities quoted by Mr. Mathews, the author calls attention to the fact that they do not always agree with those given by Gould in his original descriptions, in the 'Proceedings' of the Zoölogical Society. Mr. Campbell would do well to consult the paper prepared by Mr. Mathews and the editor of 'The Auk.' (Austral Avian Record, Vol. I, No. 6-7), in which the history of the Gould collection is given and individual specimens selected as the types. The collection is not at Washington, as Mr. Campbell supposes, but at Philadelphia, in the museum of the Academy of Natural Sciences, where it has been ever since it left Europe. The fact that Gould described a few birds from the north-west coast of Australia, before Gilbert reached Pt. Essington, as stated by Mr. Campbell, is interesting and would seem to indicate that the latter should not be quoted as the type locality. In such cases, when all the specimens were labelled Pt. Essington, we selected one of them as the type, as it seemed likely that the labelling might be inaccurate and no other possible types seemed to be in existence.

Four Ornithological Trips to the Nullabor Plains. By Capt. S. A. White.— An interesting account of travel in this region with many illustrations.

Revue Française d'Ornithologie. X., No. 114. October 7, 1918.
[In French.]

Contribution to a Study of the Storm Petrels of the Mediterranean. By L. Lauden.

Researches on the Group of *Saxicola aurita* and *S. stapazina*. By M. Bede (concluded in the next number).

Study of a Collection of Birds made by M. E. Wagner in the Province of Misiones, Argentina. By A. Menegaux (continued in the next number).

Revue Française d'Ornithologie. X., No. 115. November 7, 1918. Two Character Indices and Differentials of the Passeres, Waders and Gallinaceous Birds. By Maurice Boubier.—Comparisons of the relative length of the first and middle digits, and between the length and breadth of the bill.

The December number consists of an index to the volume.

Ornithological Articles in Other Journals.

Oberholser, H. C. Description of a New *Iole* from the Anumba Islands. (Proc. Biol. Soc. Washington XXXI, December 30, 1918.—*I. olivacea crypta* (p. 197).

Oberholser, H. C. Status of the Genus *Orchilus*. Cabanis. (*Ibid.*)—*Nothorchilus*, gen. nov. (p. 204) type *Platyrrhynchus auricularis* Vieill.

Hartert, Ernst. Notes on Starlings. (Novitates Zoöl., XXV, No. 2, November, 1918.)—A review of the races of *Sturnus vulgaris*, of which 19 are recognized, *S. v. zelandicus* (p. 329) North Yell, Shetland Isls., is described as new.

Hartert, Ernst and Goodson, A. T. Notes on Pigeons. (*Ibid.*)—Revisions of various species. The following new forms are proposed: *Ptilinopus rivoli buruanus* (p. 347), Buru; *Treron calva poensis* (p. 350), Fernando Po; *T. c. brevicra* (p. 353), Moschi, E. Africa; *T. c. sejuncta* (p. 353), Portuguese Guinea; *T. curvirostra hainana* (p. 356), Hainan; *Geopelia maugeus aulacis* (p. 358) Tenimber.

Hartert, Ernst. Some Nomenclatorial Notes. (*Ibid.*)—Reference to Navás' 'Ornithologia de Aragón (1907)' and new names proposed therein. Also the following changes. *Corvus affinis* Rupp. becomes *C. brachyrhynchus* Brehm; *Oriolus melanocephalus* L. 1766 becomes *O. luteolus* (L.) 1758; *Muscicapa grisola* (L.) becomes *M. striata* (Pall.); *Carpophaga* becomes *Muscadivora* Schl., *Muscidivores* Gray being rejected. There is finally a strong protest against changing names on the basis of one letter (or other slight) difference.

Hartert, Ernst. A New Race of Long-tailed Titmouse. (*Ibid.*)—Pyrenees form described but not named (see *antea* p. 310).

Hartert, Ernst. *Garrulus bispicularis* and its allies with List of all Forms of *Garrulus*. (*Ibid.*)—*G. b. persaturatus* (p. 430) Khasia Hills, *G. b. interstinctus* Darjiling.

Hartert, Ernst. Further Notes on Pigeons. (*Ibid.*)—*Phleganys crinigera basilanica* (p. 434), Basilan; *P. c. leytenensis* (p. 434), Leyte.

Wait, W. E. Notes on Ceylon Water Birds. Part II. (*Spolia Zeylanica*, X, Part 39.) October, 1917.

- Wait, W. E.** Rough Draft of Ceylon Pigeons and Game Birds. (*Ibid.*)
- Oberholser, H. C.** Spizixidæ, a new Family of Pyenonotine Passeriformes. (Jour. Washington Acad. Sciences, IX. January 4, 1919.)—Spizixidæ (p. 14) also *Cophixus* gen. nov. type *Spizixus semitorquus* (p. 15).
- Iverson, L.** Moth. An Essay Comparing some Mammals and Birds of North Central Europe with Related Species native in Northern United States. (Trans. Utah Acad. Sci., I, 1918.)—A rather unfortunate effort, as the vernacular names used for American species sometimes leave one in doubt as to what bird the author has in mind; the Coots of the two countries are said to be quite differently colored!
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Cuba. (*Ibid.*, pp. 22, 223-224.) Cinnamon Teal, (*Querquedula cyanoptera*.) [In Spanish.]

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CORRESPONDENCE

IDENTIFICATIONS.

(CHARACTERS VS. GEOGRAPHY).

EDITOR OF 'THE AUK';

We are between two horns of a dilemma. On the one hand, *vide* Dr. Dwight, how can we verify a specimen as subspecies "x" unless it carries the distinguishing marks by which "x" is characterized? Subspecific and other similar distributions must be founded upon observed differences in specimens; to reverse the process and identify specimens geographically without regard to characters neither adds to nor verifies existing knowledge and is reasoning in a vicious circle. It can confirm error but never correct it.

On the other hand, as Dr. Grinnell points out, taxonomic relationship descends genetically. An individual is form "y" because it comes of "y" parentage, not because it happens to show certain peculiarities of form or color. Just as distribution maps must be based upon exhibited characters, so genesis is more fundamental than appearance or form which manifestations may at any time be obscured by atavism, mutation or migration. The very fact that a certain subspecies exists in some part of a specific range is indicative that it is a possible variation in that species and suggests a certain tendency in that direction latent in every individual of that specific form. We can therefore expect, every now and then, to find individuals of pure "x" blood resembling, in varying degree, "y" of the same species. To name such a specimen "y" is as logical as calling a Viceroy butterfly a Monarch because it superficially resembles one. On these points, Dr. Grinnell is as sound as Dr. Dwight is on his.

The flaw in Dr. Grinnell's reasoning is however in his advising the geographical identification of aberrant specimens on the assumption that genetic and geographical relationship are synonymous. Dealing with stationary forms of life, such as plants, proximity of station is only strong presumptive evidence of genetic affinity. With mobile birds such probability is tremendously reduced. With Scissor-tailed Flycatchers from Hudson Bay and Black-capped Petrels from the Mississippi Valley it is evident that community of association is only presumptive of community of descent and that geography is an uncertain guide to identification.

Dr. Grinnell pleads for the exercise of "the judgment based upon experience — just as is needed in any other advanced field of knowledge." No one will quarrel with him over the value of this necessary qualification of decision. The only question is where shall it be used? Is not the first duty of the scientific investigator the elimination of the human equation in the statement of fact? In the deductions drawn therefrom full scope

must be allowed for the genius of skilled intuition but a sharp dividing line must always be drawn between ascertained demonstrable facts and hypotheses.

The truth is, we cannot with absolute certainty identify every specimen we study. Why then deceive ourselves and mislead others by making a bluff at doing the impossible? Why not own up honestly and admit that we cannot name such material? We may state that we think it is so and so and where necessary give reasons for the conclusion, but to pass as fact what is only opinion is not the spirit of modern science. The logical solution of the problem is to name subspecifically only such specimens as are humanly demonstrable and use the binomial for the rest. In other words reverse usual practice and instead of using the trinomial regularly and the binomial on occasion use the binomial generally and the trinomial only where necessity or the facts justify its use.

P. A. TAVERNER.

Museum Geological Survey,
Ottawa, Ont., Dec. 27, 1918.

[While there are some points in favor of Mr. Taverner's plan, which by the way he has put into practice in his article on 'The Birds of the Red Deer River' in this and the preceding numbers of 'The Auk,' there are others which count against it.

First of all we must realize that the practice of duplicating the specific name when referring to the earliest subspecies of a group — i. e. *Melospiza melodia melodia* — is by no means universally adopted, and in very many recent papers and all of those of earlier date the binomial *Melospiza melodia* is used for the first described race and trinomials for the others. Now Mr. Taverner would use this binomial for *some one race* (seen but not positively determined) of *M. melodia*. In the A. O. U. 'Check-List' the same binomial is used to indicate the whole group of subspecies of Song Sparrows collectively. Hence we have three different concepts which we try to denote by one expression. In an index these are hopelessly confused and we are likely to miss valuable information about some form that we are investigating because it is masquerading under some specific name where we would never think of looking for it.

Now as we have in current use a form of name to indicate just what Mr. Taverner has in mind, why not stick to it — i. e. *Melospiza melodia* subsp.? This would avoid all ambiguity. As his practice stands I find it is quite misunderstood, as all of those of whom I inquired, and who had not read Mr. Taverner's published views on the subject, thought that he was simply following Mr. Leverett M. Loomis in abandoning subspecies entirely.

Another difficulty presents itself when we try to follow out Mr. Taverner's plan in the matter of closely related *species*. There are many species that so closely resemble one another that differentiation would be impossible in the field should they happen to occur together. Now Mr. Taverner in

his efforts to avoid every possible mistake refuses to designate the subspecies of the American Magpie because there are European races of the bird which would be indistinguishable from it should they happen to occur here. At the same time he does not hesitate to name the Titlark, *Anthus rubescens*, although he would find it equally difficult to distinguish it from the European *A. spinoletta* — of which indeed Dr. Oberholser considers it a subspecies. So with the Bittern, Solitary Sandpiper, Spotted Sandpiper, etc., etc., which closely resemble species in other parts of the world. Now if it is permissible to “guess” at these *species* why not guess the subspecies also, where we are reasonably certain of them, and use the form I have indicated above in cases where we are on the borderland between races or where winter flocks may contain more than one subspecies?

If we should collect several specimens of a bird that was widely distributed over the region we were exploring it would seem absurd not to infer that all were the same form, and record them as common — though we should really be *absolutely certain* of only the few that had been shot.

As a matter of fact it is possible to make a misidentification in the case of almost any sight record and we also make misidentifications when we have specimens actually in hand, while every reviser of a group has a different opinion as to the disposition of specimens from certain regions. Therefore it should be clear that no system of names will ensure absolute accuracy.

In view of all this why not follow previous custom and make our identifications generic, specific and subspecific where the evidence points with reasonable clearness; using “sp.?” or “subsp.?” where there is a real doubt?

Nomenclature is now bearing about all the burdens it will stand and with the excessive multiplication of genera, the establishment of several different kinds of intergradation, the proposed revision in the forms of names according as they are regarded as adjectives or nouns — it is rapidly weakening both in utility and stability, and ere long we may be in danger of a collapse of the whole cumbersome system!— WITMER STONE.]

NOTES AND NEWS.

DR. FREDERICK DUCANE GODMAN, one of the original Honorary Fellows of the American Ornithologists' Union, a past president of the British Ornithologists' Union and famous as one of the authors of the 'Biologia Centrali Americana,' died at his home in England on February 19, 1919, aged 85 years.

Dr. Godman was born on January 15, 1834, and was educated at Eton and Trinity College, Cambridge. At college he met Osbert Salvin and the two developed an intimate friendship which was broken only by Salvin's death in 1898. There were other college friends too, all of them interested in ornithology and they used to meet for comparison of notes and specimens. This led to the formation in 1857 in the rooms of Alfred Newton, of the British Ornithologists' Union.

Entomology and Botany also engaged Godman's attention and a trip with Salvin to Jamaica, Belize and Guatemala, in 1861, resulted in the collecting of a large amount of natural history material. They united their collections and began preparations for the great work on the natural history of Central America which has been ever closely associated with their names — the 'Biologia Centrali Americana' the first parts of which appeared in 1878. Godman with a corps of expert collectors visited Mexico in 1888 in the interests of this work, while at various times he made trips to different parts of Europe, and North Africa. He published a work on the Azores in which islands he had travelled extensively and was also author of numerous articles in 'The Ibis' and other scientific journals. During his later life he was more interested in entomology, pursuing extensive studies in the Lepidoptera, but joined with Dr. Bowdler Sharpe in 1907 in getting out a Monograph of the Petrels, a work which his friend Salvin had always had in mind.

Dr. Godman was deeply interested in hunting and fishing and his great diversion from his more serious work was horticulture. He served both as Secretary and President of the B. O. U. and was a trustee of the British Museum. His death leaves but one of the original Honorary Fellows of the A. O. U., Count Salvadori.— W. S.

ROBERT DAY HOYT, a pioneer naturalist and bird collector in Florida, died at his home at Seven Oaks, near Clearwater, Florida, on November 23, 1918. Although never a member of the American Ornithologists' Union, he possessed a wide knowledge of Florida birds and through his collections contributed much to the advancement of ornithology in that State.

Mr. Hoyt was born in New York City, November 18, 1857. When he was about eighteen years of age, his parents moved to Madison, New Jersey. He early developed a love for the outdoors and the living creatures

about him. When still quite young he became acquainted with David Dickenson, of Chatham, New Jersey, and from him learned the art of taxidermy. He then went to Florida on a collecting trip and spent several weeks camping with his father on the St. Johns River, the Oklawaha, and Silver Springs. He continued to visit the State every winter thereafter until 1881, when he moved to Clearwater and bought the place at Seven Oaks where he lived the rest of his life.

He improved every opportunity to collect natural history material and amassed a considerable collection of mounted birds, birds' skins, and birds' eggs, which is now in the Florida State Museum at Gainesville. He was a skilled taxidermist and his services were always in demand for such work. He mounted a large number of birds for Mr. John Lewis Childs, of Floral Park, New York, most of which are now in the Brooklyn (N. Y.) Museum.

Unfortunately, Mr. Hoyt found little time or inclination to publish the results of his observations. Following is a list of the only papers by him known to the writer:

1905. Nesting of the Ivory-billed Woodpecker in Florida (*Campephilus principalis*). The Warbler (2nd Series), I, No. 2, pp. 52-55, 1 plate. Nesting of Ward's Heron (*Ardea herodias wardi*). Ibid., I, No. 4, pp. 114-115.
1906. Nesting of the Roseate Spoonbill in Florida. Ibid., II, No. 3, pp. 58-59.
1918. The American Robin in its northern migration, Feb. 15, 1915, in Pinellas County, Fla. The Oölogist, XXXV, pp. 6, 9; 2 plates.

Mr. Hoyt is survived by his widow, two sons, and two daughters.

A. H. H.

THE Museum of the California Academy of Sciences has recently acquired by gift the entire ornithological and oölogical collection of Messrs. Joseph and John W. Mailliard, prominent business men of San Francisco, and Fellow and Member respectively of the American Ornithologists' Union.

The collection contains close to 25,000 specimens, and is primarily a research collection. Of bird skins there are more than 11,000 specimens representing 777 species; of nests and eggs there are upwards of 13,000 specimens representing more than 600 species.

The Mailliard brothers have been interested in birds from their boyhood days, and these collections are the result of more than forty years of careful, painstaking field work. There are perhaps few, if any, collections that have been made with greater care or in which a greater percentage of the specimens have real scientific value. In the ornithological collection are some of the first reliable records of several species of California birds, as well as the only specimens of other species from localities where they are now unknown. There are also many albino specimens of unusual interest, and several remarkable hybrids. Of certain forms the series are

the most complete of any collection in America. In the oölogical collection there are large, carefully selected series of species now difficult or impossible to obtain.

The Messrs. Mailliard are members of the Cooper Ornithological Club and are both actively interested in the California Academy, John W. Mailliard being a trustee and Joseph Mailliard honorary curator of birds in the Academy's Museum.

The Academy is certainly to be congratulated upon securing this valuable collection, which, added to those already in its possession puts this institution in the front rank in the field of ornithology and oölogy in western America.

Now that the war is over and travelling becomes possible again a number of collectors are in the field. Roy Chapman Andrews of the American Museum of Natural History has returned to China to continue his work there, and Mr. Klages, the well-known bird collector, is making a trip through French Guiana to the Amazon. On February 26, Capt. William Beebe left New York with a party, which will establish themselves at the Tropical Research Station of the New York Zoölogical Society in British Guiana, where work of much importance will be carried on.

IN view of the constantly increasing interest in ornithology and the increasing difficulty in obtaining specimens, it seems highly desirable that more information should be accessible regarding the extent and character of the larger collections of the United States and Canada. The student would thus have a better idea as to what material is available while museums and individual collectors by making known their desiderata would perhaps be enabled to fill their gaps.

One important collection has just been completely checked up and at our request the owner, Mr. J. H. Fleming of Toronto, has kindly given us his figures. This is one of the largest private collections and covers the birds of the entire world — a most commendable feature. We learn that it comprises about 25,000 specimens representing 5,377 species and 1,925 genera, as recognized in Sharpe's 'Hand List.' When we note that there are, according to this authority, some 17,000 species of birds and 2,647 genera, we realize that Mr. Fleming has about one third of the known species and three fourths of the genera represented, the latter being evidence of the painstaking care that he has exercised in bringing together this notable series of specimens.

IN the Philadelphia Zoölogical Garden at the present time is a Naked-throated Bell-bird in full "song" if its peculiar calls may be so termed. These vocal efforts resemble exactly the strokes of a hammer on an anvil, the peculiar resonance of the ringing metal being perfectly reproduced.

There is also a specimen of the curious Kagu (*Rhinochetus jubatus*) of

New Caledonia, the original type of which was sent to the Colonial Exhibition at Paris in 1860 by Mons. Latour, and described by Jules Verreaux. We do not know whether there are any specimens of this bird in any American Museum but there are none in either the U. S. National Museum or the Philadelphia Academy of Natural Sciences.

The Kagu is closely related to the Sun Bittern (*Eurypyga helias*) though in appearance it looks more like a small pale gray heron. It is regarded as a very ancient and generalized type, with relationship to the Rails and Trumpeters.

We understand that another specimen is living in the New York Zoological Park.

WE learn from 'The Emu' that the annual meeting of the Royal Australasian Ornithologists' Union was held in Melbourne, December 4, 1918, and was attended by eighteen members, exactly as many as were present at the business meeting of the A. O. U. in November. The officers elected were A. F. Basset Hull of Sydney, President; W. H. D. Le Soeuf, Hon. Secretary; Z. Gray, Hon. Treasurer; and Dr. J. A. Leach, Hon. Editor of 'The Emu.' The R. A. O. U. has had 39 members in military service of whom 5 lost their lives during the past year. The Union maintains a room at Temple Court in Melbourne where it keeps its library and collections including the celebrated White and Austin collections of Australian birds' eggs. Well attended conversaciones are held at its room on the first Wednesday in each month and quarterly meetings at the National Museum. The report of the treasurer shows that the assets of the Union amount to over \$9000.

THE collection of birds in the U. S. National Museum has recently passed the 200,000 mark. This collection has doubled since 1884 when the number of specimens reached 100,000 (see 'The Auk,' 1884, p. 403). In this connection it is interesting to recall that the British Museum collection was said to have contained 500,000 specimens ten years ago (*Ibis*, 9th ser., II. Jub. Suppl. p. 4, 1909).

THE Treasurer reports that less than forty copies of the last edition of the 'Check-List of North American Birds,' published in 1910, now remain on hand. Members who have not secured copies should do so at once as libraries are constantly ordering the book and the stock will doubtless soon be exhausted. It will probably be several years before another edition of the 'Check-List' is issued.

AT the recent session of Congress two new National Parks were established on areas previously set aside as National Monuments. These parks are the Grand Canyon in Arizona and the Lafayette National Park on Mt. Desert Island on the coast of Maine. The latter reservation was previously known as the Sieur de Monts National Monument. This action

will insure greater protection of the wild life and we hope will result in the publication at an early date of information concerning the birds of these interesting regions.

GEOGRAPHIC DISTRIBUTION OF A. O. U. MEMBERSHIP.—As shown by the list published in this number of 'The Auk' the A. O. U. now has members in all of the states except three (Arkansas, Delaware and Mississippi), and also in Alaska, Hawaii, the Philippines and Samoa, as well as in all of the provinces of Canada except Alberta and Nova Scotia.

The foreign members, known as Honorary and Corresponding Fellows, number 85 and are widely distributed in all parts of the world. In America they are located in Cuba, Mexico, Costa Rica, Colombia, Brazil, and Argentina; in Europe in all of the principal countries except Norway, Portugal, Spain, Switzerland, Turkey and the Balkan States; and in Africa in South Rhodesia and Transvaal. The Union also has representatives in Ceylon, Japan, the Federated Malay States, British Papua, South Australia, Tasmania and Victoria.—T. S. P.

THE American Game Protective Association, the sportsmen's national organization, has done excellent work in branding as erroneous an Associated Press Dispatch to the effect that the Supreme Court at Washington has declared the Federal Migratory bird law unconstitutional. From their statement the country has been informed that "the so-called Federal Migratory bird law was repealed on July 3, 1917, when the President signed the Canadian treaty enabling act. The new measure which superseded the old one is a better and bigger law with exactly the same object in view. It provides what the former law lacked, an efficient machinery for its enforcement, and the governments of this country and Canada are now squarely united in the protection of all the birds of the continent north of the Rio Grande.

"What happened at Washington was that the solicitor-general asked to have dismissed his own motion before the Supreme Court, which was to test the constitutionality of the original migratory bird law. It was no use arguing the case, because there is no longer any Weeks-McLean law.

"The federal regulations, therefore, which absolutely protect in this country the birds which are valuable to agriculture and which make open seasons for the migratory birds which are shot for sport, are still in effect and the Federal Department of Justice will vigorously prosecute any violations of these regulations."

W. L. MCATEE wishes to announce that he has undertaken as a hobby the preparation of a dictionary of vernacular names applied to A. O. U. checklist birds. As the project involves the examination of practically the whole ornithological literature of America, the main purpose of this announcement is to elicit information as to whether the field is clear. It

would be a great waste of time to have the same ground covered by more than one person.

Mr. McAtee has been collecting data of this nature for many years, and has published two glossaries of unusual bird names. He has also recently had the good fortune to receive for examination, through the courtesy of Mrs. Gurdon Trumbull and Mr. Samuel Scoville, Jr., the manuscript notes prepared by Gurdon Trumbull, for a second edition of his "Names and Portraits of Birds." Still more recently, Mrs. Trumbull has with the greatest generosity turned over to him this book together with all of Mr. Trumbull's miscellaneous notes on the habits and names of birds. This material will eventually be deposited in the Manuscript Division of the Library of Congress. Mr. McAtee will welcome suggestions relating to the whole project, and contributions, especially of unusual local names of birds.

THE Delaware Valley Ornithological Club is endeavoring to collect all existing data bearing upon the birds of Eastern Pennsylvania, New Jersey and Delaware. Information relative to any manuscript lists of early migration records, or published matter in out of the way places, will be gratefully received.

THE Delaware Valley Ornithological Club held its twenty-ninth annual meeting at the Academy of Natural Sciences in Philadelphia in January, 1919. Officers elected were President, J. Fletcher Street, Vice-President, George H. Stuart 3d, Secretary Julian K. Potter and Treasurer, Samuel C. Palmer. Thirteen meetings were held during the year with an average attendance of twenty-two. Twenty-seven members entered the National Service during the war and one, Archibald Benners, 1st Lieut. Marines, was killed July 3, 1918.

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Photo. by H. E. Tuttle

RUFFED GROUSE DRUMMING

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SOME NOTES ON THE DRUMMING OF THE RUFFED GROUSE.

BY H. E. TUTTLE.

Plate XI.

SOME controversies die hard, and the discussion of the drumming of the Ruffed Grouse is one of them. Happily the observations made by Professor Hodge on his domesticated Grouse settled many mooted points, authenticated the testimony of accurate observers, and lopped the hydra heads of many legends that had long abused the popular intelligence. These notes, taken from my field diaries, are not offered as containing much that is new, nor as a final word on a subject long under discussion, but rather as the faithful record of a quest pursued.

UPPER PENINSULA, HURON MOUNTAIN, MICHIGAN, *April 7-13, 1910.* After crawling some distance toward the log on which he was strutting, I watched a cock Grouse drum at a distance of twenty feet. When about to drum the feet were shifted uneasily for a moment, as if to get a firmer grip of the log, the tail was spread and held in a horizontal position. At the beginning of the first wing beat the tail was dropped, and acted as a brace, across or along the log, according to the way the bird was standing. There were three quick preliminary wing beats, then the breast and neck were swelled perceptibly, the feathers on the throat being "ruffed"

the wrong way, the ruffs were slightly distended, and the first loud wing beat was begun. After drumming the tail was held erect for a moment and the ruffs were spread — a beautiful pose.

On moving my hand from behind the stump where I was concealed, he threw up his ruffs, spread his tail into a fan, puffed out his breast, trailed his wings, and with lowered crest walked up the log, turning and hissing. Afterwards he walked off the log and began feeding.

I watched this bird and one other drum more than a dozen times. There were variations in the strutting and in the raising or lowering of the crest, but otherwise the performances were identical. In this region drumming cocks were numerous, the logs on which they drummed being in most cases not ten feet off the trails. The birds were tame and easily approached.

SIMSBURY, CONNECTICUT, *April 23-24, 1910.* I spent the night of the twenty-third and morning of the twenty-fourth on the ground about one hundred yards from a well used drum log. I had set up my camera during the late afternoon, and because the bird was too shy to be approached by crawling, I adopted the expedient of sleeping at the end of my shutter thread.

The Grouse drummed from one-fifteen in the morning till after two o'clock, when I went to sleep, and was still drumming at three minute intervals when I woke at four. He may have rested while I slept, but I woke to the sound of his drumming. He drummed twelve times in thirty minutes, from one-fifteen to one-forty-five. It was rather weird to hear a Grouse drumming in the dark. A bright moon was shining, but the air was misty. A Whippoorwill sang. I woke again at six o'clock, but the Grouse had gone.

SIMSBURY, *May, 1910.* During May in the woods beyond the hill swamp I crawled to the upturned end of a tree behind which a Grouse was drumming. After the bird had drummed three times I ventured to peek around the earthwork and was surprised to find the bird's tail braced across the log about ten inches from my face. The temptation to grab it and tweak out a feather almost overcame me with laughter, but I was eager to hear the bird drum again. I was disappointed at being behind him, where I could not watch his wings and breast, but it was obvious that this was the only position where I could hope to remain unseen. As it

was I retired behind the breastwork. He drummed again. The sound is comparatively faint when heard at close range, and difficult to describe. The silky rustle of the stiff wing feathers on the air is almost louder than the first "beat." "*Fiffump fump, Fffump — Ffump — Fump —.*" The first three, which are very faint, can best be imitated by accentuating the "f" sound as the breath is expelled, like an exhaust pipe.

Suddenly he became aware of my presence, and with an explosive series of "Quit-quits" he flew to the low branch of a tree, about six feet above my head. There he continued to scold for some time, until grown tired of watching him, I rose to my feet, and he rocketed through the second growth like a bullet.

It has always been my experience that if I have been discovered by a Grouse, when lying at full length on the ground, the bird, though alarmed or annoyed, rarely takes flight, but usually indulges in argument.

SIMSBURY, *April 15, 1918.* Today I stalked a cock Grouse that was drumming on the old toboggan slide log, but as I made my last advance he saw me at the same instant that I saw him. He stood stiffly, just as he was when he ceased to drum, all five feathers of his crest separately erect and forward, his ruffs showing plainly, so that I could even see the metallic green edges of the plumes, but he was evidently worried, and turned his head slowly away. Then without warning he whirred off, to alight on the side hill about a gun shot distant.

I noted particularly how short the bill seems when the crest is erect, as compared with the longer appearance that it has when the feathers lie flat to the head, as in the brooding female. In the afternoon I set up my camera within four feet of the log in the hope of a chance shot on the following day.

April 16. No luck with the Grouse. He either did not drum, or drummed elsewhere.

April 17. I secured a very fair photograph of the cock Grouse. The morning was overcast and the light very poor, and as I had set the shutter for a fiftieth part of a second I did not expect to be able to distinguish much on the plate; but, though underexposed, the bird shows up plainly and in sharp focus. He drummed just before I reached the end of my shutter thread (about forty yards

from the camera and concealed from the bird by a little rise of ground) and I spent ten anxious minutes wondering if he had heard me and become alarmed, or whether he had seen the thread tremble as I took hold of it. At the three preliminary drum beats I slowly pulled the thread, but there was so much slack to take up that the shutter did not go off till just before the "roll."

April 18-May 1. A series of failures followed. On two occasions the shutter was sprung during the night, either by a branch blown against the thread by the wind, or by some one who like myself enjoys wandering from the beaten path. Rain precluded two other attempts, and the Grouse, becoming shy, sought another log some five hundred yards to the east, where after following his booming challenge I discovered him during the last days of April. The situation was more favorable to photography, for the log lay at the top of a ridge, broadside to the east, and caught whatever rays of light penetrated the second growth when the sun rose over the gap in the hills. After one partially successful attempt with a thread nearly one hundred yards long, and two failures, I decided to pursue another method. If the Grouse would accept a blind, I should be able to choose the pose I most desired, suit the time of the exposure to the light conditions, and observe the drumming at fairly close range. I therefore set up and concealed my camera about four feet from the position on the log where the Grouse was accustomed to drum, and pitched my blind some twenty-five feet to the east.

May 2. At a quarter before four (sun time) I set out for the second growth ridge and the drum log of the Ruffed Grouse. The moon was still shining when I left the house, and I could see my shadow by its light as I crossed the home field. Robins were singing and an occasional Red-winged Blackbird flew overhead. Early as I was, I was too late, for with a whistled alarm note the Grouse flushed from the log as I made my way through the woods toward the blind. After a wait of forty minutes I heard him stepping over the dry leaves, and shortly after, the four preliminary wing beats boomed out. Up to this time I had not dared to move sufficiently to glance through the peek hole which I had provided, but now I did so, and saw the Grouse sitting hunched up in a little ball upon the log.

I had set the shutter for a fifth of a second exposure and had not planned to take the bird as he drummed, but the temptation was too strong, and as there was light enough (at five minutes after five) I waited till I saw the wings flash out in the first beat, and then pulled the shutter thread. His wings thumped twice while the shutter opened and closed, so that I had little hope of a clear-cut image on the plate, but the developed negative shows with what steadiness the bird holds himself during the drumming, for while the wings are blurred, the head is sharp and shows no trace of movement.

The Grouse preened himself twice, running his mandibles over his ruffs, the feathers of his rump and each long tail feather. Several times he turned about as if to go, and then like one overcome by an irresistible temptation, he would face about quickly, brace his feet on the accustomed piece of bark, and begin to drum. He left the log at six o'clock.

The performance did not differ essentially from others that I had witnessed, except that this bird took four preliminary wing beats instead of three. His crest was erect throughout the drumming, the ruffs partly, but not prominently, displayed. One of the Michigan birds whose drumming I observed, did not elevate his crest until the conclusion of the "roll."

May 3. Although I entered the blind at three-forty-five, the Grouse flushed from the log. If he roosted there he must have gone to roost late, as I did not finish setting up my second camera till after seven o'clock of the night before.

As I sat in my blind waiting for the Grouse to return, a Whip-poorwill sang and either this Grouse or another drummed in the birch glade below the ridge. A Chewink called. There was a chorus of Robin's voices which almost drowned the hymn of a Hermit Thrush, but could not dampen the ardor of a Chickadee.

The Grouse did not return till four-fifty, when I heard his heavy footfall, and the scratching noise made by his toe nails on the log as he ascended it. Walking a few steps along the log until he came to the spot where a loose piece of bark offered a convenient foothold, he struck a pose. The wings flashed out, hung limp, and flashed out again. There was a pause in which he seemed to gird his loins for the blows that were to follow, then beat followed beat till the

outlines of the wings were lost in the ecstasy of the "roll." I waited till five-fifteen for my first picture, and on the first sign of uneasiness on his part (significant of the fact that he was about to drum), I made the thread taut. At the first shift of his wings, I pulled. He saw the movement of the thread and held the pose while the shutter clicked at one fifth of a second. I took the second picture with the camera set for a side view, at five-thirty, selecting almost the same pose. He again detected the movement and held his position. As soon as the shutter clicked he continued to drum. He seemed to take only a passing interest in the scream of a Red-shouldered Hawk, but manifested an unusual degree of pleasure or curiosity in the song of a Bobolink as it flew overhead. He cocked his head on one side and apparently watched the course of its flight. He noticed the slightest noises and would turn his head at the scratching of my pencil as I wrote up these notes, though the blind was twenty-five feet distant from the log. Occasionally, in the intervals between drummings, his breast puffed out and his head shot forward, as if he were being relieved of gas on his stomach or had the hiccoughs. (This happened once on both mornings.) He drummed every seven minutes, though the interval was sometimes longer, particularly if he had heard a suspicious sound. When alarmed he drew himself up and stretched his neck to its full height. Sometimes before drumming he acted as if he were about to leave, turned about and looked for a convenient descent to the ground. Then, as if reluctant to go, or as if determined on just one more performance, he turned, braced himself, and began to drum.

May 8. I arrived in the blind at two-fifty, and began my silent vigil. The Grouse appeared at four-twenty-five, hurried along the log, as if late for an appointment, and at once began to drum. He drummed four times by four-thirty, and seven times by forty-two. Just before the seventh time he dropped off the log, and I was afraid that I had lost my chance to photograph him, but he immediately returned to his post and drummed. I think he picked up a grub or some live food that had caught his eye.

After drumming the tail is flung up stiffly for a moment. I have never observed a more alert and watchful bird, and he seemed even more watchful on this morning than on previous occasions. At

five-thirty I took my first picture, from the front, springing the shutter just after the four preliminary wing beats had been followed by the first two of the faster series. The wings moved once or twice during the exposure, which resulted in a failure, being badly blurred. At five-thirty-two I made my second exposure, from the side, just after the Grouse had finished drumming. I thought that he moved, but the plate showed that he did not, and this exposure proved to be one of the best that I have made.

The Grouse had drummed twenty-seven times when the rain began at six-seven. I was curious to see if he would weather it out or take shelter. He drummed again, the ruffs well out, rising and falling on the pulsing breeze caused by the wings. The leaves in front of the log are frequently scattered by the force of the final outburst. He drummed again. It was raining in earnest now, and he was drumming in the pouring rain. At six-thirty he left the log and walked directly toward the blind, pausing about two feet away to turn and round it. He picked and ate the new green leaves of a blueberry bush, his beak making a most perceptible snap as he pulled them off. He walked as I have always seen Grouse walk when unconscious of observation or danger, the head carried quite low, the tail folded and horizontal. His crest of course was lowered. After plucking the blueberry bush he began pulling at a laurel with which I had concealed the blind. He then walked up and pecked at the material of the tent itself. After circling the blind, still within two foot range, he returned to his log and at once began to drum. I could wait no longer, and retreated from the rear opening, keeping the blind between me and the bird until I was so far away that he should not be greatly alarmed when he first saw me. On catching sight of me he crouched quickly, his head low. For perhaps a minute he trusted to his immobility, then realizing that he was seen, his head shot up and he began to walk slowly down the log, his tail flirting nervously at each step. Taking a final look at me, he dropped off the log on the far side and immediately flushed with a roar of wings.

May 9. I crawled into my blind at three-thirty. Starlight, windy, cold and clear. The Grouse flushed from the log. Whip-poorwills were noisy. The Grouse reconnoitred for an hour, walking all around the blind. Finally satisfied that the coast was

clear, he abandoned his stealthy countermarches and long motionless delays, and hurried with careless steps to the log which seemed to draw him like a magnet.

I waited till five-ten for my first shot at one-fifth of a second, selecting the moment just after drumming, in the hope of catching him with his tail erect. At five-twenty with full sunlight I pulled the second thread at one twenty-fifth, endeavoring to picture him during the pause at the end of the four preliminary wing beats. (The first picture was successful, but the plate in the second had been badly fogged, possibly owing to a defective plate holder. There was no image on it.)

At six o'clock the Grouse was in full sunlight, bright enough for a fast exposure. He scratched his head with his toe, a pose that I should like to have caught. If luck had been with me, an exposure of a fiftieth of a second would have caught him at the end of a wing stroke, as there was a pause of slight duration at the end of each beat. He preened himself, then took one wing beat, and as if unsatisfied with his stance, turned about. The Grouse takes the first beat after partially squatting as if to steady himself. He then draws himself erect and takes four, the last of which often has as much force as the ones that follow. Here there is a slight pause, the upper breast is swelled, and the bird stands even more erect, the body being almost perpendicular, the head thrust forward. In this position the Grouse slightly resembles a pouter pigeon, and suggests Browning's description of Napoleon before Ratisbon, "with neck out-thrust, you fancy how —" The next beat comes with increased volume and is followed by about twenty strokes in ever quickening succession till the "roll." This is made up of ten or possibly twenty beats, rolled into a crescendo that frequently stirs the leaves ten feet in front of the drum log. At the end of the roll the bird stands on tiptoe, the ruffs are prominently displayed, the tail is erect at an angle of forty-five degrees and gradually subsides, first to a horizontal position and then to a position resting on the log, the ruffs slide back into their normal place, and the small feathers on the throat, which are ruffed the wrong way during drumming, become smooth.

The Grouse now hopped off the log on the far side, but the temptation was too strong, and he returned, facing west for a short

space. He then shook himself and hopped off the log again, making his way rather noisily through the woods.

May 12. I moved the blind to within six feet of the drum log. If it is too close to be useful for photography, I shall at least have had the experience of watching a Grouse drum at that range.

May 13. I arrived in the blind at two-forty-five. The Grouse was heard walking about at four and reconnoitred till four-thirty. He then came to the log, manifesting an unusual degree of caution and showed an attitude of great alarm after drumming once, crouching in an attempt to see through the peep hole of the blind. He then drummed again. At five-thirty-five I attempted my first picture, but the shutter thread had become tangled with one of the twigs on the top of the blind, and the Grouse hearing the noise and seeing the movement, instantly stopped drumming and sneaked off the log. I waited till seven, hoping that he would return, which he did. I took one picture with the camera in front at one hundredth of a second. The light was very dull, but I thought it was worth the chance. I tried again to pull the other shutter off, without success. The last time that the Grouse drummed he failed to get a good grip on the log, with the amusing result that the finale of the roll shifted him off his stance and whirled him half way around. (The picture was a bad failure, the plate being fogged and the exposure much too fast. It did show that one hundredth part of a second was fast enough to catch the moving wings.)

May 15. Dawn was not yet gray in the east when I stumbled through the second growth in the darkness and sought my green denim bush. The hour was two-fifty. The Grouse was more suspicious than usual and did not come to the log till four-forty. He drummed once, then left the log and came toward the blind. After walking some ten feet behind the blind, he returned to the log and drummed. An interval, then he drummed again. He was uneasy however, and soon dropped off the log, and passing close to the blind, departed to the rear. After ten minutes he began drumming on a log twenty yards to the east. I think the blind's proximity to the log was too great an obstacle, and in the afternoon I moved it back to a position twenty feet away.

May 16. I reached the blind at two-fifty. The Grouse spent

some time in coming to the log. He arrived on the scene at four-forty, flying down from a tree near the blind. At five-twenty-five I took my first picture, showing a watchful pose. He became alarmed, watched the camera for some time, and finally left the log at five-thirty-five.

May 21. Three o'clock found me in my blind, and at three-ten it began to rain. Rain fell for an hour, dwindled to an occasional drop, but began again at four-forty when the Grouse appeared. He drummed throughout a hard rain at longer intervals than usual. He left the blind at five-thirty, passing within two feet of my eye at the peep hole. I left the blind at six and picked up my cameras. The Oven-Birds sang their flight song before dawn.

It is easier to venture an opinion as to how the drumming sound is *not* produced than it is to make an affirmative answer to a question as to its source, and there has been so much discussion that I hesitate to make any unqualified statement at all. My observations, however, and what photographs I have been able to obtain, only confirm the testimony of Professor C. F. Hodge, who had the advantage of studying tame Grouse, and whose photographs of the drumming of these birds cover a series of poses taken from the front, the side and the rear. His observations and his photographs satisfied him that however the drum beat was produced, it was not caused by the wings striking together behind the bird's back. I do not think anyone who watched the drumming at close range, and from the rear, could be persuaded that the wings struck together behind the bird's back, while I am equally sure that observations made from the front or the side might easily give rise to such an opinion.

What is perhaps the best series of pictures of the drumming of a wild cock Grouse was published in 'Forest and Stream' for April, 1918. The author, Mr. Frederick K. Vreeland, during the course of the article describes the opening wing beat as follows: "A slight elevation of the wings and then they were thrown sharply backward, striking together behind the bird's back with a deep soft 'Boom,' returning almost instantly to the starting position, but with the feathers somewhat spread." Further: "But I did succeed in getting one shot which, while it shows the wings only as a

blur, I think will prove to the most skeptical that they did actually strike together behind the drummer's back." The photograph which is offered in proof of this statement is one taken from the side, so that the blur of the moving wings is shown as extending beyond the upright body of the bird and for about a wing's breadth to the rear. But how could any photograph taken from the side and showing the wings in profile prove whether or not the wings struck together behind the bird's back? The only photograph which could prove the contention, or disprove it, without the corroborative evidence of observation, would be one taken from directly, or almost directly, behind the bird, the result of an exposure sufficiently long to record more than one wing beat. This would of necessity show as much blur in the space between the wings as elsewhere, if the wings came together behind the back to produce the beat. In regard to other photographic evidence, Professor A. A. Allen of Cornell University to whom I wrote concerning a statement that he made in 'American Forestry' (to be quoted later), very rightly contends, I think, that the exposure, unless it be a very slow one, records but a single stroke of the wings, and that the wings may thus be shown in any position without definitely proving that because they are not shown to touch that they do not do so. The photograph which accompanies this article, the result of an exposure made just before the "roll," is open to this objection, but if it fails of being in itself conclusive testimony to the assertion that the wings in drumming do not strike together behind the bird's back, it demonstrates the futility of photographic evidence other than such as I have hypothecated above (i. e. the result of an exposure taken from the rear and slow enough to record more than one wing beat).

Here, I think that observation must lend its weight, and I am so far convinced by my own experience that the wings do not strike together to produce the drum beat that I should be astonished if other observers who had watched as many or more performances than I have, and at close range, should succeed in demonstrating by such a photograph as I have suggested that the wings do actually strike together behind the back of the drumming bird. Should it be proved that the wings do meet, it would still be difficult to prove that the sound was produced by their contact, rather than by the forward stroke against the air.

Professor A. A. Allen, writing in 'American Forestry' for August, 1918, describes the drumming as follows: "The drumming sound, which begins with a measured thump-thump-thump — and ends with a loud whirring sound, like the muffled sound of a motorcycle engine — is made by the cock beating the air with his wings. Bracing himself on the log with his tail and standing erect, he first strikes his wings together behind his back producing the thump-thump-thump noise of a big drum."

In reply to my letter asking how he had arrived at this conclusion he says, — "I have never had the opportunity to watch the grouse at sufficiently close range to determine this for myself and am frank to confess that I based the statement upon the photographs and description which appeared in 'Forest and Stream' and in the 'Bulletin of the American Game Protective Association,' where the bird was watched at close range and observations were apparently made for determining this very point. I was also influenced by the similarity of those first few notes to the sounds produced by pigeons and long-eared owls, which are, I believe, without doubt, made by striking the wings together over the back."

The article on which Professor Allen based his statement (Mr. Vreeland's in 'Forest and Stream' for April, 1918) and the photograph on which this contention was based I have already discussed. The question of similarity of sound is interesting, but, for want of observation in relation to it, is of doubtful value in determining the facts. We come back to such observation as shall be considered authoritative. Of Mr. Vreeland's, putting aside the question of photographic proof already referred to, I can only add, that while he witnessed several performances at close range and secured the best series of photographs of the drumming that I have seen, his observations, as recorded, were made, as were his photographs, from the front of the drumming bird and from the side, positions from which it is well nigh impossible to discern whether the wings strike together or not. Somewhere the truth lies hid, and my purpose in reopening an old discussion is that others may aid in discovering it. When the negative side of the discussion has been settled, however, there still remains the question — if not by this means, how else?

To say, on the positive side, that the sound of the drumming is

essentially the same, and produced in the same way as the roar which accompanies the flight of the Grouse when startled (that is, by the action of the wings on the air), is perhaps an unsatisfactory explanation of that far-away throbbing challenge which steals on the ear so subtly, like the half heard beating of one's own heart. Yet for want of further evidence it must serve. What I should most like to discover is to how great an extent inflation of the rudimentary tympanum serves to enhance the strenuous thrust of the wings which seem to catch the air at the well feathered flanks.

Most of the *Tetraonidae* are possessed of air sacs, located under the neck tufts or ruffs, which when inflated are capable of producing a booming sound of great carrying power, which may be heard while the birds are performing their amatory dances, and it does not seem to me at all impossible that the sound-carrying powers of the drumming of *Bonasa* may in part be traced to an inflation of the rudimentary sacs which it possesses. In this connection observation alone is of little service, though I noticed that in the pause which follows the preliminary wing beats (which have but little sound-carrying power) that the contour of the bird changes perceptibly, the throat and the region of the ruffs is apparently swelled, and the next wing beat comes with increased volume. Mindful of what effects a bird can produce simply by a change in the arrangement of his plumage, I am inclined to think that this "swelling" is of an inflated character. Audubon, by puncturing the air sacs of a captured Pinnated Grouse, satisfied himself that these appendages were the source of the "booming," and perhaps some such experiment with a captive Ruffed Grouse would prove to what extent inflation of these parts plays in the ventriloquial and resonant quality characteristic of this bird's exuberant drumming.

But to me the most significant feature of the drumming is not the question as to the source of its sound-carrying powers, nor the attitudes that the Grouse assumes, though they are interesting, but it is the evidence of the compelling power of habit. (This differs greatly in individuals, and I here confine myself to the individual studied during the spring of 1918.) In spite of the disturbances which occurred owing to my presence in the blind, in spite of the obvious annoyance of the blind itself, especially

when moved to within six feet of the log, in spite of the adversity of the weather, in spite of the countless other logs on which he might have drummed, and on which he had drummed before he fixed his preference on the one which later came under my observation, he continued to arrive at the log within five or ten minutes of the appointed time, hurrying to it, after he had carefully reconnoitred the woods for possible enemies, as if irresistibly drawn by a power over which he had no control. He was obviously reluctant to leave the log when disturbed and usually returned to it, if the hour was still early, as soon as he had satisfied his inherent caution.

I was unable to study to what extent the drumming serves as a mating call, because the hen, whose nest was some two hundred and fifty yards to the north, had finished laying her complement of fourteen eggs on the fifth of May and had begun to set before the third day of my observation. May second and third were the only two days on which I might have seen the birds together at the log, and on neither of these days did the hen appear. On May second, however, after leaving my blind and walking about a hundred yards in the direction in which I had seen the cock disappear, I flushed the cock and another Grouse within a dozen feet of each other. This second bird I feel sure was the hen of the pair, because there were no other Grouse in this particular little second growth swale and because the nest was but a stone's throw away; nor was the hen on the nest when I walked over to it directly after flushing the pair of birds.

Inferences from the bird's attitude while on the log are largely speculation. The watchfulness which he displayed at all times was doubtless quite as much in the interest of his own safety as in the endeavor to discover the presence of his mate, yet there was one characteristic habit that might be interpreted as indicative of the fact that the Grouse was on the lookout for the hen. This was the fact that whenever I made a noise within the blind, such as might have been made by the football of the hen on the leaves, he at once craned his neck in the direction of the sound *and immediately drummed*. I made such a noise several times, with the intention of imitating a bird's footsteps, and on each occasion he displayed a lively interest, quickly followed by an exhibition of his wing power.

The sound to which the Grouse gave instant and invariable attention was the alarm note of the Blue Jay. To the scolding of Robins and even to the cawing of Crows he turned a deaf ear, but the protesting voice of a Jay hushed the sound of the drum note, and a period of silent waiting ensued, during which interval he was evidently at some pains to discover the cause of the Jay's displeasure.

There was a time, when the spring drumming of the Grouse thundered from a hundred hills, woke the echoes like the throbbing tom-toms of tribes upon the war-path and sent the blood sap pulsing quicker along the veins; but laws are useless where they are not enforced, and unless the Ruffed Grouse is given a greater measure of protection, the woods will no longer hear his footfall that might for years have thrilled to the vigorous ardor of his wings.

“THE SINGING TREE,” OR HOW NEAR TO THE NEST
DO THE MALE BIRDS SING?¹

BY H. MOUSLEY.

My attention was first drawn to this interesting subject by my inability to find the nesting sites of warblers, although regarding other species I was more than ordinarily successful. I must admit I was discouraged but not surprised, for to find the nests of these interesting little gems has always been more or less of a gamble to the students of the family *Mniotiltidae*. Of course there are red letter days when by accident one sees a female with building material fly direct to the nesting site, but these are generally few and far between, and in my experience one hardly ever sees the females until the nests are discovered. It is the males that are always in evidence, not only during the nesting season, but also at migration times, and I can well remember the day when the

¹ Read before the Nuttall Ornithological Club by Dr. Chas. W. Townsend for the Author, Oct. 21, 1918.

idea first occurred to me of paying special attention to them, and ceasing to worry about the females, which as I have already remarked one rarely sees, as compared with the other sex.

With this object in view, I repaired one day to a favorite wood, on the outskirts of which I located a male Myrtle Warbler (*Dendroica coronata*) singing from the top of an ash tree. This bird I determined to keep in view, and follow about wherever he went, a thing much easier to carry out in theory than in practice as a rule, although this particular bird was more than kind, and gave me very little trouble. After watching and following him about for some time, I found that he generally ended by coming back to the ash tree, from which he always sang. Seeing that this was the case I gave up following him about, and remained in the immediate neighborhood of this tree, where soon afterwards I had the satisfaction of seeing him make a sudden dart from the top of it into a nearby spruce, and there I found the female and her nest, and at the same time learnt the secret which has since enabled me to add many a rare warbler to my breeding list. Do not imagine however, kind reader, that in that one morning I had found the perfect system by which all gamblers hope some day or other to 'break the bank.' More often than not the bank breaks the gamblers, and no system seems to hold good for long. With mine, however, the case has been different, for the longer I have studied the ways of the male birds at nesting time, the more I have been able to perfect my system, and instead of the birds beating me, I am gradually getting the better of them, although to do so I have had to display more than the patience of Job, and have often had to remain with them for hours at a time before obtaining their secret. For the perfect working of my system, however, there is one thing essential and that is a singing male, the lack of which lost me a great prize only this summer (1918), for having located a pair of Cape May Warblers (*Dendroica tigrina*) in a certain large wood from June 11 to 26, I failed to find the nesting site, as the male could never be found singing. I would come across him (only once with the female) often in a certain area of the wood, but he always managed to give me the slip after a time, and his failure to sing never enabled me to follow him up. Not so however with a male Bay-breasted Warbler (*Dendroica castanea*) that I came across about the same

time and also in this same wood, for his persistent singing from the top of a particular birch tree eventually enabled me to locate the nest and eggs, as I shall relate hereafter. Neither of these Warblers had been observed here during the breeding season, but I was familiar with them at migration times, when the former has always struck me as being somewhat of a mute species.

However, to return to the Myrtle Warbler (*Dendroica coronata*), after finding its nest I measured the distance of the latter from the ash or 'singing tree,' and found it to be twenty-one yards. I did this at the time (and have continued it ever since) more from habit, than with any preconceived idea in my mind that it was going to be of material benefit to me hereafter, or that it would eventually enable me to answer with some degree of confidence, the question (which I have adopted as the title of this paper) recently sprung upon me in a letter from one of my most valued friends, viz: How near to the nests do the male birds generally sing?

To this question I replied that in my experience if a male bird could be found singing constantly in the same tree or trees, the nest would generally be found within twenty yards of the spot, in support of which I have prepared the following table, from which the average distance of the nest from the 'singing tree' or observation post of the male, for a number of birds works out at rather less than twenty yards, or to be precise seventeen yards.

Year	Species	Distance of nest from 'singing tree' or observation posts of male
1911	Yellow Warbler	8 yards
1912	Maryland Yellow-throat	4
"	" " "	8
"	Kingbird	8
"	Catbird	20
1914	Maryland Yellow-throat	10
"	Spotted Sandpiper	8
1915	" "	14
"	Prairie Horned Lark	32
"	" " "	34
"	" " "	21

Year	Species	Distance of nests from 'singing tree' or observation posts of male
1915	Phœbe	5
"	Robin	8
"	White-throated Sparrow	10
"	Northern Parula Warbler	12
"	" " "	7 and 9
"	Myrtle Warbler	21
"	" "	25
"	" "	6
1916	Black-throated Blue Warbler	100
1917	Nashville Warbler	8
"	Myrtle Warbler	24
"	Blackburnian Warbler	10 and 18
"	Bobolink	25
1918	Northern Parula Warbler	26
"	Magnolia Warbler	18
"	Blackburnian Warbler	18
"	Purple Finch	4
"	Canada Warbler	15
"	Chestnut-sided Warbler	20
"	Black-throated Blue Warbler	50 and 90
"	Black-throated Green Warbler	20
"	Maryland Yellow-throat	7 and 11
"	Kingbird	6
"	White-throated Sparrow	6
"	Wood Pewee	8
"	Cedar Waxwing	4 and 8
"	Bluebird	15
"	Bay-breasted Warbler	16 and 13
"	Magnolia Warbler	7
"	Black-throated Green Warbler	14 and 12
"	Olive-backed Thrush	7
	Average =	17 yards

Of course there are many birds that actually sing on the nest itself, such as Purple Finches, Rose-breasted Grosbeaks and some of the Vireos, to say nothing of others which, like the Tree Swallows, do so on and at the entrance to the nesting boxes, as well as Barn Swallows, which sing as they fly in and out of the barn and on the rafters. Many others again, such as Kingbirds for example, make use of the nesting tree to constantly perch in, whilst others will be found singing from it also.

Now in order to illustrate my 'modus operandi,' I propose to give an account of the finding this season (1918) of a Blackburnian Warbler's (*Dendroica fusca*) nest, as well as the one of the Bay-breasted Warbler (*Dendroica castanea*) already referred to. As regards the former, the male had been noted during the migration time as always occupying a certain little belt of spruce and fir trees, on the outskirts of a large wood, and close to a country cross road, and as he was still there after the bulk of the migrants had gone, I came to the conclusion that it was about time to pay special attention to him.

I therefore on June 10 repaired to the site, having already noted one particular tree that he seemed to favor most for his vocal performances. From this tree I measured out twenty yards to the north, south, east and west of it, marking the spots with rough stakes, hoping sooner or later (it is more often than not the latter) to discover the nest within the magic circle. After having done this the next thing I always do is to inspect the ground carefully within the area of the stakes, in order to find out what likely spots (one gets to know these by experience) are dominated by the 'singing tree.' In this particular instance the most likely one seemed to lie to the north, although I rather favored one to the east, from having previously seen the male take that direction on several occasions when leaving the singing tree. However, one can never be sure, and the only way is to watch the male's every movement. This I proceeded to do for the next two hours, with very little result, as he merely kept flitting round about the magic circle whilst ever and anon singing from a few special trees. However, the critical moment came at last, as a downward swoop, so to speak, of his, into a spruce tree to the north brought out the female. I at once made for this tree, mentally congratulating myself that the nest was as

good as found. Careful scanning with the glasses however revealed nothing, nor did a climb produce any better results; so I was perforce obliged to commence the tiring business of watching the actions of the male once more. These however are varied and interesting and the least significant may often lead to unexpected results. For instance, be careful to note in what direction he usually faces when in the 'singing tree,' as this may give some clue to the nesting site. Now in this case it was to the east and notwithstanding his downward swoop to the north, I felt convinced that the nest would eventually be found in the former direction (for the reasons already given), so when after nearly another two hours of weary watching, he at last made another of those telltale swoops, and this time to the east, and the female again appeared, I thought my troubles were surely at an end, and the nest was at last within my reach. Nothing of the kind apparently, for on training the glasses onto the spot (somewhat carelessly it must have been, owing no doubt to being over-tired) no signs of a nest could be seen, and as it was then past noon, I left for home and some dinner, much disgusted with my ill luck. An hour later, however, found me on my way back, with the intention of overhauling that tree more carefully, and perhaps climbing it. The latter however was not necessary, for on approaching it, much to my surprise and pleasure I noticed the female on the ground under it. This of course raised my suspicions, and I watched her carefully until she went at length to the very spot on the branch, some fifteen feet above the ground, that the male had swooped to, and remained there a short time.

Upon her leaving, I had another good look at the spot through my glasses, and sure enough there seemed to be the faintest indication of the outlines of a nest, so faint however that I had failed to notice it in the morning, and even now could hardly make up my mind until the female had been seen to go to it again several times. Thus after some five hours' hard work the goal had been reached, and it lay within the magic circle at eighteen yards from the 'singing tree.'

Now it must not be imagined that during all those hours I had the male constantly under observation, an impossibility with a warbler, as often when singing he would suddenly cease, cock his head on one side, peer down into the undergrowth, and then sud-

denly make off, and I knew by this that he had probably observed the female and was after her; but as often as not I was in the opposite direction, and was unable to follow them quickly enough to obtain their exact whereabouts, and often the male was not seen again for some considerable time. During such intervals I search all the likely looking spots and incidentally often come across the nests of other birds (as will be seen hereafter) the males of which had been noticed in the same places from time to time during my long enforced periods of watching.

The Blackburnian is certainly a great singer, or at least I should say persistent one, for the song cannot by any stretch of the imagination be said to be great. During my long acquaintance with this one he sang off and on for most of the time, and I have noticed the same thing to occur with others that I have watched for shorter periods. The nest contained a full set of four eggs on June 18.

And now for the afternoon of June 24, a record one in many ways, for besides being the first occasion on which I had ever seen a Bay-breasted Warbler (*Dendroica castanea*) here in the summer, I had also the pleasure of finding its nest and eggs, and thus being able to add it to my breeding list, to say nothing of the nests of a Black-throated Green Warbler (*Dendroica virens*), and Magnolia Warbler (*Dendroica magnolia*) that also fell to my lot, as well as one of an Olive-backed Thrush (*Hylocichla ustulata swainsoni*), thus constituting a record for my system for a period of about four hours.

Now to begin with I was on my way to the Cape May Warbler ground, to reach which I had to pass within some two hundred yards or less of the site of the nest of the Blackburnian Warbler already described, when my attention was drawn to a song that puzzled me. It seemed similar to that of a Blackburnian except that it was sometimes given in two keys, and seemed to be generally louder. On looking in the direction from which it came I espied much to my astonishment in the topmost (dead) branches of a birch tree a fine male Bay-breasted Warbler (*Dendroica castanea*). To say that the Cape May was forgotten is putting it somewhat mildly, as I never even gave him a thought again that afternoon, so elated was I at finding a singing male of this rarity, and thus

being able to further test the reliability of my system. Having watched him for some time and convinced myself that the birch tree was really the favored one (although there was a tall hemlock with dead branches also not far off, which was almost equally used), I proceeded to measure off the prescribed distance as already indicated. This being done and the ground, which was truly a warbler one, inspected, I noticed that on the eastern side the trees were taller than the birch or 'singing tree,' and therefore the latter did not dominate this part of the circle, and in all probability the nest would not be there. In passing, it may be well to mention that the 'singing tree' does not always necessarily dominate the nesting one, although I have generally found it to do so, an exception being that of a male Purple Finch (*Carpodacus purpureus purpureus*) who sang from an apple tree on the opposite side of the spruce tree in which the nest was placed, but in this case there were no trees overlooking the nest at all. Surely the male had no voice in selecting that site (although he undoubtedly did the 'singing tree,' as he had frequented it often previous to any nest being started in the spruce), invisible as it was to him whilst singing! But there, that opens up another interesting problem, and I must get back to the work in hand. After watching the male Bay-breast for some time, I noticed that he generally faced either north or south, whilst in the two 'singing trees,' more generally the latter, and I concluded that somewhere in that direction the nest would eventually be found, as it was an absolutely ideal spot. Now in the lower branches of the hemlock tree a male Magnolia Warbler ventured to sing on several occasions, but was always driven away by the Bay-breasted Warbler. This looked suspicious and I overhauled the firs and spruces in close proximity, with the result that the female Magnolia was flushed from her nest and set of four eggs only seven yards away from where the male had attempted to sing.

Time was flying fast, however, and still no signs of the female Bay-breasted Warbler, until a sudden downward swoop of the male to the south, brought her out to the east, and I was able to follow her about for a short time, until she eventually gave me the slip. Then I began to search the southern site more carefully, from which direction I had also just previously heard some Thrush-like

notes proceeding from a tall maple tree; and it was not long before I flushed the female Olive-backed Thrush (already referred to) from her nest and four eggs, which were situated in a small hemlock tree only seven yards from where the male had been heard.

At that supreme moment I was only eight yards from the nest of the Bay-breasted Warbler yet failed to detect it. Then I worked round to the west, where a Black-throated Green Warbler was singing from the top of a tall elm tree, and later on the female was flushed from her set of four eggs, just fourteen yards from the 'singing tree' of the male. At any other time three nests and two of them Warblers in three hours, I should have considered as out of the common, but in the present instance I paid no attention to the matter whatever, my thoughts all being centred on the greater prize.

The best part of another hour however went by and still no results, so I decided to have another good look to the south, as the actions of the male convinced me the nest was in that direction. Incidentally also I wanted to get the particulars relating to the nest of the Olive-backed Thrush, and it was whilst engaged with this that a bird flew to the back of me and alighted in a small fir tree. Turning sharply round I noticed she was the female Bay-breasted Warbler, and almost directly she went to her nest, notwithstanding that I was in full view of her and only eight yards away. The nest was in the top of a small fir tree, nine feet from the ground and three feet from the top of the tree, and placed close against the trunk. It contained a set of four slightly incubated eggs. I had passed it several times that afternoon without noticing it, but no one familiar with the nests of warblers will be surprised at this admission. So beautifully do they seem to blend with their surroundings that they seem to be part and parcel of them, and it is no easy matter sometimes to detect a nest, although comparatively in an exposed position as this one was. It was just five-thirty P. M. when I found it, and within the magic circle too, it being exactly sixteen yards from the 'singing tree' of the male, which I first noticed at one-thirty P. M., so that I had spent exactly four hours with this bird, during which time he sang almost continuously, with only short intervals of rest in between. This species as well as the Blackburnian and Black-throated Blue

(*Dendroica caerulescens caerulescens*) in my experience are certainly incessant singers, but the Black-throated Blue differs in many respects from the other two, as he seems to affect denser foliaged trees, and usually sings higher up and is what one might call not a home bird, as I have generally found him to sing much further away from the nest than any of the other Warblers. Still in his case if you are familiar with the sites usually selected for nesting, the 'singing tree' or trees will always give you a clue; the only thing you must do is to be somewhat more elastic with regard to the magic circle. In the case of a nest I found this year I could see from the nature of the ground beneath the 'singing trees' that a radius of twenty yards failed to bring me within any site at all likely to hold a nest, the ground being much too open; but by doubling this distance I came within some very dense undergrowth, and this I knew from experience was just the very sort of ground a female Black-throated Blue Warbler would be likely to select. I therefore measured out forty yards, but even this was not quite enough, for the nest was eventually found at fifty yards from the nearest 'singing tree,' and ninety yards from the furthest. I mention this case in order to show that there are times when experience and a little common sense must be displayed if good results are to be expected.

In conclusion it may be stated that in the case of birds that sing in the air such as Prairie Horned Larks, I have found their nests by constantly noticing the male frequenting a certain observation post, usually consisting of a large stone or boulder, although in one case it was actually a tree (see 'Auk,' vol. XXXIII, 1916, p. 285), and from there measuring out the required distance and then walking quietly over the ground, looking well ahead for the female to slip off the nest. Of course it may be necessary to repeat this proceeding several times before she is eventually found at home, but in the meantime there is always the off chance of the nest being discovered quite irrespective of the female whilst quartering the ground. This method can be adopted equally well with Spotted Sandpipers (*Actitis macularia*) as I found two nests, one in 1914 and the other in 1915, the observation post of the male in each case being a heap of stones in a field adjoining 'the marsh.'



Photo. by V. F. Richards

1. SUGAR LOAF MOUNTAIN, DEERFIELD, MASS. SHOWING LEDGE WHERE DUCK HAWKS NESTED
2. YOUNG DUCK HAWK ON NESTING LEDGE, MAY 30, 1917

THE EARLY HISTORY OF A DUCK HAWK.

BY VIOLA F. RICHARDS.

Plates XII-XIII.

How long since Sugar Loaf Mountain, a State Reservation in the town of Deerfield, Massachusetts, became a nesting place for the *Falco peregrinus anatum*, or Duck Hawk, no one knows, but records show that it was more than one hundred years ago. Year after year they have laid their eggs, and reared their young in practically inaccessible places among the ledges on the eastern side of the mountain.

In the spring of 1917, Charles L. Fisher, an enthusiastic bird student who lives at the foot of Sugar Loaf, discovered that the Duck Hawks had chosen for a nesting place, a ledge to which access was surprisingly easy. On the open ledge, with no pretense of a nest, were laid three eggs, cream colored, with an encircling band of chocolate colored spots. Lighter spots covered the large end of each egg, but the small end was clear. These eggs were the size of, and similar in shape to, a Leghorn pullet's egg. At the time of discovery two of these eggs were cracked, ready to hatch. That night two of them disappeared. The remaining egg hatched next day, which was May 5, 1917.

Instead of being bare and unlovely, like many baby birds, this little bird resembled a bunch of cotton, with two bright, black eyes. Within a few days, a faint, grayish hue took the place of the clear white. May 18 the nestling was photographed for the first time. An excellent idea of the nesting place is gathered from this picture.

A second photograph, taken May 21, shows the bird at close range. At this time it did not show much fear of intruders.

May 30, when a photographer visited the ledge, the young bird was still clad in a coat of fluffy down. During this visit the anxious parent birds soared overhead, occasionally coming so near that the whistle made by their wings cutting the air made a chill creep along the spine of the photographer. That their shrill screams were warnings which the young bird understood, was evident, for it crouched as flat as it could on the rock, with head down, and kept as nearly motionless as possible. But its heart beat wildly,

and its beady black eyes watched every move made by the visitor.

Early in June, dark feathers began to take the place of the down, and for a time the bird was decidedly ragged in appearance. His naturally fierce disposition became noticeable, and he showed increasing resentment when visitors appeared.

About this time State Ornithologist E. H. Forbush came to take pictures of the now famous baby Duck Hawk. Earlier in its career, Mr. H. K. Job had succeeded in obtaining some very fine films of it for moving pictures. At that time it had been quite docile, and would stay where it was placed very satisfactorily. Now, however, it was more active, so Mr. Forbush, aided by Mr. Fisher, attached an inconspicuous little harness to its leg, and hobbled thus, it became an unwilling but quiet subject for the photographer. So ferocious had the bird become, it was necessary to handle it — literally — with gloves on.

Wishing to get a picture of the rapidly maturing bird as late as possible before it left the nest, Mr. Fisher closely watched its development. When he judged that the bird was ready for flight, he made a last exposure with the wonderfully fine result shown here. Within a half minute after this was taken the bird flew from the ledge. Just how long it remained in the vicinity is not known; but a few days later it alighted on a branch of a tree over the ledge upon which Mr. Fisher stood, and fearlessly watched while an experimental attempt to frighten it away, was made.

If anyone ever takes a Duck Hawk which carries upon one leg the leg-band of a hen, he may be reasonably sure it is the bird about which this article is written.

A careful record was kept of the remains of such birds as were used for food by these Duck Hawks, and a list is given below.

Blue Jays (many)	Mourning Doves
Kingbirds	Phœbes
Nuthatches	Different Warblers
Chickens	Veeries
Grosbeaks	Woodpeckers
Scarlet Tanagers	Homing Pigeon
Flickers	

May 30, on the leg-band of a Homing Pigeon, the remains of which were found on the ledge, was this inscription: A-U \approx J 5733 (the A and U joined together).



Photo. by Chas. L. Fisher

1. YOUNG DUCK HAWK, MAY 21, 1917
2. YOUNG DUCK HAWK, JUNE 16, 1917

A COLONY OF CAPE COD PIPING PLOVER.

BY C. A. ROBBINS.

THE Piping Plover (*Egialitis meloda*) is the only beach-inhabiting member of the family that breeds within the limits of New England. To former generations of residents along the coast their rather plaintive call was a familiar summer sound. Then, because the gunner had marked them for his own, there came a time when long stretches of their breeding grounds grew silent and as the silence spread over an ever-lengthening area it began to be feared that they might — like other species of shore birds — entirely disappear.

Happily the fear is not likely to be realized. On the contrary, it is gratifying to note, in some places, a generous increase in their numbers.

This is due mainly to the protection which the law is now affording them, although the steadily growing interest in the welfare of all birds has doubtless aided, both directly and indirectly. It may pretty confidently be expected therefore that they will reappear in other localities which have long been bare of them and that in those most favorable there will be a return to something like their former abundance.

The shores of Cape Cod are mostly gentle slopes of clean beach with a belt of stony or pebbly sand extending back above the rows of drift, which mark the upper reaches of the tide, to a growth of beach-pea and sand-grass (*Ammophila*). This, in turn, often meets and over-runs a rise of low dunes beyond.

Spots of this kind are chosen by these birds for their summer homes. One such on the Bay side of the Cape and near its base, varying from the conventional character only in having on the inland side of the narrow wall of dunes a shoal brackish pond of an acre or more, has lately become really populous with them. On a section of beach bounded on one side by an inlet and on the other by a break in the chain of dunes and containing possibly four acres there were this past season (1918) not less than nine

pairs and broods while on an adjacent strip of beach of about the same extent nearly, if not quite, as many more were settled.

There are probably many who are unfamiliar with the species. To them, perhaps, the following,—resulting from frequent visits to the little colony,—may be of interest.

The earliest brood was running about on the morning of June 9. The birds were very small, having hatched probably earlier in the day or possibly on the day previous. The last hatching was around the 16th. All, or at least all within the bounded section, were in broods of three. By the middle of July old and young were flying in flocks. By the last of the month the majority had left; those that remained being either in small bands by themselves or else associated with the newly-arrived Ring-necks.¹

Most birds, even those that are gregarious through the greater part of the year, disperse more or less widely during the nesting period. These Plovers, however, nest comparatively close together. The young, therefore, of every brood from the time they are hatched are not only continuously associated with one another but as they range over the beach in search of food each is constantly brought into contact with members of other broods while the broods themselves gather into flocks as soon as the power of flight is acquired.

While this habitual association indicates, of course, a naturally strong social disposition and consequently a more than ordinary amount of sympathetic feeling, the continued companionship itself could hardly fail to develop the feeling still further. Hence there has been built up in the species a spirit of mutual protection.

This communal foster feeling occasionally manifests itself in a marked degree; as when, at a threat of danger, more than two adults join in driving a single brood up the beach and into the safety which the concealing color of the dry sand furnishes.

It is shown again by the number of old birds that attempt to distract attention from the same brood or even from a detached individual by feigning; creeping off with wings outstretched and fluttering, tail fanned and dragging or, if the need requires more

¹ There is, of course, no way of knowing that these later birds were from the summer colony. Possibly all those had moved along and the ones seen from time to time during the rest of the season were migrants.

extreme measures, collapsing utterly a short distance away as if completely exhausted.

They always make their nests on the dry upper beaches but, like various other shore birds, feed commonly along the water's edge where the moist sand teems with myriads of minute living creatures. Here, as they run back and forth, the comparatively dark background makes them conspicuous even from some little distance and, as if sensing this, the first hint of approaching danger sends them to the cover of the lighter colored beach above.

Concealment is the best means of protection the little birds possess. It is also largely depended upon by the adults during the nesting season and until the young are able to use their wings. A really remarkable correspondence has been developed between their color and that of the upper beaches; so perfect is it that it enables them to merge themselves into and become a practically indistinguishable part of the surrounding waste of sand. Hence birds to be kept under observation must be watched while they are in motion until they come to rest. If the eyes are diverted from one after it has settled much patience is apt to be required to locate it again although its whereabouts may be almost exactly known.

Their disappearance is due to the beach appearing to be uniformly of one color while actually it is not. The irregularities in its surface produce everywhere a multitude of shadow-points and lines and besides these shaded spots countless particles of dark colored material are mingled with the lighter sand. These contrasting colors are lost in the impression of sameness which the beach as a whole presents and thus, while the general tone of the upper parts of the bird matches that of the dry sand on which it crouches, the darker markings in its plumage fade into the background and become no more noticeable than the lines of shade they simulate. The eyes, which in the hiding bird of all ages are kept alertly open, are rendered inconspicuous not, perhaps, so much because they simulate shadow-points as because of their likeness to dark bits of beach content.

It is difficult to see whether or not the presence of stones or pebbles is an advantage to the bird. In all probability it is; yet the disappearance, at least so far as human vision is concerned,

seems to be as complete against a background of bare sand as against one over which stones are thickly strewn.

Of course it frequently happens that there is no time for concealment. Then, the young birds attempt to escape by running,—the tiny legs working with surprising rapidity and carrying them over the ground so swiftly and smoothly that they looked like balls of down blowing before the wind. Also, if their escape up the beach is cut off and they continue to be closely pressed they do not hesitate to take to the water. Even those only a few hours out of the shell swim well and navigate their frail craft if not with intelligence at least in a direction away from the source of danger. Obviously neither of these two modes of escape can afford them much security.

The earliest concealing actions must be wholly instinctive, but from them (which lead to a merely passive reliance upon concealment) there is a gradual transition to actions which are intelligently directed to make the concealment more effective. For instance, the very young when frightened run to a safe distance and simply sit motionless. Birds a week or more older not only run but usually *hide*; that is, they flatten themselves, head as well as body, on the sand, often (perhaps in the majority of instances) turning so as to face the danger point. Furthermore, the older fledglings will repeat the performance as often as occasion requires; a too near approach starts them running again and again and the concealing actions will be gone through any number of times. With those younger or less experienced there is as likely as not to be no further effort made to escape after the first; and this, as we have just seen, ends with no attempt toward concealment other than the negative one of sitting still.

One of these newly hatched youngsters that we came upon suffered his bill to be uptilted, his body to be prodded with the finger and even permitted himself without protesting to be picked up and held in the hand. All to no purpose; the machinery of his nervous system seemed to have run down and when he was returned to the ground he almost immediately settled into position again. Evidently concealment, throughout the history of the species, must have been generally successful; otherwise, it is hard to understand why the relation between the concealing actions and

the ensuing feeling of security should have become so firmly fixed.

As a mode of escape or protection, however, it is practised only so long as the birds are bound to a restricted area — the young by their inability to leave it, the old by the care which the nest and fledglings entail. As soon, therefore, as the young birds have acquired the full use of their wings both young and old alike seek the greater safety in flight.

BLACK DUCK NESTING IN BOSTON PUBLIC GARDEN.

BY HORACE W. WRIGHT.

THE first appearance of Black Ducks (*Anas rubripes tristis*) in the Public Garden, of which I am aware, was in the early morning of May 22, 1910, when a pair flew in, alighted on the pond among a family of Mallards (*Anas platyrhynchos*), and remained fifteen or twenty minutes, alert and watchful in their new surroundings. The parent Mallards at once became solicitous for their young brood, especially the mother who carefully kept herself between the female Black Duck and the ducklings. These ducklings had been hatched on May 12, nine in number, but four had been lost in the first few days of life on the pond, leaving five which were successfully reared. When the pair of Blacks left they were escorted on their way by the Mallard drake. The Black Ducks very probably came from the Back Bay Fens, where a considerable flock then wintered season by season. The building of the coffer dam to form the Charles River Basin and exclude tide water has resulted in the complete freezing up of the waters in the Fens in more recent years and an enforced absence of ducks in the winter. But about the intakes of reservoirs in the vicinity and on Leverett Pond, where the waters of Muddy River enter, Black Ducks in varying numbers still winter.

The following spring, 1911, a pair of Blacks came to the Garden on April 18, remained for a short time, watchful of any approach,

and presently took wing westward over the housetops in the direction of the Fens. The following morning they were again present, but did not stay, departing in flight toward the Common. The third morning during an easterly rain they remained and were observed for forty minutes, a typical pair of *Anas rubripes tristis* (Brewster,) the drake with rather red legs and greenish bill, and the duck smaller with brownish legs and dusky bill. They occupied the northern half of the pond where the island is located. The duck invariably swam in advance of the drake, who gallantly accepted her motives and desires as his guide. Once she flew up onto the side of the foot bridge outside the railing in her procedure of investigation. Then both swam toward the island, and she traversed much of its surface, testing the various recesses among the rocks, evidently in search of a nesting site, and several times settled herself an instant to try the several locations. Again she dropped into the water, joining her mate who had remained close by, but had not gone on the island with her. The resumption of close companionship was then followed by much bobbing of heads and a full expression of mutual love. Swimming was resumed, and later they climbed out onto the curbing, giving scarcely more heed to passersby than did the domesticated Mallard pair of the previous year. Perhaps, the heavily clouded and rainy character of the morning was a favoring circumstance. Clearly they had gained a great degree of confidence in two days and the preliminaries for nesting seemed now to have been inaugurated. Would the boating presently disturb them? It was a question of much interest. The island, however, will be as secure a nesting place as it was for the Mallards the previous year when the nine ducklings were hatched, and later in the summer a second brood of eight was hatched and all were raised.

That pair of Mallards was the first which had been seen in the Garden. Probably it belonged to the park flock living in the Fens and in 1910 first made choice of the Garden pond for breeding. These Mallards, presumably the same pair, had returned on March 21 in the following spring and begun preparations for nesting on the island, when a week later the water was drawn from the pond and remained off for eighteen days, leaving only a dry bottom, and the discouraged ducks left. The water was restored on April

15, and happily, three days later the pair of Blacks appeared to take the place of the Mallards and possess the now undisputed waters, since the latter had evidently gone elsewhere for nesting. No Mallards have since bred in the Garden. The order of arrival in this instance seems to indicate that the Mallards were prepared to breed much earlier than the Blacks, even four weeks, the difference in time between March 21 and April 18. Circumstances unknown, however, may have contributed to this disparity, such as the disturbance of the Blacks where their nesting may already have begun. But the interesting fact remains that they found the Garden pond with its island unpossessed and at once adopted it for their family life.

After the three successive days of the presence of the Blacks, already noted, they were absent from the records of the following two mornings. But on April 23 they were back, and the duck several times again searched the island for a nesting site, the drake remaining nearby on the water and occasionally bobbing his head in affectionate greeting to her. When she rejoined him, there was the natural expression of their mutual love. Again the next two mornings the pair was absent, and the question arose whether their choice of the Garden for nesting was after all a certainty. But on the 26th, this doubt was removed by perceiving that the duck had apparently made choice of location for her nest on the west side of the island in a suitable little hollow into which her body fitted well. She turned herself about in it several times. The spot seemed rather exposed to view, having in reality no concealment; but the rocks and earth composing it blended completely in coloration with herself. So the thought was, if she will only sit immovable when boats round the island close to its shores, she will probably successfully cover the period of incubation. The next day the duck was on her nest in the early morning, and the drake was temporarily absent, obviously cognizant of the stage the family life had reached. But the day following it became apparent that mother duck was not satisfied with the chosen spot, that it had not borne the test of trial, and she had now selected a place on the southerly side of the island two to three feet above the edge of the water, snugly located behind the trunk of one of the willows and shielded still more by neighboring rocks, yet

within view of the careful scrutiny of an observer from shore. The drake was again present, but took flight away about 7 A. M. in the direction of the Charles River Basin, the duck continuing on her new nest while we remained a half hour longer. This was April 30. The days following, she went on her nest each morning, usually after being seen on the water with her mate, and when she had settled herself, the drake would swim away and remain at a distance, thus withdrawing attention from the nesting site, or would fly away to other waters for a time. On some of the earlier mornings the pair were seen arriving on the wing and soon thereafter the duck to go on her nest. So its occupancy continued up to May 24 inclusive, when it might be supposed that she had laid her litter of eight to ten eggs and been sitting about two weeks. But the following day she could not be seen on her nest or on the pond and was not again present during the remaining days of May. For some reason the nesting had failed.

The next two springs, 1912 and 1913, no Black Ducks were seen to visit the Garden pond. In 1914, as late as May 16, a pair appeared and was present on some of the successive days, but there was no nesting. The visits were apparently occasional excursions from other waters. But in 1915 a pair of the *tristis* type, perhaps the pair which had made a few occasional appearances in 1914, again came to the Garden as early as March 14, when the winter's ice had but partly gone from the pond. They were not seen again, however, for a week, during which there was a new formation of thin ice nightly with minimum temperatures of 26° to 29°. They reappeared on March 21 and followed up their visits, sometimes being seen on the Frog Pond of the Common. But conditions were not yet favorable for nesting activity, for on March 27 there came a cold wave lowering the temperature to 18° and a coating of new ice was formed on the ponds. This was directly followed by the drawing off of the water for the purpose of cleaning the bottoms, and the ducks, so far as my observation went, made only two or three casual visits during the next two weeks. On April 3 six inches of snow fell. This delayed the spring-cleaning work, and it was two weeks later, or April 17, when the water was turned on again. Visits of the pair of Blacks, however, on April 11, 13, and 14, indicated that they were keeping a watchful eye on

conditions and might be cherishing a purpose of adopting the Garden for their season's family life. So when the pond had been filled by opening connection with the city's water supply, it was reassuring of the fixedness of their choice to see the pair present and investigating the island, the drake with the duck. Two days later, an observer had the unusual sight of witnessing the female walk along a somewhat horizontal branch of one of the willows on the island, as a tree-nesting duck would do. The following day, the 20th, she was seen settled upon what we supposed to be the chosen site of her nest, and egg laying probably began. The location was near the top of the island, which, however, is small, being, perhaps, not more than forty feet in diameter. The sitting was successfully accomplished, notwithstanding much boating on the pond, and on May 29 mother duck led ten ducklings down to the water. This would indicate that the period of laying extended from April 20 to 30 and the sitting period of four weeks to May 28. I had left the city for the season on that day and so was informed by interested observers of what subsequently took place. It seems that two of the ducklings were soon lost, and that when the remaining eight were only four days old they were taken from the mother by the city park department and carried to the zoological collection at Franklin Park. The park management, it may be said, got an impression from the actions of the mother duck in leading her young much about over the lawns and getting them into fountain basins from which they could not clamber out and follow her, that she was lacking in the proper care of them. The parent birds at once left the Garden for the season. But they were seen on two or three occasions in October, showing that they retained a liking for the place. It was, however, a very abrupt and disappointing ending to a mother's patient sitting and a most successful hatching, with much credit due the boating public that the nest had in no way been interfered with during the period of almost six weeks covering the laying and incubation of the eggs. The mother's restlessness with her young may have been due to a desire to get her ducklings away to a less frequented place. But the Mallard of 1910 had brought up on the Garden pond her two broods hatched on the island, and these had had no difficulty in swimming out of the way of approaching boats and

had grown into mature birds within the Garden. And the whole combined families were present on the pond many days in the autumn up to its freezing over for the winter in late November, on other days dividing up and some of them on other near waters.

When the season of 1916 opened, the first day that the pond was free from ice, namely, April 2, the pair of Black Ducks made their reappearance, having been thus watchful of conditions. It could not be doubted for a moment that it was the same pair which had adopted the Garden pond the preceding year, so wanted to the place did they seem and withal so glad to be back again at the earliest opportunity. They were of the same *tristis* type. The records show that they were present continuously from that date. On April 6 courting was observed, the duck looked the island over, and, before leaving it, once again as in the previous year perched upon one of the slanting willow trunks and flew off thence to the water. Three days later, the 9th, she was on her nest and probably deposited her first egg, as two days afterward, when she was absent from the Garden, the nest was visited and found to contain three eggs. The water had been drawn from the pond and none remained around the island. But even these conditions did not deter her from holding to her chosen location. This was now on the northerly side of the island about four feet from the water's edge. On the 14th, again in her absence, the nest was visited and found to contain six eggs well covered over with dead grasses, the number indicating that one had been laid each day. On the 19th the water was returned to the pond. Thirty-one days later, on May 20 at 7.10 A. M., she came down to the water followed by five ducklings only. Thus many of her eggs had failed to hatch. The period covered between the laying of her first egg on April 9 and the hatching on May 19 was forty-one days. As sitting would occupy but twenty-eight days, the period allowed for the laying of thirteen or fourteen eggs. Whether such was the case it cannot be stated. If she did not lay as many, there must have been an interruption to the usual order of the nesting due to some cause unknown.

When the ducklings dropped into the water, they at once swam actively about in their newly awakened happiness. A half-hour later the mother had taken them back to their nest for brooding.

The drake came in on the wing five minutes after the young had embarked on the pond and joined his family for a time. He had been absent almost altogether during the period of incubation, only occasionally being seen on the Garden pond. But on some of the days he was no farther away than the Frog pond on the Common and had the companionship variously of one, two, or three other drakes. During the days following the presence of the ducklings on the pond with their mother he was seldom with his family.

On May 23, when the ducklings had been but three days upon the water, the family was missed from the pond. But shortly a loud quacking was heard from the northwest corner of the grounds, and it was found that the mother with one duckling was travelling toward the pond, while the four remaining ducklings were struggling to get out of a fountain basin and follow her. This they could not do on account of the height of the granite curbing. A dozen men had gathered, attracted by the mother's calls, and seeing that the attempts of the ducklings were unavailing, it was at length suggested that a garden bench be placed on an incline with one end in the water and effort be made to induce them to clamber up this incline. This was done, and after a time the idea of a means of escape thereby came to them and they began its ascent. But the bench proved to be slippery, as it was wet with rain, and the ducklings slid back as often as they made an advance. The thought then occurred to place newspapers which were at hand on the wet surface of the bench. This done, after a little time of further effort the ducklings were again induced to try the ascent, and three succeeded in climbing to the top and tumbling to the ground. Meanwhile the mother duck had left her one duckling safe on the pond and returned quacking for the four, a reversal of the story of "the ninety and nine." With a little more perseverance the one remaining duckling was induced to climb the newspaper-covered bench and was at last in safety with its mother and the three, and all travelled to the pond and joined the duckling left there, which meanwhile had remained unconcerned over its isolation as if it comprehended the whole proceeding. The interest and patiently rendered assistance of the men, who were passing through the Garden at the time to their work, was a pleasing instance of spontaneous kindness and sympathy.

Three days later there were but four ducklings, one having been lost. And the following day the whole family had disappeared. The explanation furnished me by an employee was that he was told by a man, who himself observed the proceeding, that he had seen at five o'clock in the morning the mother duck and young travelling over the Garden lawns and crossing Beacon Street in the direction of the Charles River Basin, which is just in the rear of the houses. Such a walk by the brood would certainly not be beyond their powers, taking their way through the extension of Arlington Street to the esplanade bordering the basin. The act of the mother was entirely consistent with her apparent purpose the previous year, when she was intercepted and her ducklings taken away to the city Zoo. Doubtless this brood of four, then but a week old, perished on the open waters of the Basin, unable to cope with their roughness when strong winds arise. Thus we have an instance of a Black Duck, to a considerable extent domesticated by living among men so that she nests confidently where they resort in large numbers, upon possessing her young apparently urged by a desire to get them away to a less frequented place under a mistaken idea about their relative safety, and so jeopardizing their lives. Four days later, May 30, the pair was again on the Garden pond without their ducklings, but, as far as my knowledge goes, they only continued to visit the pond for a day or two and then absented themselves. In October and November a pair of Black Ducks, presumably this same pair, was observed on the Garden pond upon many of the days and were last seen visiting their old haunt on November 24.

When the spring of 1917 was opening and the ice began to break on the ponds, so that merely a small area of open water had appeared at one end of the Frog Pond, the pair of Black Ducks — with scarcely a doubt the same pair which had nested on the island in 1915 and 1916 — so closely watchful of conditions as to discern this, once more appeared on the wing over the Garden and, perceiving an unbroken surface of ice on the pond there, continued their flight to the Common, where was the bit of open water. This occurred on March 26. On the following day the Garden pond came to be almost half free from ice, and, upon my morning visit, the pair was found to be swimming and tipping

happily in its waters, availing of the very first opportunity to be in their old haunt again, it may be said indeed, delaying scarcely an hour after the partial opening up. Their presence on several days thereafter was recorded. On April 1 the duck was observed on the island. On the 4th the water was drawn off, and the next day the pair was seen flying in, but they left directly, as the pond had been drained to its bottom. For seven days then the ducks were not seen, and it seemed as if they might have been deterred from their purpose of again breeding in the Garden. But on the 13th they were back and paddling in the mere shallow ditch which runs centrally through the pond and still retained a little water. It was five days later when the water was restored and the pair began their continuous occupancy of the pond. This season it seemed as if there were a purposed delay on their part in beginning the nesting until the water should have been returned, as by their experience of previous seasons they might feel assurance it would be. On the first day of their return, April 18, the female was seen investigating the island. The following day she went upon it several times successively during observation and seemed to be making choice of a spot on the southerly side, for she again and again tested its fitness by adjusting herself upon it. Six days later she was seen on her nest, probably to deposit her first egg, and upon each day following the same record 'duck on her nest' was made up to May 29 inclusive, when at 7.20 A. M. she moved down to the water with a brood of eight ducklings following her. The drake was not present at the time. The egg-laying would seem, therefore, to have occupied eight days, April 25 to May 2, and the period of incubation to have extended to May 28, when the young were hatching, and thus upon the water the day following. Again mother duck had accomplished a successful nesting, free from interference. It had been possible just to discern her form as she sat on her nest, the protective coloration of her plumage blending completely with her surroundings. And later, when the grasses and lily leaves grew up around her, she was almost entirely concealed from view. So as she probably maintained her fixed position when boats full of people rounded the island, it is likely that their occupants were unaware of her presence. But many bird-lovers followed the course of her family

life with much interest and pleasure. I was informed that the brood was safely cared for in the Garden up to July 4, or a day or two later, when the ducklings had come to be more than five weeks old; not one had been lost. But the whole family then disappeared, and it was surmised that the mother following her bent, as observed in the two preceding years, had led them over to the Charles River Basin.

In October I found the mother and one immature duck on the Garden pond. The young duck was about half grown, and the wing quills were very little developed. It was regarded as probably a duckling of a second brood, raised outside the Garden; for I have since been informed that a mother Black Duck with two ducklings, probably three or four weeks old, was seen for a time in late summer on the esplanade bordering the Charles, where it is at a distance of a few hundred feet only from the Garden. So the other having been lost, presumably on the Basin, she may have eventually led her remaining duckling to the Garden pond now so familiar to her. Here it remained continuously up to the time of the closing of the pond with ice, having grown to about full size and developed power of flight. Sometimes in the later days of the autumn the mother was absent and the young duck alone, and again on many days not only was the mother present, but several others, both male and female, which came in company with the original pair to its Garden haunt on excursions from other waters. And it is not unlikely that some of these visitors were members of the brood raised in early summer which departed from the Garden and, it was surmised, went to the Charles River Basin at the time of their disappearance.

So the Public Garden has been the successful nesting place of a pair of Black Ducks for the last three years, 1915, 1916, 1917, following an earlier attempt at nesting in 1911 which was not successful. These breeding ducks are to be regarded as essentially wild, not having been in the care of the city or owned by the park department, but belonging to flocks which year by year have arrived upon ponds and reservoirs in this vicinity and have wintered here in considerable numbers. They come and go at pleasure. So these pairs of the Garden, undoubtedly of such origin, have lived their own free life and come and gone according to their

desire, owned and controlled by no human agency. Protective laws now in operation for several years have materially furthered the possibilities and even probabilities of just such an occurrence as the choice for breeding of a much frequented city garden like the Boston Public Garden, possessing a pond and suitable island within it. And as wild ducks just from a fully wild life soon come to feel at ease and safe, gradually losing apprehensive fear, when unmolested in their occupancy of park and reservation waters during their migratory flights, which the extended visits of wild ducks¹ to Jamaica and Leverett ponds in recent years have shown, so these Black Ducks of the Public Garden, which already had lived in some degree of confiding association with man on neighboring waters, soon became as wonted to the peopled garden and as little apprehensive upon near approach as domesticated ducks of farm or public park. Yet they retain their freedom, as the latter do not, and live their own lives unmodified by the control of man. This is cause for congratulation and gratitude to the agencies which have so efficiently and earnestly labored for laws covering the protection of our wild fowl.

It may be stated that the Boston Public Garden has an area of twenty-four acres and is located somewhat centrally within the city, the Charles River Basin, however, lying in close proximity to its northern side. The pond occupies three and three-fourths acres of the whole area. It is shallow, not paved except around the margin, but has a muddy bottom, and it is bordered by granite curbing. In former years European Swans and for one or two seasons Muscovy Ducks were kept by the park department on the grounds during the season when the pond was open, but in these recent years of the nesting of the Black Ducks no other water fowl have lived within the Garden. The Blacks, therefore, have had undisputed possession, while the swans and domesticated ducks have been maintained at Franklin Park in connection with the city's zoological collection there.

In the spring of 1918, this pair of Black Ducks made its reappearance on March 25, when the pond was still incased in ice, making a circuit over the Garden, but not alighting. Two days later

¹ Some Rare Wild Ducks wintering at Boston, *Auk*, XXVII, Oct. 1910, pp. 390-408.

they made a brief visit, remaining a few minutes at the base of the fountain where already was a very small area of open water. On the 30th the pair was seen standing on the curbing upon the first day of a considerable opening up. On the following day the ice had almost entirely disappeared, and the Blacks were present, enjoying the open water. On April 1, at the time of my morning visit, the female, to my surprise, was seen on the spot of her nest of the previous year on the island, well settled upon it and occasionally drawing dead grasses and leaves with her bill about her. The drake was swimming on the pond. The day following I found the water was being drawn off for the annual spring cleaning, but the ducks were present. April 3 and 4, the pond had been drained, and the ducks were not present. But on April 5, again the duck was seen on her nest at the time of my morning visit, while laborers with hoes were scraping the bare bottom of the pond around the island. And a little later the pair was seen swimming in the central ditch, where some water remained. On the 6th, as the duck was not present, I visited the nest and found it empty; but upon the bottom of the pond at a spot nearby was the shell of a duck's egg, indicating that she had laid her first egg, presumably, on the previous day when I had seen her on her nest. Then during the days following the pair absented themselves while the work of cleaning was completed. The water was restored on the 11th, and in another day the pond had filled. But the ducks did not promptly return. On the 16th, however, again the duck was seen on her nest in the morning, and it seemed likely that her nesting was now begun in earnest, but it did not prove so. The visits of the pair were intermittent and transitory both to the Garden pond and the Frog Pond, and in late May they were no longer seen. At this time the pair of Blacks was replaced by a pair consisting of a Mallard Drake and a Black Duck, which were seen successive days, with a presumption that this pair in the absence of the Blacks had become their successors. Both pairs had been observed present on one or two occasions, when the Black Drake drove off the Mallard Drake, pursuing him from the Garden. But it eventuated that the Blacks seemed not to have a settled purpose to breed in the Garden this season, and so finally at the end of May they relinquished the pond and island to this rival pair whose

nesting now began, as indicated by the presence of the drake alone on the pond morning by morning and the absence from view of the duck, as she presumably occupied her nest on the island, concealed by the vegetation which had arisen upon its surface.

THREE INTERESTING GREAT HORNED OWLS FROM NEW ENGLAND.¹

BY GLOVER M. ALLEN.

DURING the cold winter of 1917-18, New England had an unusual visitation of Great Horned Owls. A large number were killed or captured and many found their way into taxidermists' shops. Among several received that winter at the State Museum at Augusta, Maine, I noticed on a recent visit, a single one that appeared to be uncommonly dark, and on my expressing an interest in the bird, Curator Thomas A. James of the Museum very generously presented the specimen to the Boston Society of Natural History. It was an adult female taken at Scarborough, Maine, about February 7, 1918, and received in the flesh by Mr. James on the 9th. Through the kindness of Mr. Outram Bangs, it has been compared carefully with the series of Great Horned Owls from eastern North America in the Museum of Comparative Zoölogy, and it seems to be without doubt referable to the dark northern race, typical in Labrador, *Bubo virginianus heterocephalus* Oberholser. It is especially interesting, however, in being even darker than the generality of these northern birds, with a considerable clouding of blackish in addition to the black barrings that thickly cover the breast, and in almost lacking the usual bright buffy markings. Its whole appearance is therefore unusually sooty. It agrees with the Newfoundland and Labrador birds in having the facial disks dark, a mixture of black, gray and tawny, instead of nearly clear tawny, as in typical *virginianus*. The feet are dusky gray, finely speckled with darker, instead of the usual

¹ Read before the Nuttall Ornithological Club, January, 1919.

ochraceous color, though in this respect it is nearly matched by a bird from Newfoundland.

In 1897, Mr. Arthur H. Norton (Proc. Portland Soc. Nat. Hist., Vol. 2, p. 103) recorded as a bird new to the Maine list, a very dark-faced Horned Owl in the collection of the Portland Society of Natural History, that was killed many years previously and given the Society in March, 1870. It was taken near Portland, Maine. Mr. Norton referred it to the race *saturatus* as then understood (now restricted to the dark form of British Columbia), and described it as "very dark brown, or blackish brown" above with fine grayish marks; "very wide dusky bars below, having a tendency to mass on the breast; feet and bases of the feathers below deep tawny (much deeper than in any specimen of *virginianus* examined)"; wing 400 mm.; tarsus with numerous dusky bars. No doubt this, too, is an example of the subspecies *heterocnemis* and came from the north.

Later, Knight (in his 'Birds of Maine,' 1908, p. 260-261) dismissed this record with the remark that Mr. Norton's specimen is "not much darker in coloration than many individuals seen elsewhere. It is indeed possible that all our Maine birds are nearer the northern form and may be better regarded as all being referable to it." This is hardly the case, however, as the birds I have seen from southern and eastern Maine, taken in the breeding season, are clearly typical *virginianus* and agree with Massachusetts specimens in their clear risset facial disks and lighter coloration.

A second Great Horned Owl of the 1917-18 flight was a very pallid female bird killed at the Mount Auburn Cemetery, Cambridge, Mass., by one of the employees of the cemetery, on December 4, 1917. It was brought to the M. A. Frazar Company's taxidermist establishment and I saw the bird in the flesh shortly after. Through Mr. Frazar's interest the bird was obtained for the Boston Society of Natural History. During the past winter, 1918-19, there has again been a considerable flight of Great Horned Owls. Mr. Frazar says that over twenty had been received at his shop before January 1, 1919, where in ordinary years scarcely half a dozen come in, during an equal period. Among the birds of this year's flight was another pale individual which has also been secured by the Boston Society of Natural History.

According to the person who obtained it, it was picked up dead in Somerville, Mass., on November 26, 1918, and its death was supposed to be due to its having flown against a house, or some other obstruction, a somewhat unusual fate for an Owl. Both these birds are very similar and should evidently be referred to the same subspecies. The Mt. Auburn bird has pure whitish facial disks, and feet immaculate above, though lightly speckled with darker at the sides. The Somerville bird, a male, has the whitish facial disks somewhat washed with pale ochraceous, but the feet are pure white. A comparison of these two specimens with the pallid western birds seems to indicate that of the two large races of the interior of North America, they are best referred to the northern, *Bubo virginianus wapacuthu* (Gmelin), the Arctic Horned Owl. They are not quite so dark above as the bird of the interior United States, Dakota to Nevada (*B. v. occidentalis*) and are slightly paler in the facial area. In measurements they are of maximum size, the female with a wing of 390 mm., the male 375 mm., hence are not to be referred to the other pallid western races which are smaller. The supposed breeding range of this subspecies is north-central Canada, from Hudson Bay to Slave River, migrating occasionally south in winter to the northern United States. There is one previous record for this race in Massachusetts, namely a bird killed at Waltham, November 30, 1867, by C. J. Maynard. This specimen was formerly in the Museum of Comparative Zoölogy, but has lately been given to the Boston Society of Natural History, so that the latter institution now has all three of these Massachusetts birds. All seem remarkably similar and no doubt represent this Arctic race. In his 'Birds of the Cambridge Region' (1906, p. 204) Mr. William Brewster considers at length the status and correct name for this specimen and considers that Hoy's name *subarcticus* is more certainly applicable than the barbaric *wapacuthu*. In the paper previously cited, Norton records a bird probably of the same form under the name *B. v. arcticus*. It was presented to the Portland Society alive on December 6, 1869, and was said to be from Maine, though the exact locality was not then specified. Its color above "is pale, hoary gray: top of head much as in *virginianus*: below, white with numerous narrow, dusky bars on the feathers: feet, white, nearly

immaculate; . . . wing about 380 mm." The color of the facial disks is not mentioned. Knight in his 'Birds of Maine,' prefers to treat such birds as "extremely pale or faded individuals of the typical Horned Owl," considering the species non-migratory. This course, however, seems hardly justifiable, and to my mind the present additional records of birds identical respectively with the Labrador and the northwest Canadian forms seem sufficient proof that they have come as occasional migrants from these precarious portions of the species' range, driven from their usual year-round haunts by some causes which we have not yet wholly fathomed: but no doubt chiefly through failure of the food supply in their home regions. These constitute the first definite record for Massachusetts of the Labrador Horned Owl, and the second and third records for the Arctic Horned Owl in the same state.

VARIATION IN THE GALAPAGOS ALBATROSS.

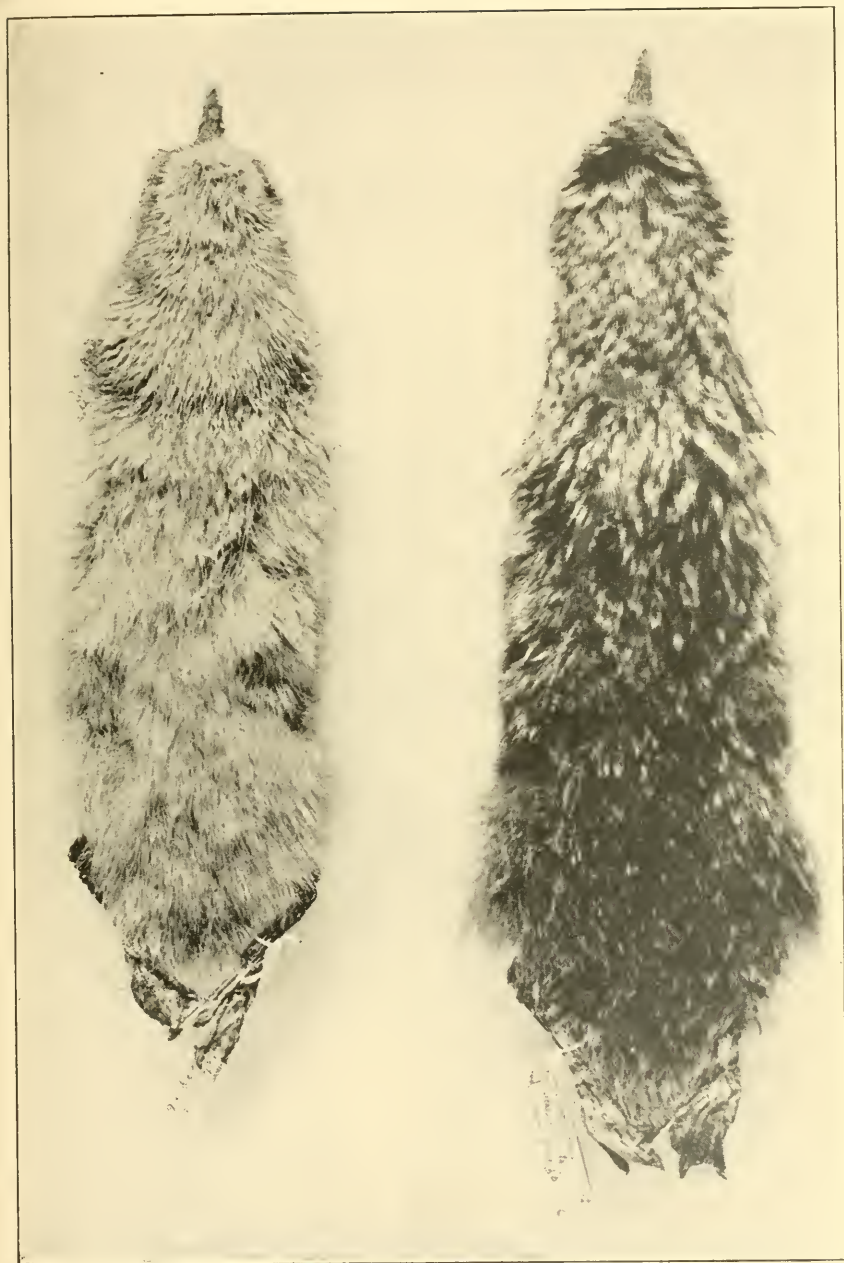
BY LEVERETT MILLS LOOMIS.

*Plates XIV-XVI.*¹

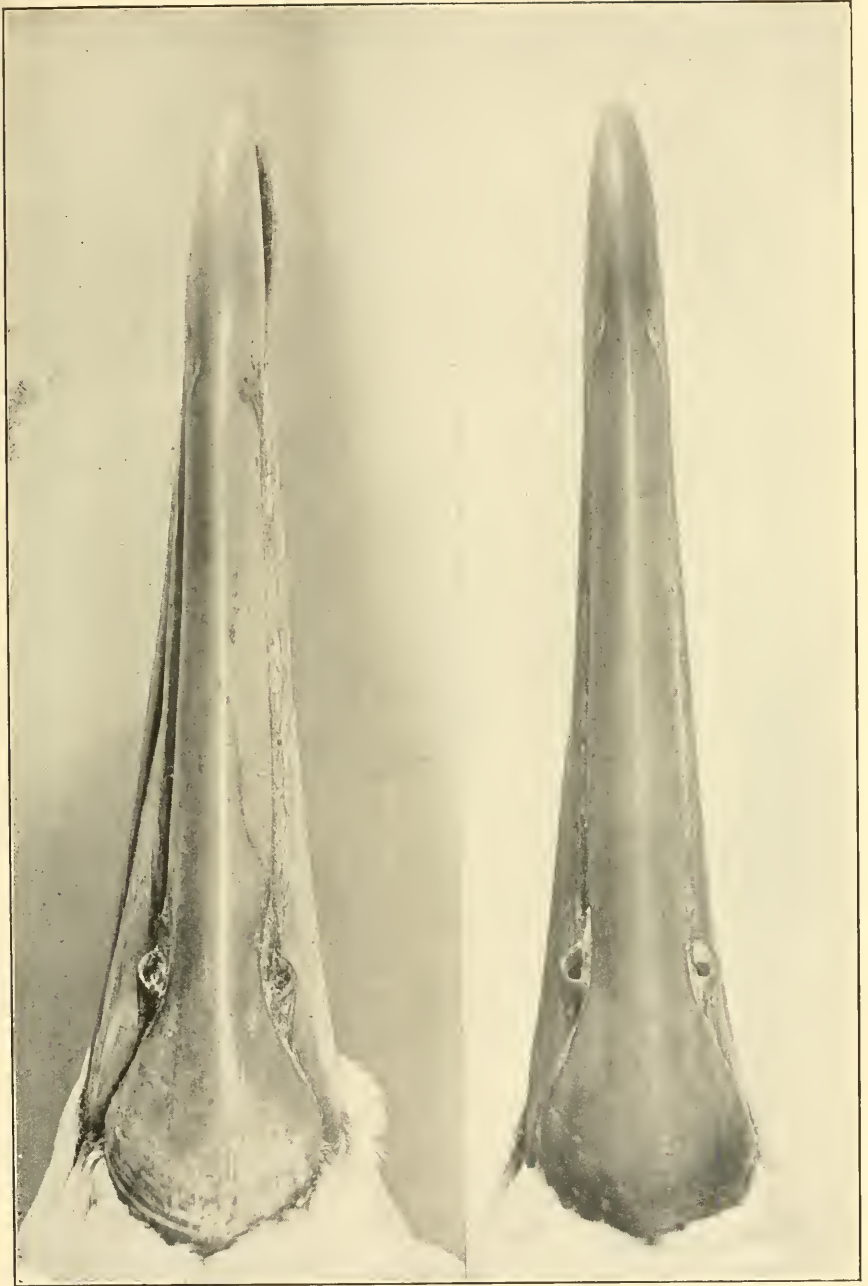
FOR an albatross, the Galapagos Albatross (*Diomedea irrorata*) has a peculiar distribution. It breeds in the Southern Hemisphere within less than two degrees of the equator and, so far as known, only on Hood Island of the Galapagos Archipelago. After reproduction it apparently migrates southward, as far at least as the coast of Peru.

The island isolation of this bird during its breeding season and its large size render it an attractive subject for a study of variation. The most striking differences occur in the coloration of the downy young and in the form of the bill in sexually mature individuals taken at their rookery.

¹ I am under obligations to Mr. Charles B. Barrett and Mr. L. R. Reynolds for the photographs reproduced in these plates. Mr. Reynolds photographed the downy young and the bills showing side aspect and Mr. Barrett enlarged the latter to natural size and photographed the other bills.



DOWNY YOUNG OF *DIOMEDEA IRRORATA*



DIOMEDEA IRRORATA
Culmen from above (nat. size)



DIOMEDEA IRRORATA. Bills from the side

Independent of age and sex, the downy young have a light phase and a dark phase connected by intermediates, constituting a definite dichromatism. Plate XIV shows the upper surface of the extremes in primary natal down (protoptyles). In the light specimen (1180 C. A. S.) the general aspect was light drab-gray and in the dark one (1185 C. A. S.) dark drab, medially lighter below and varied with dull cream color above, especially anteriorly. It may be, also, that there is a slight dichromatism in the adults, for some nesting individuals are darker than others. It is significant that the only transition nestling (1204 C. A. S.) before me is passing from the dark phase of the natal down into the darker style of the definitive plumage.

To what extent dichromatism prevails among the albatrosses is unknown. Certain of the plumages esteemed to be of specific significance by some systematists I believe to be dichromatic. The whole question of color variation in the albatrosses, and also in the other Tubinares, needs a thorough investigation.

In plates XV and XVI are illustrated the extremes in the general shape of the bill in a series of thirty-three breeding birds obtained on their rookery during eight days ending July 2, 1906. These variations occur independently of sex and, so far as ascertained, of age, the birds being sexually mature. Plate XV exhibits the difference in the width of the bill in two males (1199 and 1221 C. A. S.). In the stouter bill the basal width of the upper mandible is 35.2 mm. and in the slenderer one 31 mm. Plate XVI shows the variation in the concavity of the culmen in two females (1208 and 1225 C. A. S.). The greater concavity measures 6.5 mm. in depth and the lesser 2.5 mm. The latericorn and ramicorn, it will be noticed, also vary in form. Furthermore, the nasal tubes in the entire series of specimens vary; even in the same individuals the tubes may be unlike in shape. In their general dimensions, the specimens differ as follows:¹

Fourteen males: Wing, 550-593 mm. (572); tail, 142-158 (149); culmen, 146-160 (153.2); basal depth of upper mandible, 30.3-33.6 (31.7); basal width of upper mandible, 31-35.2 (33.4); tarsus, 91-103 (95.3); middle toe and claw, 125-138 (131.6).

¹I am indebted to Mr. Edward Winslow Gifford for making the measurements here summarized.

Nineteen females: Wing, 535-565 mm. (548); tail, 134-148 (139); culmen, 134.8-148.8 (141.2); basal depth of upper mandible, 29.6-32.6 (30.7); basal width of upper mandible, 30-33.5 (32); tarsus, 88.3-94.4 (91.6); middle toe and claw, 121.4-131.4 (125.2).

The differences recorded in the foregoing paragraphs emphasize the necessity of large series in determining the range of variation in the tubinarine species, and the futility of attributing specific value to similar differences on no better evidence than single specimens.

The future of the dichromatic and structural variations of the Galapagos Albatross is unknown, as is also the future of the island geographic variations of more widely distributed species. It is held, therefore, that any system of classification that attempts to forecast the remote future of such variations is unscientific, and destined to be discarded like the Quinary System that flourished in the time of Swainson.

AUDUBON'S BIBLIOGRAPHY.

BY FRANCIS H. HERRICK.

At the end of the second volume of 'Audubon the Naturalist'¹ published at the close of 1917, I added a bibliography of 240 titles, selective in respect to biography, criticism and miscellany, but as nearly complete as it was then possible for me to make it in other respects. The most important section was evidently that containing Audubon's principal works, five or, perhaps we should say, seven in number, namely: (1) 'The Birds of America' (4 vols. of plates only, in folio); (2) 'Ornithological Biography' (5 vols. Svo. of text to No. 1); (3) 'A Synopsis of the Birds of North America' (1 vol.); (4) 'The Birds of America' (7 vols. of revised text and plates of Nos. 1 and 2, in octavo); (5) 'The Vivipar-

¹'Audubon the Naturalist: A History of his Life and Time.' In 2 vols. New York, 1917.

ous Quadrupeds of North America' (3 vols. of plates only, in folio); (6) 'The Viviparous Quadrupeds of North America' (3 vols. of text only, in octavo); (7) 'The Quadrupeds of North America' (3 vols. of revised text and plates of Nos. 5 and 6, in octavo). Four of these, the folio 'Birds' and 'Quadrupeds,' the 'Biography' and the 'Synopsis' enjoyed but one complete edition under their respective original forms. Accordingly it would seem a simple task to prepare a full, correct, and therefore final bibliographic statement regarding so short a list. Such, however, is far from the case, since the 'Birds' and 'Quadrupeds,' in their reduced and final form, appeared before, during and after the Civil War, in numerous 'editions' or issues, which have proved so difficult to trace that no correct account of them has appeared up to the present time.

While bibliographic details are about the last subject to which a student of nature, with freedom of will unimpaired, would turn for refreshment, in the present case they afford a certain modicum of reward in biographical and historical interest; it is also apparent that possessors of such valuable and attractive works as Audubon's 'Birds' and 'Quadrupeds' have proved, are entitled to know the edition which their holding represents, as well as the time and circumstances which called it forth.

In preparing the list, to which reference was made, the principal public libraries in eastern America and western Europe were consulted, but that, it seems, was not enough, since correspondents in different parts of the country have pointed to certain errors and omissions, proving that significant sets of these works are quite as likely to be in private hands, or the smaller collections of books, as in the classic shades of the metropolis. For this service I am chiefly indebted to Rev. E. L. Shettles, of Brenham, Texas, and to Messrs. Henry Brannon, of Portsmouth, Ohio, Edward H. Johnson, of Philadelphia, and Charles E. Stratton, of Boston.

When we remember that large libraries have sometimes been guilty of eliminating titles and reducing the number of volumes which the author intended his work should represent; that Audubon's 'Birds' and 'Quadrupeds' in octavo form, were issued to subscribers in paper-covered parts that were liable to be dispersed or lost during the long period of disorganization which followed the

outbreak of the Civil War, and especially in the South where many of the naturalist's patrons resided; that the publication of first editions usually extended over a period of many years, that from 1854 to 1861 one or the other of Audubon's two sons was constantly projecting new issues of their father's standard works, and finally that when the collected parts came to be bound many defective sets were pieced out of two or more distinct editions,—some of the difficulties involved will be better understood. The present list is more nearly correct than any which has preceded it, but it would be remarkable if further verification and emendation were not needed.

It will be seen that the text of Audubon's 'Birds of America,' in its revised octavo form, has enjoyed no less than nine editions, namely (1) 1840–1844; (2) 1856; (3) 1859; (4) 1860; (5 and 6) 1861, one issue with, and one without, plates; (7) 1863, condition unknown; (8) 1865; (9) 1871. Excepting the possibility of error in one unverified notice (Nos. 14 and 16, below) there have appeared seven editions of text and plates combined.

The text of the 'Quadrupeds' has passed through four editions, namely (1) 1846–1853, text alone; (2) 1849–1854, text and plates; (3) 1854, text and plates; (4) 1856, text and plates, while the complete work, in octavo form, has appeared not once only, as formerly supposed, but three times.

For further detailed notes on the several editions the reader is referred to 'Audubon the Naturalist,' volume ii, Bibliography, Nos. 1–14 (which appear in brackets in the following list), pages 401–409.

Revised List of Audubon's Principal Works in their Several Editions.

1 (1). AUDUBON, JOHN JAMES:

The Birds of America, from Original Drawings by John James Audubon, Fellow of the Royal Societies of London & Edinburgh and of the Linnæan & Zoölogical Societies of London, Member of the Natural History Society of Paris, of the Lyceum of New York, &c. &c. &c. Issued without text, titles excepted, to subscribers, in 87 Numbers of 5 plates each (at 2 guineas a Part), or 435 copper-plate engravings, colored by hand, and representing 1,065 life-size figures of 489 supposedly distinct species of of North American birds, in double elephant folio. Published by the Author. London, 1827–1838.

- 2 (2). AUDUBON, JOHN JAMES, F. R. SS. L. & E. (with list of Societies):

Ornithological Biography, or an account of the habits of the Birds of the United States of America; accompanied by descriptions of the objects represented in the work entitled *The Birds of America*, and interspersed with delineations of American scenery and manners. 5 vols., royal 8vo, Edinburgh, MDCCCXXXI-MDCCCXXXIX.

Volume 1 was also issued in Philadelphia in 1831 and again in 1835, and volume 2 in Boston in 1835.

- 3 (3). AUDUBON, JOHN JAMES, F. R. SS. L. & E. Member of various scientific associations in Europe and America:

A Synopsis of the Birds of North America. Pp. i-xi, 1-359. 8vo, Adam and Charles Black, Edinburgh; Longman, Rees, Brown, Green and Longman, London, MDCCCXXXIX.

- 4 (4). AUDUBON, JOHN JAMES, F. R. SS. L. & E. (&c., &c):

The Birds of America from Drawings made in the United States and its Territories. 7 vols. of text and plates, royal 8vo. Published by the Author and (partly) issued by J. B. Chevalier. New York and Philadelphia, 1840-1844.

First octavo edition of revised text and plates combined; issued to subscribers in 100 Parts each with 5 lithographic colored plates, or 500 plates in all, at \$1.00 a Part.

- 5 (5). AUDUBON, JOHN JAMES, F. R. S. &c., &c., and BACHMAN, THE REV^d. JOHN, D. D. &c. &c.:

The Viviparous Quadrupeds of North America. 3 vols. of 150 lithographic colored plates; imperial folio. Published by J. J. Audubon, New York, 1845-1848.

Vol. I. Parts 1-10, pll. 1-50, 1845.

Vol. II. Parts 11-20, pll. 51-100, 1846.

Vol. III. Parts 21-30, pll. 101-150, 1848.

Issued to subscribers in 30 Parts of 5 plates each, size 28 x 22 inches, to compose 3 volumes (though sometimes bound in 2 with one title omitted), at \$10 a Part, or \$300, without text except titles, tables of contents and names on plates.

- 6 (6). AUDUBON, JOHN JAMES, F. R. S. &c., &c., and BACHMAN, THE REV. JOHN, D. D. &c. &c.;

The Viviparous Quadrupeds of North America. 3 vols., royal

Svo. Published by J. J. Audubon and V. G. Audubon, New York and London (in part), 1846-1853.

First edition, without plates, issued to subscribers as text to the foregoing.

Vol. I. Pp. i-xvi, 1-390. Published by J. J. Audubon, New York, 1846.

Vol. I. (European ed.). The same as foregoing with imprint of Messrs. Wiley & Putnam. London, 1847.

Vol. II. Pp. 1-336. Published by V. G. Audubon, New York, 1851.

Vol. III. Pp. i-vi, 1-257. Published by V. G. Audubon, New York, 1853.

A supplement of 93 pages and 6 colored plates, added in 1854, and apparently issued to all previous subscribers to this and the large folio, is sometimes bound up with the third volume of the present edition, when the date of which is usually quoted as "1854."

7. AUDUBON, JOHN JAMES, F. S. R. (&c., &c.), and BACHMAN, THE REV. JOHN, D. D. (&c., &c.):

The Quadrupeds of North America. 3 vols. royal Svo, with 155 lithographic colored plates. Published by V. G. Audubon, New York, 1849-1854.

Vol. I. Nos. 1-10, pp. i-viii, 1-383: 1849.

Vol. II. Nos. 11-20, pp. 1-334: MDCCCLI.

Vol. III. Nos. 21-31, pp. iii-v, 1-348: 1854.

First edition of text and plates in octavo; issued to subscribers in 31 Parts (in printed covers) of 5 plates each, at \$1.00 a Part, the number of plates being reduced to 155 by the omission of one of the small plates in the supplement noticed above. A set in the original (unbound) paper-covered Parts was quoted by Samuel N. Rhoads in his catalogue (No. 39) on "Auduboniana and other Nature Books" issued in 1919.

- 8 (7). AUDUBON, JOHN JAMES, F. R. S. (&c., &c.), and BACHMAN, THE REV. JOHN, D. D. (&c., &c.):

The Quadrupeds of North America. 3 vols. royal Svo, with 155 lithographic colored plates. Published by V. G. Audubon, New York, 1854.

Second edition of text and plates.

9. AUDUBON, JOHN JAMES, F. R. S. (&c., &c.), and BACHMAN, THE
REV. JOHN, D. D. (&c., &c.):

The Quadrupeds of North America. 3 vols., royal Svo., with 155 lithographic colored plates. Published by V. G. Audubon, New York, 1856.

The third and, so far as known, the last octavo edition of text and plates. Issued like the two preceding in 31 Parts; According to Rev. Mr. E. L. Shettles, of Brenham, Texas, who has furnished me with data concerning this hitherto unnoticed edition, the plates bear the legend: "Drawn on stone by Hitchcock."

- 10 (8). AUDUBON, JOHN JAMES, F. R. S. (&c., &c.):

The Birds of America, from Drawings made in the United States and their Territories. Vols. I-VII, royal Svo. Published by V. G. Audubon, (R. Craighead, printer and stereotyper; 52 Vesey Street, New York, 1856.

The second octavo edition of Audubon's *Birds*, with 500 plates, but now appearing for the first time with colored backgrounds. According to Rhoads (*loc. cit.*) several of the plates were redrawn for this edition; the pagination is identical with that of the first edition, "but the text has been reset in a slightly different style of type."

11. AUDUBON, JOHN JAMES, F. R. S. (&c., &c.):

The Birds of America, from Drawings made in the United States and their Territories. Vols. I-VII, royal Svo., with 500 colored lithographic plates. Issued by V. G. Audubon. Roe Lockwood & Son, 411 Broadway. New York, 1859.

The third octavo edition of the text and plates of the *Birds*. On the second page of volume 1 appears: "Entered according to Act of Congress 1839 by J. J. Audubon, in the clerk's office of the district court of the United States for the Southern district of New York," and in the lower left hand corner the following: "R. Craighead, Printer, Stereotyper, and Electrotyper, Caxton Building, 81, 83, and 85 Centre St." According to Rev. Mr. Shettles, who possesses a copy of this unnoticed edition, the paging of the respective volumes (omitting front matter, which is presumably the same as in No. 4 of the pre-

ceding list¹) is as follows; 246, 199, 233, 321, 346, 456, and 372; the distribution of plates follows the first edition (No. 4, above). The plates bear the legend: "Lith., Printed, and Colored by Bowen and Co., Phila."

12. AUDUBON, JOHN JAMES, F. R. S. (&c., &c.):

The Birds of America, from Drawings made in the United States and their Territories. Vols. I-VII, royal Svo., with 500 lithographic colored plates. Issued by V. G. Audubon, Roe Lockwood & Son, 411 Broadway. New York, 1860.

The fourth octavo edition of the text and plates of the 'Birds.' According to my correspondent, Mr. Henry Bannon, a set of this unnoticed edition is in possession of the Public Library at Portsmouth, Ohio (volume 2, however, being from the third edition of 1859).

- 13 (9). AUDUBON, JOHN JAMES, F. R. S. (&c., &c.):

The Birds of America; from original Drawings by John James Audubon, Fellow of the Royal Societies of London & Edinburgh, &c., &c., &c. Reissued by J. W. Audubon. 1 vol. of 106 double elephant folio plates, in chromolithography, by J. Bien, 180 Broadway, representing 151 of the original copper plates. Roe Lockwood & Son, Publishers. New York, 1860.

The only (partial and greatly inferior) reissue of the original folio.

- 14 (10). AUDUBON, JOHN JAMES:

The Birds of America, from Drawings made in the United States and their Territories, by John James Audubon, F. R. S., &c. Reissued by J. W. Audubon. Vols. I-VII, royal Svo. Text only. Roe Lockwood & Son, Publishers. New York, 1861.

Vol. I, pp. i-viii, 11-246; Vol. II, pp. i-viii, 11-200; Vol. III, pp. i-viii, 9-234; Vol. IV, pp. i-viii, 9-322; Vol. V, pp. i-viii, 9-346; Vol. VI, pp. i-viii, 2-322; Vol. VII (not seen).²

First edition (in brown stamped cloth), without plates, and fifth octavo edition of the text of the 'Birds'; apparently

¹ See 'Audubon the Naturalist,' *loc. cit.*

² According to a copy quoted for me in detail, pp. 1-360 to which are added index to folio volume of plates pp. i-iv and index to the whole work pp. 361-372. The set to which this volume belonged was bound uniform with a copy of the 1860 folio plates and was obviously intended to accompany it as shown by index to plates, mentioned in Vol. VII.—WITMER STONE.

issued as text to the imperfect folio (see No. 13) described above. Rhoads (*loc. cit.*) lists, with a set of this edition, 2 vols. of 500 uncolored plates, in octavo, "bound in cloth to nearly match the seven volumes of text." The plates in this instance seem to have been issued to favor a particular purchaser.

15 (11). AUDUBON, JOHN JAMES, F. R. S. (&c., &c.):

'The Birds of America' Reissued by J. W. Audubon. Vols. I-VII, imperial Svo., with 500 lithographic colored plates, 10 × 7 inches. Roe Lockwood & Son, New York, 1861.

Fifth complete octavo edition (and sixth of the text) of the 'Birds.' Reference partly from Coues' 'Birds of the Colorado Valley,' Bibliographical Appendix: "List of Faunal Publications relating to North American Ornithology" (Washington, 1878).

16 (12). AUDUBON, JOHN JAMES:

'The Birds of North America:' a popular and scientific description of the Birds of the United States and their territories. New Edition. New York, 1863.

Not seen; supposed by Coues to be a reissue of the edition of 1856 or of 1861. If complete, the sixth octavo edition (and, if without plates, the second edition of the text alone) of the 'Birds.' As to plates, see note under 14.

17 (13). AUDUBON, JOHN JAMES:

'The Birds of America' 8 vols., Svo. New York, 1865.

The eighth edition of the text of the 'Birds,' and according to Coues a reissue of the edition of the text only, by J. W. Audubon, in 1861 (see No. 14 above), but in 8 instead of 7 volumes.

18 (14). AUDUBON, JOHN JAMES, F. R. S. (&c., &c.):

'The Birds of America,' from Drawings made in the United States and their Territories. Vols. I-VIII, imperial Svo. George R. Lockwood, late Roe Lockwood & Son, 812 Broadway, New York. No date (1871.)

Vol. I, pp. i-viii, i-xv (memoir), 11-246, pll. 1-70; Vol. II, pp. i-vii, 11-199, pll. 71-140; Vol. III, pp. i-viii, 9-233, pll. 141-210; Vol. IV, pp. i-viii, 9-321, pll. 211-280; Vol. V,

pp. i-viii, 9-346, pll. 281-250; Vol. VI, pp. i-vii, 9-298; Vol. VII, pp. i-vii, 9-285, pll. 395-440; Vol. VIII, pp. i-viii, 9-256, pll. 441-500.

The seventh complete (? see Nos. 14 and 16, above), last and ninth edition of the text of Audubon's 'Birds.'

Sets of this issue, but without plates (and also bearing no date) were apparently circulated to some extent; at least one, answering to this description, was offered for sale in New York in January of this year.

SOME SUMMER BIRDS OF LIBERTY COUNTY, GEORGIA.

BY W. J. ERICHSEN.

To so thoroughly investigate the summer bird life of any selected area as to leave but slight room for belief that additional species, unsuspected of breeding in the area, would ever be subsequently discovered, would require continuous field work extending over a period of several years; therefore the present paper, based on notes made by the writer during a ten months' residence, from January 3 to November 1, 1913, at Allenhurst, Liberty County, Georgia, can in no wise be considered as being more than a brief review of the more common and characteristic breeding birds of the county. It is rather a preliminary list, intended for further elaboration by, and as information for, future workers in the field which it covers, and for the use of anyone who may be contemplating the compilation of a complete list of the birds of the state, to both of whom it may, I hope, prove of some value. Very little has been put into print respecting the avifauna of the coast region, or indeed of any part of the state of Georgia, and anything pertaining thereto, however meagre and of a local character, is a welcome addition to our knowledge of the state's bird life. It is with this realization that ornithological literature is almost destitute of

references to the birds of Georgia, that I contribute these few notes. There has recently come to my notice an article by H. B. Bailey in the 'Bulletin of the Nuttall Ornithological Club,' Vol. 8, January, 1883, consisting of notes on a collection of eggs made in McIntosh and Wayne counties, Georgia, by Dr. S. W. Wilson. These counties adjoin Liberty County on the south and southwest respectively, and each presents a topography differing but little from that of that county. Dr. Wilson evidently made some errors in identification and also in his notes relating to nesting sites selected and material used in nest construction by several of the species he met with.

The avifauna of Liberty County is unusually varied and abundant, particularly as regards the water birds, and it is with regret that my short residence there would not permit of my securing sufficient notes on which to base a more complete list, including migrants and winter visitants.

Weather conditions were favorable almost the entire spring and summer, admitting of nearly continuous field work which obviously has a considerable advantage over desultory observations where much work is to be done in a single nesting season.

It may be well to make a few general remarks on the topography of the region under consideration and give some points of information in regard to the conditions affecting the distribution of summer bird life within the county. Although primarily intended as an exposition of some of the breeding species, it may not be out of place to add a few remarks on its bird life in general. With a combination of favorable topographical features the avifauna of the county is, as before stated, rich in species; the coast line of approximately ten miles attracting numerous water birds, while the swamps, uplands, cultivated lands and pine barrens, the latter mostly free from undergrowth, all present conditions suitable for many species of land birds. The region covered by this paper also includes St. Catherine's Island, a large sea island, which presents topographical features differing in no essential particulars from those of the mainland. This island and its surrounding waters are favorite resorts for large numbers of Ducks, Shorebirds, Herons, Gulls and Terns, as well as for many species of the smaller land birds.

As references in the list will show, most of my field work was done within a five mile radius of the town of Allenhurst, near the geographical center of the county, excursions being made however to all other points of the region at frequent intervals, particularly to the coast, where several interesting finds were made.

The region under consideration, in area the third largest county in Georgia, is a succession of swamps, rolling uplands, pine barrens, scrub oak woodland and abandoned rice plantations, which latter are particularly attractive to many species of marsh loving birds, such as various species of the *Rallida*, Blackbirds, Grackles, as well as many of the smaller swamp loving species. There is an absence of large heavily timbered areas in the county, due to the extensive operations of the large lumber plant located at Allenhurst, although many smaller patches of fairly heavily timbered land still remain, particularly near the coast.

Short leaf pine, ash, hickory, cypress, red and black gum, tupelo and various species of oak form the major portion of the forests, while large areas of more or less thickly matted and tangled undergrowth are scattered all over the county, forming agreeable retreats for birds. Other forest trees found in more or less abundance include yellow poplar, sassafras, wild cherry, bay, laurel, red maple, red cedar, holly and palmetto, the latter three being particularly numerous on St. Catherine's Island. Spanish bayonet thickets are almost a feature in the landscape in the vicinity of the coast and on the islands.

Altamaha River is the largest in Liberty County, and separates it from Wayne County on the southwest. The swamps on both sides of this river are almost impenetrable, worthy rivals of the famous Okefinokee Swamp in southeast Georgia, and harbor rookeries of the Louisiana, Little Blue and Green Herons, and are the breeding place of several other species. Lack of time prevented me from doing much work here. The Canoochee to the north, a medium sized river, forms a part of the boundary line between Liberty and Bryan Counties, while the North and South Newport Rivers, in the southeastern section of the county, complete the list of principal streams. Beard's Creek, a small branch emptying into the Altamaha, flows through the extreme eastern part of the county. Taking into consideration St. Catherine's Sound, which extends

some distance westward between Bryan and Liberty Counties, we find that the latter is almost completely surrounded by bodies of water varying in size from the broad ocean to a small creek. Besides this, numerous small creeks traverse the interior, and several ponds, caused chiefly by the overflow from the abandoned rice fields, dot the county, particularly that section immediately bordering the Altamaha River. In years past this was one of the largest rice producing sections on the South Atlantic coast, but little evidence of this now remains, the once symmetrical network of irrigation canals now being but a labyrinth of canoe trails used by gunners.

But a small portion of the county is under cultivation, the large areas of low swampy ground, covered much of the time with water, together with the abandoned rice fields, unfit for any other use, forbid any very extensive diversified farming.

One of the most interesting experiences of my residence in the county was the noting of many wild turkeys in the swamps, Liberty County being probably one of the last strongholds of this species on the coast of Georgia.

Although so far as I know I was the only one in Allenhurst interested in bird study, I am indebted to many residents of the place for courtesies extended, particularly to the Dunlevie Lumber Company, on whose motor car many trips were made out the tram road to points of interest which were accessible for hurried visits only by this means of transportation.

It might be well to state here that expressions of the degrees of abundance of individuals in the county refer only to the occurrence of the species during the nesting season of the period of my residence. Many of my notes were written during my residence in Liberty County and were intended for early publication, and I have allowed them to stand unaltered, with the exception of some few additions and omissions.

1. **Anhinga anhinga.** WATER TURKEY.—On May 11, I located a nest of the Water Turkey containing four eggs. It was built in a small willow, growing in two feet of water near the margin of a large rice field reservoir, and was placed about four feet above the surface of the water, being composed of a few sticks loosely laid together. There are many suitable nesting places among the abandoned rice plantations, and the

presence there of many of these birds throughout the summer can be accepted as conclusive evidence that the Water Turkey breeds abundantly.

2. **Hydranassa tricolor ruficollis.** LOUISIANA HERON.

3. **Florida cærulea.** LITTLE BLUE HERON.

4. **Butorides virescens virescens.** GREEN HERON.—On April 28 I paid a visit to a rookery containing several nests of the Louisiana Heron besides many of the Little Blue and Green Herons. The nests of the two former species were all placed at such heights that, lacking the necessary equipment with which to make ascents, I was unable to examine their contents. There is little doubt, however, but that many of the nests contained full complements of eggs at this date, as the birds were continually flying to and from them. The majority of the nests of the Green Heron were placed at low altitudes, mainly from four to twelve feet above the water which covered the swamp, and were easy of access. Of twelve nests examined, nine contained four eggs each, and the remaining three held three eggs each.

Although the Green Heron must nest at many other localities in the county, these were the only nests that came under my observation. As for the Little Blue and Louisiana Herons, it is doubtful or extremely improbable that any other colonies exist in the county, as personal efforts as well as those of several correspondents failed to discover any.

This rookery is situated in a remote part of the Altamaha swamp near the McIntosh county line, and is probably known to but few persons. The majority of the trees are cypresses of large size, with a few isolated gums and willows on the outskirts. To my regret I was unable to pay a second visit to this interesting place.

Since the above was written, I have been informed that a colony of American Egrets and Snowy Herons exists in the Altamaha river swamp near where the Seaboard Air Line Railway bridge crosses that river.

5. **Rallus elegans.** KING RAIL.—On April 20, quite by accident, I stumbled upon a nest of the King Rail containing six eggs. On the afternoon of the 25th, I returned to the nest which then held eleven eggs, showing that the female had deposited an egg every day. The nest was placed fourteen inches above water, in rushes growing in an abandoned rice plantation, and was composed of the stalks and leaves of cattail flags. Additional field work would undoubtedly prove the King Rail to be a common breeder in the county.

6. **Rallus crepitans waynei.** WAYNE'S CLAPPER RAIL.—This rail is confined exclusively to salt water marshes and is abundant. The marshes bordering the mainland and inland islands north of St. Catherine's island are their favorite resorts, although they are found more or less abundantly in all of the salt marshes bordering the rivers and creeks that go to make up the extensive inland waterway of Liberty county. A nest found May 9 contained eleven eggs. On July 19 I noted a nest containing seven eggs. These nests were composed of the blades and stems of the marsh grass and were placed in the marsh just above high water mark.

These birds evidently have not learned of the danger from unusually high spring tides, as when these occur, many of their nests which are placed out of reach of normal tides, are destroyed.

7. **Catoptrophorus s. semipalmatus.** WILLET.—The Willet breeds in much the same situations as the Wilson's Plover, except that perhaps the former shows a more decided preference for the high grassy stretches well back from the beach. A few grass stems are laid in a depression made by the birds, usually at the base of a bunch of grass or weeds. Oftentimes no material is used, the eggs being deposited in a bare hole scooped out by the birds.

Two nests were located by me on July 19 among high grass well back from the beach on St. Catherine's island. Both held four eggs. Incubation was evidently advanced at this late date.

Willetts show much concern when their breeding grounds are invaded, flying overhead and emitting shrill cries until the intruder has withdrawn.

8. **Ochthodromus wilsonius.** WILSON'S PLOVER.—The Wilson's Plover is a characteristic bird of the beaches and mud flats and is abundant on St. Catherine's island. The birds appear to prefer as nesting sites, isolated beaches bordering on sounds and inlets where there are numerous tussocks of grass and an abundance of small shells among which they lay their eggs. Three eggs are laid in a hole scooped out in the sand, usually among short beach grass and on slight elevations formed by drifting sand. Although the birds breed abundantly on the island, my visit there was made on July 19 near the end of the breeding season, and I located but two sets of eggs.

9. **Chæmepelia passerina terrestris.** GROUND DOVE.—The Ground Dove is locally distributed in the county, and but two nests came under my observation. On May 1 I located a nest containing two fresh eggs, and on May 13 a second nest was found which also contained two eggs. The former was situated three feet up in a scrub oak, while the nest found May 13 was nine feet from the ground on a horizontal limb of a large pine and some distance from the trunk of the tree. Both nests were composed merely of a few twigs and dead pine needles, almost falling apart at the touch.

The Ground Dove shows a decided preference for scrubby pastures, and woodland where there is much undergrowth, and, like the Bob-white, does not wander far from the locality in which it was hatched. Many Ground Doves nest on the ground, and use even less material in such cases than when placed in trees or bushes.

I have been informed that eggs of this bird have been collected outside but near Liberty county in every month from March to October inclusive, a remarkably long nesting period.

10. **Haliaeetus leucocephalus leucocephalus.** BALD EAGLE.—On January 9 I flushed a Bald Eagle from a nest on St. Catherine's island, but was unable to ascertain its contents. It was built in a large short leaf pine, approximately eighty-five feet from the ground, and was of massive

proportions, evidently having served as a home for the birds for a number of years. I was told that several pairs of these birds bred on the island, but I was unable to pay a visit to their nests.

11. **Pandion haliaetus carolinensis.** OSPREY.—Fish Hawks are numerous on St. Catherine's island and I am told that at least ten pairs regularly nest on the island. A nest on the south end was occupied at the time of my visit on May 4. The birds return to the same nest year after year, adding material each season, until the structure becomes of large size.

12. **Coccyzus americanus americanus.** YELLOW-BILLED CUCKOO.—Locally known as the 'Rain Crow,' this bird is moderately common in the county. On May 17, near old Midway church, I found a nest seven feet from the ground on a horizontal limb of a live oak, well out from the trunk of the tree. The nest was the usual frail platform of twigs characteristic of this species and contained three young.

In its choice of nesting sites, the Yellow-billed Cuckoo shows no preference for any species of tree or character of woodland, but as a rule, although not invariably, it selects a horizontal limb.

13. **Melanerpes erythrocephalus.** RED-HEADED WOODPECKER.—Although not as abundant as the Flicker, the Red-headed Woodpecker nests in much the same situations as the former species, but as a rule, excavates its hole at a greater height than the Flicker. A nest noted May 28 at a height of twenty-eight feet contained five eggs. A subsequent visit to the nest disclosed the fact that the tree had been felled by the wind, breaking the eggs and killing the sitting bird.

14. **Colaptes auratus auratus.** FLICKER.—Liberty county contains large areas of cut over lands with many stumps and dead trees, a condition favorable to the increase of the Flicker. The birds are as a result very abundant, nesting in close proximity to houses and as often in the woods far from dwellings. Although several birds were noted entering and leaving their nesting holes, I examined but one of the latter. This was ten feet from the ground in a telegraph pole opposite the depot at Allenhurst, and contained six fresh eggs on May 6.

15. **Antrostomus carolinensis.** CHUCK-WILL'S WIDOW.—This interesting bird is abundant in the county, particularly on St. Catherine's island and adjoining hammocks. It inhabits thick dry woods where the sun seldom penetrates the heavy foliage during the summer months. At least a month elapses after arrival of the birds before the eggs are laid, and from observations made by me in Liberty and nearby counties, covering a period of six years, I am convinced that but a single brood is raised. Their two eggs are laid on the ground, usually on or among dry leaves, and are, contrary to popular belief, unusually conspicuous in their setting.

The Chuck-will's Widow flushes when the intruder is yet some distance away, and rises with a guttural squawk, to my ears unlike any other sound in nature. It is eminently crepuscular in habits, but when flushed during the daytime flies with ease and rapidity through the maze of trees until lost to view.

To test the truth of the report that these birds remove their eggs a short distance when touched, I purposely handled every one of the four sets found, being careful to mark the exact spot where they lay, but on returning to the eggs, I found every one in the spot where I had left it, none having been moved so much as an inch. I have made this test repeatedly in several other localities on the coast of Georgia, but always with the same result.

Eggs were found on May 3, May 13 (two sets), and May 26, all in the immediate vicinity of Allenhurst.

16. **Tyrannus tyrannus.** KINGBIRD.—Not an uncommon species, but rather locally distributed. It shows a strong attachment to the vicinity of farmhouses, and often ventures to nest in the shade trees in the towns. On May 22, I noted a nest containing four eggs. It was placed fourteen feet from the ground in a China-berry tree growing in the yard at the rear of the hotel at Allenhurst. This nest was later destroyed by the wind, but the birds rebuilt in the same tree and not over five feet from the site of the first nest, and were successful in rearing a brood.

17. **Myiarchus crinitus.** CRESTED FLYCATCHER.—This species breeds in large numbers on St. Catherine's island, but appears to be very locally distributed on the mainland, due no doubt to the scarcity of cedars there, as the birds show a strong preference for nesting in these trees, whenever they contain suitable hollows. A nest found May 4 on the island was in a natural cavity of a cedar, nine feet from the ground, and contained five eggs which were unusually heavily marked. An entire cast-off snake skin twenty-two inches in length constituted over half of the nest material.

18. **Cyanocitta cristata cristata.** BLUE JAY.—On June 12 at about dusk, near the town of Walthourville, I noted, at a height of about twenty-five feet, a bulky nest which I suspected was of this species. Wishing to be sure, I loitered around a few minutes, and was rewarded by seeing a Blue Jay settle on the nest. I was unable to examine the contents of the nest, and had no opportunity to revisit it. It was some distance out on a horizontal limb of a live oak. This species is not uncommon in the county, but I failed to discover any additional nests.

19. **Agelaius phœniceus phœniceus.** RED-WINGED BLACKBIRD.—A colony of at least twenty-five pairs of these birds were noted nesting in some tall cat-tails growing in and around a fresh water pond located a short distance from Allenhurst. On May 8 nearly every nest contained four eggs, the birds evidently having begun nesting simultaneously. I revisited the pond on May 25, at which date many of the nests contained well fledged young, while additional nests with fresh eggs were noted. The nests were of the usual construction, being composed of the blades and stems of the different species of vegetation growing in the pond. The average heights of the nests were four feet, the lowest and highest being, respectively, 14 inches, and six feet six inches. No other Blackbird colonies of this size were discovered in the county, although scattered pairs of birds were noted nesting among the abandoned rice fields.

20. **Icterus spurius.** ORCHARD ORIOLE.—Two nests of the Orchard Oriole were noted, both placed in shade trees bordering a roadside, an environment to which this species appears to be almost wholly restricted. The first nest, found May 31, contained five well fledged young. On June 4, I located another containing four fresh eggs, undoubtedly a second laying. Both nests were placed in the apex of small sweet gums, at heights of nine and thirteen feet respectively, and were composed of blades of different species of grass woven in when green, but which had faded very much. Thistle-down constituted the linings, with the exception of a few fine hair-like rootlets.

21. **Megaquiscalus major major.** BOAT-TAILED GRACKLE.—This is a characteristic bird of the salt marshes, breeding in large colonies. On May 9 I examined upwards of seventy-five of their nests in the tall marsh bordering the numerous hammocks and islands north of St. Catherine's island. Many nests contained young, but the majority held eggs. Several of the sets were incomplete, but in no case were more than three eggs or young noted in any nest, which number appears to be the full complement. The nests were composed of the blades and stalks of the marsh grass. Mud is largely used in their construction also, which upon hardening renders the nests almost indestructible by the elements, some retaining their original shape and solidity after being exposed for two or three years.

22. **Pipilo erythrophthalmus alleni.** WHITE-EYED TOWHEE.—Although not uncommon in the county, the White-eyed Towhees are very secretive in their nesting habits, often building their nests on or near the ground, and when so placed are very difficult to locate. On May 20 I discovered a pair of these birds building in some dense undergrowth bordering the tram road about a mile distant from Allenhurst. I withdrew a short distance to watch them at their work, in order to learn more of their nesting habits, but although I remained quiet and almost concealed for nearly half an hour, neither one of the birds returned to the nest while I remained in the neighborhood. On June 1 this nest contained three eggs. Continuing to search in the vicinity, I succeeded in finding another, containing three piped eggs. Both nests were placed twelve inches above the ground in gall-berry bushes, and were composed almost entirely of weed stalks and long dry grass blades, the latter material predominating, and lined with rootlets and grass stems.

23. **Cardinalis cardinalis cardinalis.** CARDINAL.—This fine bird is abundantly distributed over the county, nesting in equal abundance in all of the many and varied environments which the county has to offer. As attesting the wide diversity in character of woodland frequented by this species, particularly during the nesting season, I will state that I noted their nests far in the interior of almost impenetrable swamps; in willows growing in water in rice fields, and in high open woods of mixed coniferous and deciduous growth, as well as in bushy pastures and among trees and undergrowth bordering roadsides. April 26 is the earliest date on which I noted fresh eggs. Well fledged young were noted in the nest

July 4. Between and including the two dates mentioned, I found eight nests, six containing three eggs each, and two with young. Sets of more than three eggs are extremely rare, for during these and previous observations elsewhere in Georgia, covering a period of several years, I have never noted a nest containing a larger number than this, and very often but two eggs are laid. The heights at which these nests were placed varied from three to ten feet, averaging about seven feet. They were composed of weed stalks, moss, dead leaves and trash, lined with grass stems, rootlets and pine straw, and were very loosely constructed, this being a characteristic of the nest of this species.

24. *Passerina ciris*. PAINTED BUNTING.—This highly colored bird nests abundantly in the county, frequenting scrub oak woodland, bushy pastures and undergrowth bordering roadsides. The birds are absent entirely from heavily timbered tracts and the interior of swamps, occasionally however, nesting among the low undergrowth bordering the latter. My earliest and latest dates when fresh eggs were found are May 14 and July 19 respectively. Well fledged young were noted in the nest July 25. Between, and including the two dates first mentioned, I located twelve nests of this species which contained eggs, besides several nests in which were young of various stages of growth. Of the twelve nests noted nine held three eggs each, and the remaining contained four each. The majority of the nests were in small gums and scarlet oaks, with an occasional nest in vines and sumach, and were placed at heights ranging from two feet six inches to eleven feet, averaging about six feet. All were composed of leaves and grasses, lined with rootlets and, in several instances, with horsehair. Practically no variation in materials used was noted. This species often nests in festoons of the Spanish moss, and the nests when so placed are difficult to discover.

25. *Piranga rubra rubra*. SUMMER TANAGER.—This species breeds abundantly, especially in localities where there are large areas of second growth scrub oak woodland. Although the birds arrive early in April, they do not commence nest building until the latter part of that month, and it is often well into May before full complements of eggs are found. I noted three nests of this species, two of which were placed on the extremity of horizontal limbs of scarlet oaks. These two nests were so close to the ground that by bending the limbs down a few inches, the contents could be easily examined. In striking contrast to the low heights at which these two nests were placed, was one I found on May 13. It was built almost at the extreme end of a horizontal limb of a huge black gum at a height of approximately fifty-five feet, and was inaccessible. The two nests whose contents I was able to examine each contained four eggs. Dates were May 8 and 20. The Summer Red-bird constructs a very shallow and flimsy nest, almost always composed wholly of the bleached stems of the wild pepper plant, which abounds in the south Atlantic states, and in nearly every instance the eggs are visible from the ground through the nest. The three nests noted by me were located in a tract of mixed woods near Allenhurst.

26. **Progne subis subis.** PURPLE MARTIN.—Four colonies were noted in the county, two at Walthourville, one at Hinesville and one near Sunbury, in addition to other colonies which were reported to me. About twelve pairs of birds comprised each colony. Boxes and gourds put up for the purpose were used for nesting.

27. **Lanius ludovicianus ludovicianus.** LOGGERHEAD SHRIKE.—The single nest of this species that I found was placed five feet above the ground in thorny bushes bordering a roadside near McIntosh; it was composed of thorny sticks and twigs, weed stalks and trash, lined with rootlets, and contained four eggs on April 6. This species is very locally distributed in the county, a fact however not at all to be regretted.

28. **Vireosylva olivacea.** RED-EYED VIREO.—On May 21, in a patch of deciduous woods between Walthourville and Allenhurst, I found a nest of this species containing three heavily incubated eggs. It was placed twelve feet from the ground near the end of a horizontal limb of a sweet gum, and directly over a much frequented road. On June 2, in the same piece of woods, I noted a second nest containing three eggs. This was built in a dogwood tree at a height of only five feet. This species constructs a nest of material similar to that used by the White-eyed Vireo, and inhabits much the same character of woodland. Its nest however is, as a rule, much less deeply cupped, and the lining differs in being composed of pine needles and rootlets.

A peculiarity of this species which I have noted both in Liberty county and elsewhere is a habit the birds have of destroying partially completed nests built by them. I once watched a pair remove piece by piece the material from a nearly completed nest, and weave it into another which they had begun a few yards distant. This is a habit of the Red-eyed Vireo which I have not seen mentioned in ornithological literature.

29. **Vireo griseus griseus.** WHITE-EYED VIREO.—Abundantly distributed. The White-eyed Vireo inhabits moderately timbered districts and bushes. It places its nest in the fork near the end of a horizontal branch. Four nests were noted, each containing four eggs. Two were in small sweet gums, four feet from the ground; one in a myrtle bush at a height of ten inches, and one three feet up on a low limb of a large silver leaf maple. They were composed largely of dead cane leaves, interwoven with grape-vine bark, and had numerous small pieces of rotten wood secured to the exterior with spider web. Much of the latter material, interwoven with fine rootlets, was attached to the rim of the nests, being used to secure them to the limb. The linings were composed of fine rootlets and grasses. All of these nests were found on the margin of a small swamp near Allenhurst. Dates: April 22, two nests, April 29 and May 7.

30. **Compsothlypis americana americana.** PARULA WARBLER.—But a single nest of this species came under my observation, although I searched for them many times in the festoons of Spanish moss which hang in profusion from the ancient live oaks at old Midway cemetery and other points near the coast. The nest was placed only six feet from the ground

in a festoon of moss, and was a rather shabby affair composed of the fibres of the moss, and grass stems, lined sparingly with fine dry grasses and rootlets, and held four fresh eggs on May 2. This species, as well as the Yellow-throated Warbler, is dependent altogether on the Spanish moss for nesting sites. I might add that although I searched many times for the nest of the Yellow-throated Warbler in these oaks at Midway, as well as at other places where moss abounds, I was unable to locate a single one.

31. **Dendroica discolor.** PRAIRIE WARBLER.—Although the Prairie Warbler breeds commonly in the scrub oak woodland and bushy pastures in the interior of the county, I located but a single nest. It was placed seven feet from the ground in a cedar in an open pasture, two miles south of Hinesville. It was an unusually handsome specimen of bird architecture, deeply cupped, composed of fine grass stems and plant down, lined with hair, and contained three fresh eggs on May 12, I returned to the nest two days later at which time it held four eggs.

32. **Wilsonia citrina.** HOODED WARBLER.—The Hooded is another species of Wood Warbler whose nesting in the county is recorded in my note book but once. This nest was located on May 4, and contained four eggs well advanced in incubation. It was placed four feet from the ground in canes growing in a dense swamp nine miles from Allenhurst, and within one hundred feet of a tram road over which heavy log trains passed several times daily. The nest was a dainty little home, woven of cane leaves, weed stalks and bark strips, and was lined with fine rootlets, and secured to the cane stalks with caterpillar silk.

33. **Icteria virens virens.** YELLOW-BREADED CHAT.—The nesting of this secretive bird in the county has fallen under my observation but once, and then only after a hard half hour search in a dense thicket of blackberry briars three miles from Allenhurst, near a road between that town and Hinesville. The nest was a bulky affair, placed three feet up in the briars, and was composed of weed stalks, cane leaves, and several strands of grapevine bark, lined with fine grasses. This nest was found on May 16, and contained four eggs which must have been in an advanced stage of incubation, for on revisiting the nest nine days later it held well-feathered young. The Yellow-breasted Chat is common in the county, and during the months of May and June, I have often observed their amusing aerial acrobatic stunts. After the latter month, the birds become silent, and are extremely shy and rarely observed.

34. **Mimus polyglottos polyglottos.** MOCKINGBIRD.—The Mockingbird breeds abundantly in orchards and shade trees in and around the towns and settlements throughout the county. Between April 9 and July 16 I counted no less than twenty-four nests of this bird with eggs or young in the towns of Allenhurst, Hinesville and Walthourville, besides several nests in course of construction which were not revisited. One nest was placed among a clump of vines screening the front porch of a residence at Hinesville, and another was built in a small shrub in the front yard of a house in the same town. The remaining nests were distributed among

the shade trees, orchards, and isolated bushes in the vicinity. The nests were composed of twigs, grapevine bark, plant fibre and trash, lined with rootlets. Of the nests noted, sixteen held four eggs each, two held three eggs each, and two contained five eggs each, all in various stages of incubation, while four nests contained four young each. The heights ranged from three to nineteen feet, averaging about five feet. My earliest and latest dates when full complements of eggs were noted, are, respectively, April 9, set of four, and July 16, set of three. Well feathered young were observed in the latter nest on August 6.

35. **Toxostoma rufum.** BROWN THRASHER.—Although fully as abundant in the county as the Mockingbird, the Brown Thrasher is more retiring in habits, showing a preference for secluded localities, and in Liberty County at least, rarely ventures to nest in the immediate vicinity of dwellings. The birds choose as their home environment, brush heaps, thorn thickets and grapevine tangles. They begin nest building slightly earlier than the Mockingbird, as I noted young about one week old on April 18. Eight nests were noted, in widely separated localities. Seven contained four eggs each, and one held three young about one week old, the latter nest being the one noted on April 18, and is my earliest breeding record for the county. My latest date is June 20, when a nest containing four eggs was found. In construction, and materials used, these nests were very similar to those of the Mockingbird, being, however, slightly bulkier and containing more twigs than the nest of the latter species. Heights varied from two to seven feet, averaging four feet.

36. **Thryothorus ludovicianus ludovicianus.** CAROLINA WREN.—This species is present everywhere in the county, nesting in great abundance. They are, however, very secretive in nesting habits, and I am able to record the finding of but three nests. These were built in a variety of situations, the first one being noted on April 15. It was placed four feet from the ground in a natural cavity of an oak stub, and contained five fresh eggs. This nest was constructed entirely of dead pine needles with the exception of the lining, which consisted of a few dried strands of Spanish moss. Another nest, noted May 12, was placed in a depression between two converging roots at the base of a large cypress growing in the heart of a dense swamp. This nest also contained five eggs. The third nest was built in a burnt out "boxing" of a live pine in a heavily timbered district on St. Catherine's island, and contained an incomplete set of three eggs on June 7, evidently a second laying. The two latter nests were bulky affairs, composed of moss, hay, grasses and leaves, lined with hair and feathers.

The Carolina Wren is an early breeder in Liberty County. Five seems to constitute the usual complement of eggs of the first laying, the second consisting usually of four.

37. **Telmatodytes palustris griseus.** WORTHINGTON'S MARSH WREN.—The Marsh Wren is ever associated in my mind with wide stretches of marsh and early morning excursions on numerous rivers and

creeks that thread their way alternately between small heavily wooded hammocks and beautiful islands all covered with undergrowth almost tropical in aspect, and bordered by luxuriant growths of tall marsh grass swaying in the gentle summer breeze. In such an environment the wiry trill of the Marsh Wren is the first bird voice to be heard at the morning awakening. This species breeds numerously in the county, being confined exclusively to salt water marshes. On May 9, among the marshes bordering the islands and hammocks north of St. Catherine's island, I examined many nests containing from one to five eggs. The latter number constitutes the full complement. The nests were globular in shape, with the entrance on the side, and were composed of the blades and stems of the marsh grass. They were placed in the tall grass well out of reach of high tides. This bird constructs many nests which apparently are never occupied, although I am not aware that anyone has carried on observations in one of their colonies sufficiently continuous to prove conclusively that these nests are not used in some way.

A THREE MONTHS' LIST OF THE BIRDS OF PINELLAS COUNTY, FLORIDA.

BY MAJOR CLIFFORD H. PANGBURN, A.R.C.

THE observations upon which the following list is based were made during a period extending from January 22 to April 29, 1918. The region covered included the greater part of Pinellas County, Florida, although most of the time was spent in the southern part of the county around the city of St. Petersburg, and along the keys which separate the Gulf of Mexico from the mainland.

Pinellas County is in the form of a peninsula about seven or eight miles wide at the widest point, and tapering to a blunt end at the southern end. Along the east side is Tampa Bay, on which is located St. Petersburg, a city of about 15,000, which has nearly double that population in the winter. Tampa is about fifty miles distant, up and across the bay.

On the west side of the county lies Boca Ceiga Bay, from which there are a few passes opening into the Gulf of Mexico between the keys. These are for the most part very narrow. The keys them-

selves are with a few exceptions only a few hundred yards in width. In some places there are thick groves of good sized palmettos but for the most part the vegetation is thin and scarce. There are a good many very shallow bayous on the inner side of the keys.

At the center of the Pinellas Peninsula and about two miles from its southern point is Salt Lake. As a matter of fact this lake is fresh in spite of its name. It has an area of perhaps a square mile. At three corners there are good sized marshes of tall grass and cat-tails, and at many places the banks are wet and soggy turf. It is an ideal place for many species of water birds, and hundreds of them are there. Unfortunately there seems to be absolutely no attempt made to enforce game laws either State or Federal. I visited Salt Lake many times and on every occasion discovered one or more persons shooting at the wildfowl there.

The mainland of the county consists almost entirely of pine barrens considerably thinned out for a long distance from the city by real estate developments. Indeed I often found that I could stroll through the heart of some good ornithological hunting ground on the cement sidewalks of some optimistic real estate speculator.

All around the coast line of the county are numerous bayous, which are usually very shallow and make excellent feeding places for wading birds.

This list makes no pretense of being more than an outline upon which to start a complete record of the bird life of this interesting region. In the first place it covers only a little over three months, and in addition I was in Florida convalescing from an operation following service in France. During the first part of my stay I was much limited in getting about, and at no time could I take very long walks or cover as much of the country as I should have liked.

The wealth of bird life, especially of various sorts of water birds, and the ease with which many of them can be observed makes Pinellas County a place of never ending interest to the ornithologist. The perfect climate of the winter heightens the charm.

1. **Colymbus auritus.** HORNED GREBE.—Rather common during February, but showing great variation as to abundance. On some days forty to sixty could be seen near the docks, while on other days none could be found. Seen only on Tampa and Boca Ceiga bays, never on the Gulf. Some specimens seen on February 18 were almost in full plumage.

2. **Podilymbus podiceps.** PIED-BILLED GREBE.—Abundant at all times on Salt Lake, which as mentioned above is actually fresh. These Grebes were in company with Coots, but not nearly so numerous. Present but less abundant as late as April 20.

3. **Gavia immer.** LOON.—Present in small numbers on the bays. On February 13 I watched two for some time within fifty feet of a dock from which a number of people were fishing.

4. **Gavia stellata.** RED-THROATED LOON.—Two seen on January 30 is my only record of this species.

5. **Larus argentatus.** HERRING GULL.—Herring Gulls were fairly common at all times although outnumbered by the two following species. Nearly all of the birds seen were immature.

6. **Larus delawarensis.** RING-BILLED GULL.—These gulls became very common from February 11 until late April, although prior to that time I did not see any. This may have been because I did not get to Boca Ceiga bay, where they were most abundant until that date. Fairly common along the Gulf beaches.

7. **Larus atricilla.** LAUGHING GULL.—Hundreds of Laughing Gulls were always present, and every sort of transitional stage of plumage could be observed. They are easily attracted by throwing minnows into the water. The fishermen call them Crying Gulls, a name perhaps fully as appropriate as the official title. The Laughing Gull is a persistent tormentor of the Brown Pelican. While the latter is squeezing the water from its pouch after catching a fish the Gull will calmly perch on the Pelican's head, and attempt to steal the fish when it is tossed prior to swallowing. The Pelicans appear to ignore totally the presence of the Gull and I have never seen one lose a fish. After watching hundreds of unsuccessful attempts by the Laughing Gulls to steal a meal in this way I came to the conclusion that they must be an extremely optimistic species.

8. **Larus franklini.** FRANKLIN'S GULL.—I saw one Franklin's Gull on February 26. It was in company with several other species at the mouth of a sewer where I watched it for half an hour or more with an eight diameter glass, often being within twenty-five feet. There could be no doubt of the identification. This is I believe a rare Gull in Florida.

9. **Larus philadelphia.** BONAPARTE'S GULL.—A few Bonaparte's Gulls were observed on a half-dozen different dates ranging from January 28 to April 29. They were always in company with Laughing Gulls. Apparently a regular but scarce winter visitor on this portion of the West Coast.

10. **Sterna caspia.** CASPIAN TERN.—This magnificent Tern was about as common as the equally handsome species which follows, both being abundant. They were seen over both bays, the Gulf and the fresh water lake. They are also fond of sitting for hours on sand bars with other water birds. At such times they are shy and are the first to take flight. They have a considerable variety of calls and whistles.

11. **Sterna maxima.** ROYAL TERN.—What has been said about

the foregoing species applies to this one. The two are usually found in company, but with a little practice it is easy to distinguish them from one another. Their beautiful flight and striking appearance make them most attractive.

12. *Sterna sandvicensis acuflavida*. CABOT'S TERN.—I saw a half dozen Cabot's Terns on February 14, March 25 and March 26. They were all on the Gulf side at Pass-a-Grille Key. They are probably more abundant than my records would indicate, but do not frequent the land-locked bays to so great an extent as do other Terns.

13. *Sterna hirundo*. COMMON TERN.—A few were seen during the last week of January and the first ten days of February. After that they seemed to disappear. Some of the birds were probably Forster's Terns but in winter plumage this is a distinction that is difficult to make.

14. *Sterna antillarum*. LEAST TERN.—One was seen on February 11, and I saw two more on April 26. These are my only records.

15. *Rynchops nigra*. BLACK SKIMMER.—Skimmers were among the most abundant of the water birds about St. Petersburg, but varied greatly in their abundance from day to day. Flocks of from a hundred to a thousand could be seen resting on sand bars. They were found for the most part on the bays. They are locally known as Scissorbills and Shearwaters.

16. *Phalacrocorax auritus floridanus*. FLORIDA CORMORANT.—Whether all of the Cormorants observed were of this subspecies I cannot say, although theoretically I suppose that they were. In any case those which were breeding on Bird Key must have been floridanus. The Cormorants are known locally and to the tourists as "nigger ducks." They are probably the most abundant water bird of Pinellas county, although not as conspicuous as the Brown Pelican. On February 11 at Pass-a-Grille I saw a flock of Florida Cormorants which numbered easily twelve thousand. The flock was apparently following some vast school of fish, and swung about in the air and water for two hours or more before passing out of sight. This was in the Gulf of Mexico. At one time the flock came so near the beach that I could hear the roar of the wings. About half of the birds were in the water and half in the air, and they kept constantly changing, so that there was a tremendous amount of activity. A few Pelicans, Mergansers and Gulls were mingled in the flock. On a visit to Bird Key, April 3, I found the Cormorants nesting in large numbers. The nests were in the most inaccessible portions of the mangroves, and were further protected by the violent disgorging of half digested fish by their tenants.

17. *Pelecanus erythrorhynchos*. WHITE PELICAN.—I saw only two White Pelicans. One was flying over Salt Lake on February 7 and the other was at Bird Key on February 18. The fishermen assure me that a few are seen every winter on Boca Ceiga bay.

18. *Pelecanus occidentalis*. BROWN PELICAN.—Brown Pelicans are the chief show bird of St. Petersburg. They are the pets of the tour-

ists, who take endless delight in their extraordinary prowess as living fish nets. During the past winter fishermen have been attempting to get permission to kill the Pelicans on the ground that they destroy valuable fish. The absurdity of this assertion is apparent to anyone who has watched the birds. Hundreds of Brown Pelicans nest on Bird Key, the nests being placed at from six to twenty-five feet in the mangroves. I visited the key on April 3 at which time the young were just hatching.

19. *Fregata aquila*. MAN-O'-WAR-BIRD.— I first saw a Man-o'-war-bird on the Gulf side on April 4. From April 16 to 29, when I left, I saw from one to four of them every day. The extraordinary grace with which they sail in the heaviest wind or the most complete calm makes them conspicuous in spite of their comparatively small numbers.

20. *Mergus serrator*. RED-BREADED MERGANSER.— Flocks of two or three to sixteen or eighteen were frequently observed. They were very tame, frequently coming directly under the docks. Full plumaged males were seldom seen.

21. *Mergus americanus*. MERGANSER.— Three adult males were seen, the last on March 25.

22. *Anas platyrhynchos*. MALLARD.— Only one Mallard was seen, February 11.

23. *Anas fulvigula fulvigula*.— I saw a flock of about a dozen Florida Ducks in the Manatee river across the mouth of Tampa bay from the southern tip of Pinellas county, but I have no doubt that they occur on the Pinellas side of the bay as well. The birds were seen from a steamer on January 30.

24. *Chaulelasmus streperus*. GADWALL.— I got quite close to a flock of eight Gadwalls at Salt Lake on March 4th. Although this was the only time that I saw them it is probable that they had been there for some time among the hundreds of Scaups.

25. *Querquedula discors*. BLUE-WINGED TEAL.— I did not see any Teal but Howard Hall, of Indianapolis, Ind., observed some Blue-winged Teal at Clearwater in January.

26. *Marila valisineria*. CANVAS-BACK.— Fairly abundant at Salt Lake until the middle of March. First seen February 7. The extremely cold winter in the North may have been responsible for their appearance so far South.

27. *Marila marila*. SCAUP DUCK.— Positively identified only once, March 4.

28. *Marila affinis*. LESSER SCAUP DUCK.— Extremely abundant on both salt and fresh water. On Salt Lake they are constantly shot at by local hunters who totally disregard all game laws, but they remain there by hundreds if not thousands. Abundant as late as April 20.

29. *Marila collaris*. RING-NECKED DUCK.— One seen on Boca Ceiga bay on February 14.

30. *Erismatura jamaicensis*. RUDDY DUCK.— A good sized flock

of Ruddy Ducks was on Salt Lake on February 7 and 8 but I did not see them at any other time.

31. **Guara alba.** WHITE IBIS.—The White Ibis was inconspicuous until April, being seen only on Bird Key, where I found two on February 18. Throughout April they were very abundant, often being seen wheeling about over the city. They frequently fly in wedge shaped flocks. I have seen as many as five hundred circling about together. They are probably the largest breeder at Bird Key.

32. **Mycteria americana.** WOOD IBIS.—I saw only one Wood Ibis. It was at Salt Lake on April 20. It sailed about overhead for some time.

33. **Ardea herodias herodias.** GREAT BLUE HERON.—So far as I could tell without collecting any specimens Great Blue Herons and Ward's Herons seemed to be about equally abundant. Large numbers of both were present. During the last week of March birds were building nests on Bird Key. These were, I suppose, *A. h. wardi*.

34. **Herodias egretta.** EGRET.—It was a pleasant surprise to find the Egret quite well established. I have seen as many as fifty together. Nesting preparations were started at Bird Key at the time of my last visit April 4.

35. **Egretta candidissima candidissima.** SNOWY EGRET.—Not nearly as abundant as the preceding species during the latter part of my stay but commoner during February. I did not see any Snowy Egrets at Bird Key, although told that they nest there. A number in full breeding plumage were noted.

36. **Hydranassa tricolor ruficollis.** LOUISIANA HERON.—Common at every pool and bayou and along the shore. Usually quite tame. Breed on Bird Key.

37. **Florida cærulea.** LITTLE BLUE HERON.—Very abundant, but seen mostly on the mud flats on the bay side of the Gulf keys. A few in the white plumage seen. Breed on Bird Key.

38. **Nyctanassa violacea.** YELLOW-CROWNED NIGHT HERON.—Only one seen.

39. **Rallus elegans.** KING RAIL.—One apparently spent several weeks in a brackish bog not a hundred feet in diameter, and very near one of the city streets. It could be seen frequently and heard oftener. This species also occurred at Salt Lake.

40. **Gallinula galeata.** FLORIDA GALLINULE.—The marshes about Salt Lake were full of Florida Gallinules, and they could be seen there at any time. They were probably breeding.

41. **Fulica americana.** COOT.—Coots were very abundant on Salt Lake. Flocks of three or four hundred were common, and parts of the marshes were almost crowded with them. Some were there at least as late as April 20.

42. **Gallinago delicata.** WILSON'S SNIFE.—Two Wilson's Snipe were present in the same bog mentioned above as the home of the King Rail from January 26 to March 6. These were the only ones I saw.

43. **Macrorhamphus griseus scolopaceus.** LONG-BILLED DOWITCHER.— I suppose that the Dowitchers observed were of this subspecies. They were common on the mud flats and beaches, although none were seen after April 1. They were usually in flocks of about a dozen.

44. **Pisobia minutilla.** LEAST SANDPIPER.— Extremely common, occurring with the Semipalmated and Western Sandpipers in flocks of hundreds on beaches and mud flats.

45. **Pelidna alpina sakhalina.** RED-BACKED SANDPIPER.— Did not appear to be common but a few could usually be found in any large group of shore birds. In winter plumage they are so inconspicuous that they were doubtless passed by at times.

46. **Ereunetes pusillus.** SEMIPALMATED SANDPIPER.— Common on all the beaches and flats.

47. **Ereunetes mauri.** WESTERN SANDPIPER.— Apparently not very common, but this is perhaps due to the close resemblance to the preceding species.

48. **Totanus melanoleucus.** GREATER YELLOW-LEGS.— Two were seen on February 15.

49. **Catoptrophorus semipalmatus inornatus.** WESTERN WILLET.— While I did not collect any Willets I assumed those seen to be of this subspecies, as the Gulf Coast of Florida is a part of their regular winter range. Willets were abundant during all of my stay and were most commonly seen in groups of four to six. On February 16 I saw a flock of at least a thousand on a sand bar in Boca Ceiga bay. I often heard them crying as they flew about at night, especially when there was a good moon.

50. **Actitis macularia.** SPOTTED SANDPIPER.— This species was not as abundant as would be expected. I saw it only three or four times.

51. **Squatarola squatarola.** BLACK-BELLIED PLOVER.— Quite common up to April 16. Seen mostly in small flocks on the Gulf beaches.

52. **Oxyechus vociferus.** KILLDEER.— While it is true that the Killdeer is not the most abundant shore bird of Pinellas County it is easily the most conspicuous. Small numbers are present everywhere along the beaches and at many places inland. Like the Willet they are very active at night. Was very rare after the first of April.

53. **Ægialitis semipalmata.** SEMIPALMATED PLOVER.— This species was regularly present in fair sized flocks on all of the beaches. It was usually in company with other Plover and the smaller Sandpipers.

54. **Ægialitis meloda.** PIPING PLOVER.— Not so abundant as the preceding and seen only on the Gulf beaches of the outer keys, where they could always be found in small flocks.

55. **Ægialitis nivosa.** SNOWY PLOVER.— The Snowy Plover is, I believe, a very rare bird in Florida. I saw only one which was on a sand bar south of Pass-a-Grille Key on March 25. I was able to examine it for a long time with an eight diameter binocular at a distance of less than fifty feet. There could be no question of the identification. It was in company with a small flock of Piping Plover.

56. *Ochthodromus wilsonius*. WILSON'S PLOVER.—A common species seen with almost every flock of shore birds. Last seen on March 25.

57. *Arenaria interpes morinella*. RUDDY TURNSTONE.—One of the most abundant of the shore birds, being found in about equal abundance along the surf and on the tidal flats.

58. *Colinus virginianus floridanus*. FLORIDA BOB-WHITE.—Bob-white did not appear to be very common, but were sometimes seen along the edges of the roads. I assume that they were of this subspecies.

59. *Zenaidura macroura carolinensis*. MOURNING DOVE.—A common bird in the central part of the county, but not often seen near the water.

60. *Zenaida zenaida*. ZENAIDA DOVE.—I saw two Zenaida Doves on Pass-a-Grille Key on February 11. This is the only record I have of the species.

61. *Chæmepelia passerina terrestris*. GROUND DOVE.—Ground Doves are common throughout Pinellas County both on the mainland and the keys. In St. Petersburg they are often seen about the door yards. They are locally called Sand Doves, perhaps because all the ground is sand.

62. *Cathartes aura septentrionalis*. TURKEY VULTURE.—See following species.

63. *Catharista urubu*. BLACK VULTURE.—Both species of Vultures are of course extremely abundant. There is not a moment of the day when one to a hundred cannot be seen. The two species seem to be about equally common.

64. *Circus hudsonius*. MARSH HAWK.—A Marsh Hawk could always be seen about Salt Lake and also along the keys, but there were probably not many individuals present.

65. *Accipiter velox*. SHARP-SHINNED HAWK.—I saw one Sharp-shinned Hawk in the Pine woods on February 20.

66. *Haliaeetus leucocephalus leucocephalus*. BALD EAGLE.—Quite common all around the coast line of the county. I knew of six nests. The first one which I found had two young which looked to be about half grown on February 13.

67. *Falco sparverius sparverius*. SPARROW HAWK.—Sparrow Hawks were abundant everywhere on mainland and keys.

68. *Pandion haliaetus carolinensis*. OSPREY.—Frequently seen about the bays and over the Gulf.

69. *Aluco pratincola*. BARN OWL.—I flushed a Barn Owl among some thick pines north of the city on February 27. It lingered about the locality, where it probably spent the greater part of its time.

70. *Asio flammeus*. SHORT-EARED OWL.—The only Short-eared Owl which I saw I flushed from among the grass tufts at the lower end of Pass-a-Grille Key on February 11.

71. *Otus asio floridanus*. FLORIDA SCREECH OWL.—I frequently heard Screech Owls and knew of one hollow tree in which one roosted. Because of the locality I assumed the Owls to be floridanus.

72. **Coccyzus americanus americanus.** YELLOW-BILLED CUCKOO.—One Yellow-billed Cuckoo was seen on April 26 but it may have arrived considerably before that date as I had not previously been in a suitable region for this bird.

73. **Ceryle alcyon alcyon.** BELTED KINGFISHER.—Several Kingfishers could be seen in the course of a day along the shore, but though regular they were not abundant.

74. **Dryobates pubescens pubescens.** SOUTHERN DOWNY WOODPECKER.—While I encountered Downy Woodpeckers occasionally they did not appear to be common at any time.

75. **Dryobates borealis.** RED-CKOAKED WOODPECKER.—Evidence in the form of old nests led me to believe that all Woodpeckers have recently been more common in Pinellas county than I found them. The Red-cockaded Woodpecker could be seen regularly in a few localities but was entirely missing from places equally favorable.

76. **Melanerpes erythrocephalus.** RED-HEADED WOODPECKER.—Evidently a scarce bird at least at the season covered. I saw only two, March 21 and April 26.

77. **Centurus carolinus.** RED-BELLIED WOODPECKER.—This species with the exception of the following was the most abundant and evenly distributed Woodpecker. They were quite frequent on the keys where they nest in the trunks of the larger palmettos.

78. **Colaptes auratus auratus.** FLICKER.—The Flicker was common throughout the county both in the city and the pine woods. I saw them only rarely on the keys.

79. **Antrostomus carolinensis.** CHUCK-WILL'S-WIDOW.—Rather common from March 13 on. One or two could usually be heard singing at any place around the edge of the city in the evening.

80. **Chordeiles virginianus chapmani.** FLORIDA NIGHTHAWK.—Unless *C. V. virginianus* occurs on this part of the West Coast during migration the Nighthawks I saw were of this subspecies. They did not appear until April 19 and were abundant after that date.

81. **Chætura pelagica.** CHIMNEY SWIFT.—Every day from March 24 to the end of my stay these birds were increasingly abundant. None seen before that date.

82. **Archilochus colubris.** RUBY-THROATED HUMMINGBIRD.—First seen on February 21 on Long Key. Only two others were seen in spite of the large quantities of flowering plants and trees.

83. **Tyrannus tyrannus.** KINGBIRD.—Kingbirds appeared first on April 28, the day before my departure.

84. **Myiarchus crinitus.** CRESTED FLYCATCHER.—Common in the pine woods and along the city streets after April 20.

85. **Sayornis phœbe.** PHOEBE.—I saw this species throughout my stay but not in large numbers.

86. **Cyanocitta cristata florincola.** FLORIDA BLUE JAY.—The Blue Jay ranks next to the Mockingbird in point of abundance among the

land birds. They are everywhere and in the city nest in trees along the streets and in the yards. There is a noticeable difference in the notes of the Florida birds and those found in the North.

87. **Corvus ossifragus.** FISH CROW.—All of the Crows which I observed were small in size and had the characteristic call of the Fish Crow. It would seem that *C. b. pascuus* (Florida Crow) must occur in the county but I did not see any that I could certainly identify as being of that subspecies.

88. **Agelaius phœniceus floridanus.** FLORIDA RED-WING.—Abundant on both wet and dry keys and in every bog hole and swamp.

89. **Sturnella magna argutula.** SOUTHERN MEADOWLARK.—I found Meadowlarks abundant everywhere except in the thicker pine woods. There is a decided difference in the song from that of *S. m. magna*. The birds were also much tamer than any Meadowlarks I had previously encountered.

90. **Quiscalus quiscula aglæus.** FLORIDA GRACKLE.—A common bird about the lawns of St. Petersburg. Not as abundant as the following species, nor so often seen about the water front or the marshes.

91. **Megaquiscalus major major.** BOAT-TAILED GRACKLE.—Common all along the water front and in the marshes around Salt Lake. A favorite perching place was on the mast head of any convenient boat in the yacht basin.

92. **Astragalinus tristis tristis.** GOLDFINCH.—Two Goldfinches seen on Pass-a-Grille Key on February 11 are my only record of this species.

93. **Poœcetes gramineus gramineus.** VESPER SPARROW.—I saw two Vesper Sparrows near Salt Lake on February 27. No other record.

94. **Passerculus sandwichensis savanna.** SAVANNAH SPARROW.—A small number of Savannah Sparrows were near Salt Lake during February, but I did not find them anywhere else.

95. **Passerherbulus henslowi henslowi.** HENSLOW'S SPARROW.—On February 1 and for a few days thereafter two Henslow's Sparrows were present on a scrubby sand field euphemistically known as Bay View Park. I did not see any elsewhere.

96. **Passerherbulus maritimus peninsulæ.** SCOTT'S SEASIDE SPARROW.—All of the region which I visited being south of Tarpon Springs I suppose that the Seaside Sparrows, which were fairly common, were of this subspecies, although some may have been *P. m. fisheri*. They were decidedly different in appearance from the Seaside Sparrows with which I had been familiar in the North. *P. m. macgillivrayi* may also have been among those present. This was a case where only a gun could give a strictly accurate answer.

97. **Spizella passerina passerina.** CHIPPING SPARROW.—One bird seen on February 19 is my only record.

98. **Spizella pusilla pusilla.** FIELD SPARROW.—A flock of half a dozen Field Sparrows seen near Salt Lake on February 7 is my only record of this species.

99. *Peucæa æstivalis æstivalis*. PINE-WOODS SPARROW.— There was one pine grove north of St. Petersburg where the Pine-woods Sparrow could always be found, but on the whole it did not appear to be as common as I had expected.

100. *Melospiza melodia melodia*. SONG SPARROW.— This region seemed a little too far south for the Song Sparrow, and two seen on February 13 are the only ones noted.

101. *Melospiza georgiana*. SWAMP SPARROW.— Present in small numbers in almost all suitable localities, particularly in the swamps about Salt Lake.

102. *Pipilo erythrophthalmus erythrophthalmus*. TOWHEE.— Towhees were plentiful in suitable country being most abundant where the Palmetto scrub was thick. I had a number of opportunities to examine birds at very close range and did not see any that could be considered *P. e. alleni*.

103. *Cardinalis cardinalis floridanus*. FLORIDA CARDINAL.— One of the commonest land birds both in the city yards and the country.

104. *Zamelodia ludoviciana*. ROSE-BREADED GROSBEAK.— A few migratory birds, all males, were seen on April 28. This was probably the day of their arrival although it seems very late.

105. *Passerina cyanea*. INDIGO BUNTING.— Indigo Buntings were common in a few restricted localities April 26 to 29, when I left the region.

106. *Passerina ciris*. PAINTED BUNTING.— A brightly plumaged male was seen by Mr. Howard Hall in February. I have not the exact date.

107. *Piranga erythromelas*. SCARLET Tanager.— This species arrived from the tropics April 28.

108. *Progne subis subis*. PURPLE MARTIN.— From February 28 to the time of my departure Purple Martins were constantly seen about the city of St. Petersburg and the surrounding country. There are hardly any martin houses, the result being that large numbers of them nest under cornices of buildings and wharves.

109. *Hirundo erythrogastra*. BARN SWALLOW.— I saw the first Barn Swallow on April 19, after which it was an abundant species.

110. *Iridoprocne bicolor*. TREE SWALLOW.— Noted at Charleston, S. C., on January 21, but not seen at St. Petersburg until February 7. Regularly observed after that date.

111. *Riparia riparia*. BANK SWALLOW.— One Bank Swallow was seen with other swallows about a small pond in St. Petersburg on April 10.

112. *Lanius ludovicianus ludovicianus*. LOGGERHEAD SHRIKE.— This species probably stands third in point of abundance among land birds throughout Pinellas county, being exceeded only by the Florida Blue Jay and the Mockingbird. They live about close to the houses and seem to be quite tame. For the most part their food consists of insects. I saw only one bird with a mouse, and none with small birds as prey. Young fully feathered and flying were seen with the parent birds during the last week of March.

113. *Lanivireo solitarius solitarius*. BLUE-HEADED VIREO.—Seen only twice, January 26 in a small park in St. Petersburg and on Pine Key on March 25.

114. *Vermivora celata celata*. ORANGE-CROWNED WARBLER.—Seen in the pine woods near Salt Lake on February 7, a day when warblers were more abundant than any other during my stay. This is my only record.

115. *Compsothlypis americana americana*. PARULA WARBLER.—Migratory birds appeared on April 14, after which date they were frequently seen.

116. *Dendroica coronata*. MYRTLE WARBLER.—One of the most abundant birds in the trees of the city streets and yards from my arrival January 22 to the end of March after which they were less abundant.

117. *Dendroica dominica dominica*. YELLOW-THROATED WARBLER.—While not abundant these handsome Warblers could be found regularly in the denser palmetto groves on the keys, and to a lesser extent in the pine woods on the mainland.

118. *Dendroica vigorsi*. PINE WARBLER.—I first saw the Pine Warbler on February 7. It was at no time common, and could be found in only a few very restricted localities.

119. *Dendroica palmarum hypochrysea*. YELLOW PALM WARBLER.—Abundant everywhere up to March 4. After that date they rapidly diminished in numbers. It is possible that *D. p. palmarum* was the form most abundant as I have had no experience in differentiating between the two in the field.

120. *Dendroica discolor*. PRAIRIE WARBLER.—The song of the Prairie Warbler could be constantly heard about the mangrove keys and among the mangroves on the shores of the shallow bayous, beginning March 6. Prior to that I did hear or see the birds. During the first two weeks of April they were abundant in the trees along the city streets.

121. *Seiurus aurocapillus*. OVEN-BIRD.—Seen at Salt Lake on February 7 and on Pine Key on March 25.

122. *Seiurus motacilla*. LOUISIANA WATER THRUSH.—Seen on April 26 which was probably some time after its arrival.

123. *Geothlypis trichas ignota*. FLORIDA YELLOW-THROAT.—A moderately common species in two or three places, but never seen elsewhere. Heard in song on February 15.

124. *Anthus rubescens*. PIPIT.—One Pipit was seen on the beach at St. Petersburg on March 2, and another on a small sand bar in the harbor on March 6. The latter was walking about among a flock of Plover, Black-skimmers and Caspian Terns.

125. *Mimus polyglottos polyglottos*. MOCKINGBIRD.—The Mockingbird is the most conspicuous, most abundant and best known land bird in the county. Every yard has one or more nests, and the birds can be seen and heard all day long everywhere. They also sing most of the night in smaller numbers, especially when the moon is shining.

126. **Dumetella carolinensis.** CATBIRD.—I saw only one Catbird during my entire stay. This was at Salt Lake.

127. **Toxostoma rufum.** BROWN THRASHER.—The Brown Thrasher was nearly as uncommon as the Catbird except in one spot where two or three individuals could usually be found. Perhaps the extreme abundance of the Mockingbird crowds the other Mimidæ.

128. **Thryothorus ludovicianus miamensis.**—FLORIDA WREN.—This form of the Carolina Wren was regularly found about Salt Lake and a few bayous, but I did not find it elsewhere.

129. **Thryomanes bewicki bewicki.** BEWICK'S WREN.—On February 27 I saw a Bewick's Wren north of the city. I was unable to visit the place again, and did not find the species elsewhere.

130. **Troglodytes aedon aedon.** HOUSE WREN.—Only one record. Seen near Salt Lake February 19.

131. **Regulus calendula calendula.** RUBY-CROWNED KINGLET.—A wave of Ruby-crowned Kinglets together with the following species appeared on February 5 and lasted until the 18th after which none were seen. During that time they were everywhere, being especially abundant in the camphor trees along the city streets.

132. **Polioptila cærulea cærulea.** BLUE-GRAY GNATCATCHER.—Came and went with the Ruby-crowned Kinglets. Extremely common during the two weeks mentioned under the preceding species.

133. **Hyllocichla guttata pallasi.** HERMIT THRUSH.—I saw several Hermit Thrushes at Salt Lake on February 7. I have no other record.

134. **Planesticus migratorius migratorius.** ROBIN.—Robins were rather scarce in Pinellas county. I saw them but rarely and then usually near or about the so-called "muck lots," where because of the black soil they probably found worms. The universal white sand discourages worm hunting elsewhere.

135. **Sialia sialis sialis.** BLUEBIRD.—While not particularly abundant Bluebirds could be found in many sections in fair numbers.

NOTES ON NORTH AMERICAN BIRDS.

VIII.

BY HARRY C. OBERHOLSER.

In the present installment¹ of these notes on North American birds there are discussed forms of three species belonging respectively to the families *Motacillidæ*, *Sylviidæ*, and *Troglodytidæ*.

Anthus spinoletta rubescens (Tunstall).

In a comparatively recent publication² Dr. Ernst Hartert treated the American Pipit as a subspecies of *Anthus spinoletta*.³ Only a superficial examination is required to demonstrate that this is the correct view of its relationship. It is distinguishable from *Anthus spinoletta spinoletta* by its smaller size and by the more deeply ochraceous or cinnamon rufous suffusion on the under surface. So far as measurements are concerned, the difference between these two forms is merely average, since the extremes considerably overlap. Both these birds have a wide range of individual variation in color which manifests itself strikingly in two extreme color phases, one gray, the other deep ochraceous, between which there are all sorts of intermediates. There is also much difference in the amount of streaking on the lower parts, some specimens being almost immaculate, while others are very heavily marked on the breast and sides. This great individual variation so completely and widely overlaps the distinctions between *Anthus rubescens* and *Anthus spinoletta* that only on average characters are they separable even as subspecies. It is, therefore, perfectly evident that the former should stand as *Anthus spinoletta rubescens* (Tunstall).

¹ For previous papers in this series, cf. 'The Auk,' XXXIV, April, 1917, pp. 191-196; XXXIV, July, 1917, pp. 321-329; XXXIV, October, 1917, pp. 465-470; XXXV, January, 1918, pp. 62-65; XXXV, April, 1918, pp. 185-187; XXXV, October, 1918, pp. 463-467; XXXVI, January, 1919, pp. 81-85.

² Vögel paläarkt. Fauna, Heft III, June, 1905, p. 282.

³ *Alauda Spinoletta* Linnaeus, Syst. Nat., ed. 10, I, 1758, p. 166 (Italy).

***Acanthopneuste borealis kennicotti* (Baird).**

The Kennicott Willow Warbler, *Acanthopneuste borealis kennicotti*, originally described by Professor Baird¹ and subsequently revived by Mr. Ridgway,² has for some unaccountable reason not been currently recognized. It is undoubtedly a good subspecies, differing from *Acanthopneuste borealis borealis* in its much smaller size, particularly of wing, tail, and bill, and in its somewhat less yellowish, more grayish upper parts, particularly at the spring and summer seasons. It should, therefore, be restored to a place in our North American list. It breeds in middle and western Alaska and migrates to parts of southeastern Asia.

***Salpinctes obsoletus guadeloupensis* Ridgway.**

The Guadalupe Rock Wren, *Salpinctes guadeloupensis* Ridgway, was originally described as a subspecies of *Salpinctes obsoletus*, but is commonly considered a distinct species. Mr. Ridgway has, however, within recent years³ again reduced it to a subspecies of *Salpinctes obsoletus*, though this seems to have been ignored by present day writers. The study of a series of some 190 specimens of *Salpinctes obsoletus* and 25 of *Salpinctes guadeloupensis* unquestionably substantiates Mr. Ridgway's opinion in regard to their subspecific relationship. All the measurements of these two birds fully inosculate, as may be readily seen from the detailed figures that Mr. Ridgway has given.⁴ In color the two birds look very different at first sight, but there not infrequently occur examples that completely bridge over the differences in coloration. In fact, the most deeply colored specimens of *Salpinctes obsoletus obsoletus* are really darker than the lightest examples of *Salpinctes guadeloupensis*. Moreover, *Salpinctes obsoletus neglectus*, which is an undoubted subspecies of *Salpinctes obsoletus*, is, in the shade of the upper surface,

¹ *Phyllopneuste kennicotti* Baird, Trans. Chicago Acad. Sci., I, 1869, p. 313, pl. 30, fig. 2. (St. Michael, Alaska).

² Bull. U. S. Nat. Mus., No. 50, part III, 1904, p. 696.

³ Bull. U. S. Nat. Mus., No. 50, part III, 1904, p. 650.

⁴ Bull. U. S. Nat. Mus., No. 50, part III, 1904, pp. 645, 646, 650.

almost the same as *Salpinctes guadeloupensis*. Furthermore, in testing Mr. W. De W. Miller's criterion of distinctness for *Salpinctes guadeloupensis*¹ the ratio of wing-length to exposed culmen we get the following results in our series; *Salpinctes obsoletus obsoletus*, 3.4-4.2; *Salpinctes obsoletus neglectus*, 3.3-3.7; *Salpinctes guadeloupensis*, 3.0-3.5. It is thus evident that even this character inosculates. The Guadalupe Rock Wren and its subspecies should therefore stand as

***Salpinctus obsoletus guadeloupensis* Ridgway.**

***Salpinctus obsoletus proximus* Swarth.**

THE GEOGRAPHIC RACES OF *HEDYMELES MELANOCEPHALUS* SWAINSON.

BY HARRY C. OBERHOLSER.

THAT there are two subspecies of *Hedymeles*² *melanocephalus* is pretty generally recognized. Determination of the 245 specimens of this species in the United States National Museum, including the Biological Survey Collection, has, however, revealed the fact that the names and geographic ranges of these forms seem to be in need of readjustment.

The results of this study appear worth placing on record, which we shall endeavor to do in the following pages.

***Hedymeles melanocephalus melanocephalus* Swainson.**

Guiraca melanocephala SWAINSON, Philos. Mag., New Ser., I, June, 1827, p. 438 (Temascaltepec, Mexico, Mexico).

Fringilla epopæa LICHTENSTEIN, Preis-Verz. Säug., Vögel, Amphib., Fische, und Krebse Mex., 1830, p. 2 (Mexico).

¹The Auk, XXXVI, No. 2, April, 1919, p. 295.

²For the use of the generic name *Hedymeles* instead of *Zamelodia*, cf. Oberholser, 'The Auk,' XXXVI, No. 1, January, 1919, p. 115.

Fringilla xanthomaschalis WAGLER, *Isis*, 1831, col. 525 (Mexico).

Fringilla maculata AUDUBON, *Birds Amer.*, folio ed., IV, 1837, pl. 373, figs. 2, 3, 4 (Columbia River).

Guiraca tricolor LESSON, *Rev. Zool.*, II, April, 1839, p. 102 (Mexico).

Pitylus guttatus LESSON, *Rev. Zool.*, II, April, 1839, p. 102 (Mexico).

[*Hedymeles melanocephalus*] var. *capitalis* BAIRD, in Baird, Brewer, & Ridgway's *Hist. North Amer. Birds*, II, 1874, p. 70 (Columbia River, Oregon).

Zamelodia melanocephala microrhyncha GRINNELL, *Condor*, II, No. 6, Nov. 16, 1900, p. 128 (Buckhorn Canyon, Sierra San Gabriel, Los Angeles Co., California).

Chars. subsp.—Size small; particularly of wing, tail, and bill; a post-ocular tawny streak usually present.

*Measurements.*¹—Male:² wing, 96.5–101.5 (average, 98.8) mm.; tail, 71.2–81.2 (77.5); exposed culmen, 15.2–17.8 (16.5); height of bill at base, 13.1–15.1 (14.1); tarsus, 22.6–24.9 (23.1); middle toe without claw, 16.5–18.3 (17.8).

Female:³ wing, 93.5–104.1 (average, 97.8) mm.; tail, 74.9–81.3 (78.2); exposed culmen, 15.8–20.1 (17.5); height of bill at base, 14.–15.8 (15); tarsus, 22.4–25.7 (23.6); middle toe without claw, 17.3–18.8 (17.8).

Type locality.—Tamascaltepec, Mexico, Mexico.

Geographic distribution.—Mexico and the Pacific Coast region of the United States and southern British Columbia. Breeds north in Mexico to northern Vera Cruz, Hidalgo, Guanajuato, and Oposura in north central Sonora, and on the Pacific Coast to southern British Columbia; west to Vancouver Island in British Columbia, western California, Lower California, Durango, Jalisco, Colima, and Michoacan; south to Guerrero and Oaxaca; and east to Oaxaca, Vera Cruz, Durango, northeastern Lower California, eastern California, southeastern Oregon, and west central Idaho. Winters north to southern Lower California, Mazatlan in Sinaloa and to the Valley of Mexico, and south to Oaxaca and to Chicharras in Chiapas.

Remarks.—The separation of *Hedymeles melanocephalus* into two subspecies was originally made on the basis of the difference existing between the birds of California and those of the Rocky

¹ Taken by Mr. Robert Ridgway and published in part in his "Birds of North and Middle America" (*Bull. U. S. Nat. Mus.*, No. 50, part I, 1901, pp. 618–619). It is of importance to note that the measurement of the height of the bill is taken in a straight line from the base of the exposed culmen to the malar apex, not to the nearest point on the ramus of the mandible. This gives a substantially greater measurement than the latter and more common method, and the fact that Mr. Ridgway uses this measurement throughout the volume just quoted, which contains the *Fringillidæ*, persons who consult this book should bear in mind.

² Fifteen specimens, from California and Oregon.

³ Eight specimens, from California.

Mountain region of the United States. Mr. Ridgway found, however, that the birds breeding in Mexico are much smaller than those of the Rocky Mountains from Arizona to Wyoming, and, in fact, are close to California specimens. Subsequently, by authors who regard the California race as distinct, the Mexican birds were considered identical with those from the Rocky Mountains, and both together were treated as the typical form. Mr. Ridgway, apparently for the same reason, decided not to recognize two races. It is now evident from a reëxamination of the matter that, while the Rocky Mountain bird differs appreciably from that of California, that of Mexico, though somewhat intermediate, is so near in characters to the latter that it must be referred to this form instead of to the Rocky Mountain race. This close approximation in size may be readily seen from the following average measurements of 18 adult males from Mexico, which may be compared with the measurements of the present race above given: wing, 99.6; tail, 78.5; exposed culmen, 17.5; height of bill at base, 14.7; tarsus, 23.9; middle toe without claw, 17.3. The only other alternative is the recognition of three forms, which, in view of the slight and inconstant difference between birds from Mexico and California, seems certainly not desirable. The inclusion of the Mexican bird with that of California, of course, makes the latter a part of the typical form, and the name now used for it, *Hedymeles melanocephalus capitalis*¹ becomes consequently a synonym of *Hedymeles melanocephalus*; and the Rocky Mountain bird requires a new name.

It is of interest, moreover, to note in this connection that even if the former arrangement were to be continued, neither of the names that have been used for the California bird, *Hedymeles melanocephalus capitalis* Baird² and *Zamelodia melanocephala micro-rhyncha*³ is tenable, for both are long antedated by *Fringilla maculata* Audubon,⁴ which was based on a bird from the Columbia River. In fact, the type of *Hedymeles melanocephalus capitalis* Baird,

¹[*Hedymeles melanocephalus*] var. *capitalis* Baird, in Baird, Brewer, & Ridgway's History of North American Birds, II, 1874, p. 70.

²Loc. cit.

³Grinnell, Condor, II, No. 6, Nov. 16, 1900, p. 128.

⁴Birds Amer., folio ed., IV, 1837, pl. 373, figs. 2, 3, 4.

which is still in the United States National Museum, is a specimen collected by J. K. Townsend on the Columbia River, July 28, 1835, and received by Professor Baird from Audubon; and it is without much doubt the very specimen from which Audubon drew the male figure of *Fringilla maculata* for his folio plate.

Birds from the State of Guanajuato in Mexico are rather large, but are referable to the present form, and possibly represent nearly or quite its northern limit in this region. Specimens from the Cocopah Mountains in northeastern Lower California are practically typical, though they have a slightly longer wing than California birds. Examples from southeastern Oregon, northeastern Oregon, and western Idaho are rather large but clearly nearer the present race.

The 104 specimens examined come from the following localities:

California.—Baird, Shasta Co. (May 11, 21, and 23, 1883; June 9, 20, and 23, 1883); Ft. Tejon; San Francisco; Stanford University (June 6, 1900); San Dimas Canyon, Los Angeles Co. (June 27, 1915); Dominguez Rancho, Los Angeles Co. (April 22, 1915); Petaluma, Sonoma Co. (May 16, 1856); Hayward (July 26, 28, and 29, 1903; Aug. 8, 1901); Three Rivers (July 12, 1904); Honey Lake (June 16, 1877); Santa Barbara (June 27 and 29, 1875); Marin County (June 26, 1878); Calaveras (1852); Cloverdale (April 22, 1889); Santa Cruz (Aug. 17, 1891); Fyffe, El Dorado Co. (June 13, 1898); Ukiah (April 26, 1889); Laguna Station, San Diego Co. (May 5, 1894); Jacumba, San Diego Co. (May 23 and 27, 1894); Palo Alto (May 30, 1898); Hayden's Ranch, San Diego Co. (May 31, 1894); Red Bluff (May 2, 1884); Riverside (April 20, 1889); San Diego (April 11, 1882); Laguna, San Diego Co. (June 13, 1894); Cameron Ranch, San Diego Co.; Heninger Flats, San Gabriel Mts. (July 8, 1905); Millard Canyon, San Bernardino Mts. (May 8, 1909); Shepherd Canyon, Argus Range (April 26, 1891); Maturango Spring, Argus Range (May 14 and 15, 1891); Chieo (Aug. 5, 1904); Paraiso Springs (July 7, 1902); Camp Badger (May 17, 1894).

Idaho.—South Fork of Salmon River, 12 miles east of Warren (Aug. 2, 1913); Weiser (June 13, 1913); Idaho City (June 17, 1910).

Oregon.—Rockville, Malheur Co. (July 15, 1915); Eugene

(June 18 and 19, 1914); Tillamook (July 3, 1897); Haycreek (May 17, 1915); Portland (July 8, 1897); Homestead (June 6, 1916).

Washington.—Mt. St. Helens (Aug. 10, 1897).

Colima.—Plains of Colima (October, 1863; January, 1863).

Durango.—Chacala (March 1, 1899); El Salto (July 25, 1898).

Guanajuato.—Guanajuato; Cupataro.

Guerrero.—Omitlencé (May 25, 1903).

Hidalgo.—El Chico (March 23 and 24, 1893).

Lower California.—East base of Cocopah Mts. (April 13, 1905); Seven Wells (April 16, 1894); San Ysidro Ranch (June 30, 1894); San José (February, 1860); Pichilingua Bay (Jan. 23, 1882); Gardner's Laguna, Salton River (April 24, 1894); Nachoguero Valley (June 1 and 5, 1894).

Mexico.—Tlalpam (Dec. 24, 1892); Lerma (July 3, 1904).

Michoacan.—Patzcuaro (July 20, 1892).

Morelos.—Huitzilac (Dec. 28, 1892; Jan. 1, 1893); Tetela del Volcan (Feb. 10, 1893); Cuernavaca (Jan. 5, 1893).

Oaxaca.—Oaxaca (June 21, 1894).

Puebla.—Chalehicomula (April 13, 1893); Mt. Orizaba (April 26, 1893); Orizaba; Puebla.

Sinaloa.—Mazatlan (February, 1866).

Sonora.—Near Oposura (April 14, 1887).

Tlaxcala.—Huamantla (May 11, 1893).

Vera Cruz.—Jico (July 14, 1893); Mirador, near Vera Cruz (June, 1864).

***Hedymeles melanocephalus papago*, subsp. nov.**

Zamelodia melanocephala melanocephala Auct. nec SWAINSON.

Chars. subsp.—Similar to *Hedymeles melanocephalus melanocephalus*, but larger, especially the wing, tail, and bill; postocular stripe usually absent.

Description.—Type, adult male, No. 129086, U. S. Nat. Mus.; Santa Cruz River, west of Patagone Mountains, Arizona, June 21, 1893; Frank X., Holzner, original number, 1634. Pileum, upper cervix, back, wings, and tail black, the wing-quills and the outer webs of the rectrices somewhat brownish; streaks on the cervical collar, on back, rump, and short upper tail-coverts, ochraceous tawny; long upper tail-coverts black tipped with

grayish white; the broad tips of the median wing-coverts, terminal spot on the outer webs of each of the greater coverts, a conspicuous wing speculum on the eight outer primaries (on both webs except on the outermost feather), and a terminal spot on the outer webs of each of the secondaries and tertials, white; subterminal edging on sinuated portion of the external webs of four outer primaries (excepting the outermost), and large (18 mm. long) terminal spots on the inner webs of the two outermost rectrices, also white; chin black; throat and jugulum like cervix; sides of body, of breast, and of upper abdomen, together with flanks, light ochraceous tawny, palest posteriorly; middle of breast and of upper abdomen rather dull lemon chrome; lower abdomen white; crissum ochraceous buff, the longest lower tail-coverts ochraceous buff; thighs deep fuscous, spotted with white; lining of wings lemon chrome.

Measurements.¹—Type: length (in flesh), 221 mm.; extent (in flesh), 336; wing, 102.5; tail, 85.5; exposed culmen, 21.5; height of bill at base, 15.5; tarsus, 25; middle toe without claw, 17.5.

Male:² wing, 99.3–109.2 (average, 103.1) mm.; tail, 76.2–86.9 (81.8); exposed culmen, 17.5–20.3 (18.5); height of bill at base, 15.–17.5 (15.5); tarsus, 22.9–25.4 (24.1); middle toe without claw, 16.3–19.1 (17.8).

Female:³ wing, 96.5–104.6 (average, 99.8) mm.; tail, 74.2–86.4 (79.3); exposed culmen, 18.–20.1 (19.1); height of bill at base, 15.–16.3 (15.8); tarsus, 22.9–25.7 (23.9); middle toe without claw, 17.3–18.5 (17.5).

Type locality.—Santa Cruz River, west of the Patagone Mountains, near the Mexican Boundary Line, southern Arizona.

Geographic distribution.—Mexico and the west central portion of the United States, and southern Saskatchewan. Breeds north to northwestern North Dakota, northeastern Montana, and southwestern Saskatchewan; west to eastern Idaho, western Nevada, western Arizona, and La Chumata, near Opodepe, north central Sonora; south to the last mentioned locality, southeastern Coahuila, and southwestern Tamaulipas; and east to southwestern Tamaulipas, central western Nuevo Leon, central western Texas, eastern New Mexico, eastern Kansas, central Nebraska, and central North Dakota. Winters from the State of Durango in Mexico to Puebla and probably to southern Mexico. Migrates east to eastern Nebraska and central Texas.

Remarks.—Color is much less important than size for the characterization of this race, and particularly for the identification of specimens, because such color differences as exist are not very

¹ Taken, except those of the type, by Mr. Robert Ridgway. The same remarks apply to these measurements as to those of *Hedymeles melanocephalus melanocephalus*, for which see footnote on page 409.

² Twenty-four specimens, from Arizona, New Mexico, Nevada, Utah, Colorado, Wyoming, and North Dakota.

³ Seven specimens, from Arizona, New Mexico, Utah, and Wyoming.

satisfactory. The absence of a tawny postocular stripe in *Hedymeles melanocephalus papago* is the best color character. The tendency of birds from the Rocky Mountains to have the crown solidly black instead of with a tawny median stripe is very inconstant, and, besides, is shared by Mexican birds, and is thus of no diagnostic value. The difference in the depth of the color on the throat, breast, sides, rump, and crissum, and the width of the white tips on the median coverts, mentioned by Dr. Grinnell in the original description of his *Zamelodia melanocephalus microrhyncha*,¹ prove by examination of our large series to be merely individual variations.

Breeding birds from Jaumave, Tamaulipas; Sierra Guadalupe, Coahuila; and Cerro de la Silla, Nuevo Leon, are practically typical of the present subspecies; and a single female from Atlixco, Puebla, without date, but which, of course, represents a winter record, is also typical. Specimens from Pyramid Lake, the Monitor Mountains, Toyabe Mountains, and Mountain City, all in Nevada, are a little small but much nearer *Hedymeles melanocephalus papago* than to the typical race. The same remarks will apply to birds from localities in southeastern Idaho.

An adult male (No. 49757, U. S. Nat. Mus.) from Camp Grant, Arizona, taken, May 14, 1867, by Dr. Edward Palmer, exhibits a peculiar individual plumage variation in the color of the upper throat, which is bright yellow.

As explained under *Hedymeles melanocephalus melanocephalus*, all the names applied to the species pertain to that race, since we now refer the Mexican representatives to the same subspecies as those from California.

Of this race 141 specimens have been examined, from the subjoined localities:

Arizona.—Fort Huachuca (May 9, 1892; July 22, 1893); Huachuca Mts. (July 26, 27, 28, and 31, 1893; Aug. 17 and 20, 1893; Sept. 5, 1893; July 12, 1888); Grand Canyon of the Colorado (May 14, 1884); Fort Whipple (July 21, 1865; Aug. 10, 1864); San Pedro Slope of Santa Catalina Mts., Pinal Co. (May 5, 1885); Santa Catalina Mts. (May 31, 1889); Squaw Peak, Verde Mts.

¹ 'Condor,' II, No. 6, Nov. 16, 1900, p. 128.

(May 9, 1888); Apache (Sept. 13, 1873); Fossil Creek, Yavapai Co. (June 20, 1885); Pinal County (Sept. 5 and 16, 1884; Aug. 19, 1884); Bowie (Aug. 15, 1874); Willow Spring (July 12, 1874); Camp Grant, 60 miles east of Tucson (May 14, 1867); Tucson (May 15, 1884); Fort Verde (Sept. 14, 1886); Oak Creek, 25 miles north of Fort Verde (Aug. 13, 1885); Santa Rita Mts. (June 8 and 11, 1884; July 1, 1884); San Francisco Mt. (Aug. 10, 1889; Sept. 5, 1889); Ash Creek, Graham Mts. (May 9 and 11, 1914); Rice, on San Carlos Indian Reservation (May 18, 1916).

Colorado.—Colorado Springs; Pueblo County (May 24, 1893; May 25, 1892); Pueblo (Aug. 1, 1874); Canyon of the Grand River (Sept. 14, 1889); East Plum Creek (June 4, 1873); Garland (June 19, 1873).

Idaho.—Shelley (July 29, 1911; Aug. 4, 1911); Pocatello (June 16, 1911); American Falls (May 27, 1911; June 4 and 5, 1911); Blackfoot (July 8, 1890); Idaho City (June 17, 1910); Blue Spring Hills, Oneida Co. (May 31, 1916).

Montana.—Benton (Aug. 7 and 8, 1910); Junction of Pilgrim Creek and Powder River, 10 miles northeast of Broadus (June 12, 1916); 10 miles southwest of Broadus (June 20, 1916); 25 miles southwest of Broadus (June 21, 1916); Highwood Mts. (Aug. 23, 1910); Fort Keogh (June, 1889; June 7, 1889); Reese Creek (Aug. 11, 1888); near Hillsdale (Aug. 15, 1888); Glasgow (June 18, 1910).

North Dakota.—Buford (May 30, 1910); Cannonball (Aug. 17, 1915); Fort Totten (July 13, 1915); Fort Union (June 26, 1843); Fort Rice (June 16, 1873).

New Mexico.—Southeastern slope of Capitan Mts. (July 15, 1903); northwestern foothills of Capitan Mts. (June 27, 1903); Willis (July 15, 1903); Rinconada (May 6 and 8, 1904); north slope of Animas Peak, Animas Mts. (July 29 and 30, 1908; Aug. 6, 1908); Bear Ridge, Zuni Mts. (June 19, 1909); Fort Wingate (June 29, 1905; Sept. 14, 1888); Pecos Baldy (Aug. 5, 1903); Oak Canyon, Raton Range (Sept. 2, 1903); Capitan (June 27, 1903); Red River at 9500 feet altitude (Aug. 16, 1904); Dog Spring, Grant Co. (May 24, 1892); west side of San Luis Mts., Mexican Boundary Line (July 14 and 19, 1892); east side of San Luis Mts., Mexican Boundary Line (June 23, 24, 25, and 26, 1892).

Nevada.—Pyramid Lake (June 12, 1889); South Twin River, Toyabe Mts. (Aug. 19, 1915); Jett Canyon, Toyabe Mts. (Aug. 13, 1915); Monitor Mts., 25 miles southwest of Eureka (June 9, 1898); Mountain City (June 12 and 14, 1898).

Texas.—Marathon (May 15, 1901); Pine Canyon, Chisos Mts. (June 3, 1901).

Utah.—Salt Lake City (May 24, 1869); Parley's Park, Wasatch Mts. (July 29, 1869); Ogden (June 7 and 8, 1872); Provo (July 29 and 30, 1873; July 30, 1872).

Wyoming.—Fort Steele (May 23, 24, and 25, 1911); Greybull (June 7, 10, and 13, 1910); Fort Bridger (May 24, 1858; June 1, 1858); Laramie; Fort Laramie (May 28 and 31, 1878); Sage Creek, fork of Stinking Creek (June 13, 1860).

Coahuila.—Sierra Guadalupe (April 27, 1902).

Durango.—Chacala (Feb. 27, 1899).

Nuevo Leon.—Cerro de la Silla (March 24, 1902).

Puebla.—Atlixco (1883).

Sonora.—La Chumata, near Opodepe (May 27, 1905).

Tamaulipas.—Jaumave (June 6, 1898).

GENERAL NOTES.

The Generic Name of the Gannets.—Several years ago Mr. G. M. Mathews proposed the recognition (Austral Avian Record, II, Nos. 2-3, Oct. 23, 1913, pp. 55-56) of *Pelecanus bassanus* Linnæus and the other Gannets as a genus apart from the other species of *Sula* Brisson. On a later occasion (Birds Australia, IV, pt. 3, June 23, 1915, pp. 204-207, 217-218) he elaborated the diagnosis of this group and showed conclusively the claims of the Gannets to generic distinction. The feathered face, the proportions of wing, tail, tarsus, and culmen, and particularly the scutellate toes and parts of the front of the tarsus are more than ample characters. He further mentioned (Birds Australia, IV, pt. 3, 1915, p. 202) what had for some time been known, that the name *Dysporus* Illiger (Prodrom. Mamm. et Avium, 1811, p. 279), which has frequently been used in either generic or subgeneric sense for the Gannets, is merely a substitute term for *Sula* Brisson, on grounds of purism. The next name in point of time, *Morus* Vieillot (Analyse Nouv. Méth. d'Ornith. Élément., April, 1816, p. 63), is preoccupied by *Morum* Bolten, 1798, for a genus of *Mollusca*, and for this reason Mr. Mathews has named the group of Gannets *Sulita* (Austral Avian Record, II, No. 7, Jan. 28, 1915, p. 123; type by original designation, *Pelecanus bassanus* Linnæus). The name *Moris* Leach (Syst. Cat. Spec. Indig. Mamm. and Birds Brit. Mus., August, 1816, p. 35; type by monotypy *Moris Bassana* [= *Pelecanus bassanus* Linnæus], he rejects (Birds Australia, IV, pt. 3, 1915, p. 202) as a nomen nudum; and *Moris* Forster (Synop. Cat. Brit. Birds, 1817, p. 59) as a "mis-spelling of *Morus* only" (Birds Australia, IV, pt. 3, 1915, p. 217). According to the A. O. U. Code of Nomenclature, Mr. Mathews is correct in the rejection of *Morus* Vieillot on account of the prior *Morum* Bolten; but neither the A. O. U. Code nor the International Code permits the rejection of *Moris* because of either *Morus* or *Morum*, since *Moris* is a word not merely of different grammatical gender, but of different classical termination. Furthermore, the generic names in the publication of Leach quoted above are not nomina nuda, being properly joined with already duly described specific names; and in this particular case the species is unequivocally recognizable. Moreover, even if Leach's name *Moris* be disregarded, as of course it should not be, it would then be necessary to fall back on *Moris* Forster, 1817, which of course is a perfectly legitimate substitute for *Morus* Vieillot. Thus, in any case, the generic name of the Gannets will become *Moris*, and the species stand as follows:

Moris bassana (Linnæus).

Moris capensis (Lichtenstein).

Moris serrator serrator (Gray).

Moris serrator dyotti (Mathews).

HARRY C. OBERHOLSER, *Washington, D. C.*

Polysticta versus Stellaria — a Correction.— In the recent note on the generic names *Polysticta* and *Stellaria* (The Auk, XXXVI, No. 2, April, 1919, p. 277), there occurs a wrong citation, to which Dr. C. W. Richmond has kindly directed our attention. Lest this cause confusion it seems worth while now to make the necessary correction. We have cited the original place of publication of *Polysticta* Smith as "Illust. South Afr. Zoöl.," whereas it should be "Report Expedition Explor. Central Africa." The date, however, is correct as given — "June (or later) 1836." — HARRY C. OBERHOLSER, *Washington, D. C.*

Megalestris versus Catharacta.— Mr. G. M. Mathews has already indicated (Novit. Zoöl., XVII, No. 3, December 15, 1910, p. 498; Birds Australia, II, pt. 5, January 31, 1913, p. 489) that the name *Catharacta* Brünnich must be used in place of *Megalestris* Bonaparte, and in this he seems to be quite right. Some additional details, however, regarding this interesting and complicated case, about which so much has been written, may not be out of place from the viewpoint of American ornithology. The generic name *Catharacta* was originally proposed by Brünnich (Ornith. Bor., 1764, p. 32) for the following four species: (1) *skua* (= *Megalestris skua* Auct.); (2) *cepplus* (= *Stercorarius parasiticus* [Linnæus]); (3) *parasitica* (= *Stercorarius longicaudus* Vieillot); (4) *coprotheres* (= *Stercorarius parasiticus* [Linnæus]); and its type was apparently first designated by Reichenbach (Syst. Avium, 1851, p. v) as *Catharacta skua* Brünnich. Dr. J. A. Allen, in discussing this case at considerable length (The Auk, XXI, No. 3, July, 1904, pp. 345-348), came to the conclusion that *Catharacta* was untenable on account of the prior *Catarractes* Brisson (Ornith., VI, 1760, p. 102; type by monotypy and tautonymy, *Aptenodytes chrysocome* Forster). This, however, was before the publication of the revised edition of the American Ornithologists' Union Code of Nomenclature, which provides that names differing in classical endings shall for purposes of nomenclature be considered distinct. Since this applies, of course, to the present case, the name *Catharacta* Brünnich becomes tenable, for it is not to be rejected on account of the previous *Catarractes*. The following species, together with their subspecies, will be affected by this change:

Catharacta skua Brünnich.

Catharacta antarctica (Lesson).

Catharacta chilensis (Saunders).

Catharacta lonnbergi Mathews.

Catharacta maccormicki (Saunders).

HARRY C. OBERHOLSER, *Washington, D. C.*

Destructive Invasion by an Australian Rail.— Irregular migration of species of birds in large numbers is a phenomenon seemingly unknown in the United States since the days of the Passenger Pigeon; indeed such a happening is rare in any part of the world. Readers of 'The Auk' will

no doubt be interested in the following account quoted from the 'Journal of Agriculture of South Australia' (Vol. 22, No. 7, Feb. 1919, pp. 556-57):

"The Murray River settlements are this year suffering an invasion of black-tailed native hens, *Tribonyx ventralis*. These birds, which have the habit of migrating in flocks, are visiting some of the irrigation settlements in countless thousands, and have already done considerable damage by eating out lucerne plots and other green crops, and devouring fruit. In some cases fruitgrowers found it necessary to stack trays on which apricots were being dried, and there is considerable apprehension in some quarters in regard to the safety of the grape crop.

One satisfactory feature in so far as the native hen is concerned is that the experience of the past suggests that it appears only at long intervals. In 1846 it is reported that the bird invaded the streets of Adelaide, in 1886 it reached Perth, and Northern Victoria was visited in 1909."—W. L. McATEE, *Washington, D. C.*

***Sarcidiornis sylvicola* in Venezuela.**—I should like to report the collection of three living specimens of *Sarcidiornis sylvicola* Ihering, in November, 1918, near Barcelona, Venezuela. These birds were taken by Gustave Sebillé, a professional collector, who netted them in a nearby lagoon. They are now living in the New York Zoological Park. There are two males and one female, just beginning to assume adult plumage, the combs of the males being represented by a slight swelling at the base of the upper mandible. The resemblance between these birds when in immature plumage and wild Muscovy Ducks of the same age is striking, though the legs of the comb ducks are noticeably longer.

As they were quite immature when taken, it is reasonable to suppose they were reared in the vicinity of their capture. Barcelona is on the northern coast of Venezuela. The distribution of *Sarcidiornis sylvicola* is given by Brabourne and Chubb as Brazil, Paraguay and northern Argentina, so the present record seems to imply a considerable extension of range.—LEE S. CRANDALL, *New York Zoological Park.*

Occurrence of the Red Phalarope in Pennsylvania.—Mr. Edmund Cocks recently sent to the Academy of Natural Sciences of Philadelphia for identification, a specimen of the Red Phalarope (*Phalaropus fulicarius*) which had been picked up in a dying condition near George School, Bucks County, Pa., on December 15, 1918. Later the specimen was mounted and presented to the local collection at the Academy. So far as I can ascertain this is the first record of the species in the state, and even on the coast of New Jersey we have very few records, the Northern Phalarope being the most frequent of the three species of the family. Curiously enough shortly after the capture of this specimen a skin of the same species was presented to the Academy by Dr. C. E. Ehinger, which had been secured near Lenape, Chester Co., Pa., at about the same time.

West Chester is about forty miles southwest of George School. The two occurrences would seem to indicate that a flock of these birds had been blown inland from the ocean and that these and perhaps others had become exhausted.—WITMER STONE, *Academy of Natural Sciences, Philadelphia*.

The Status of the Genus *Archibuteo*, Brehm.—Since proposing (The Auk, XXXVII, No. 2, April, 1919, p. 282) to change the name of the genus *Archibuteo* Brehm to *Triorchis* Kaup, the writer has had occasion to investigate the generic status of this group. The two Rough-legged Hawks, *Falco lagopus* Brünnich and *Falco ferrugineus* Lichtenstein, have for a long time been generically segregated from the species of *Buteo* because they have the tarsi completely feathered in front and on the sides. Dr. Hartert has recently (Hand-List Brit. Birds, 1912, p. 115; Vögel paläarkt. Fauna, Heft IX [Band II, Heft 3], October, 1914, pp. 1114, 1128-1131), advocated the elimination of *Archibuteo* as a genus because of the intermediate character of some species of *Buteo*. The results of our own study may be worthy of brief notice in print, as they seem, much to our surprise, completely to justify Dr. Hartert's position. The common Rough-legged Hawk of Europe, *Archibuteo lagopus lagopus* (Brünnich), and its North American subspecies, *Archibuteo lagopus sanctijohannis* (Gmelin) exhibit the extreme extent of feathering on the tarsus, which in these birds extends over the base of the toes. This condition, compared with that seen in *Falco buteo* Linnaeus, the type of the genus *Buteo* Lacépède, would seem to indicate that *Archibuteo* is an excellent genus. Examination of other species of both groups shows, however, that in this character there is a complete chain of intermediates connecting *Archibuteo lagopus* with *Buteo buteo*, through *Buteo augur*, *Buteo desertorum*, *Buteo leucocephalus*, and *Buteo ferox*. In fact, *Archibuteo ferrugineus* is also somewhat intermediate in this respect, since the feathering on its tarsus does not cover the base of the toes, nor in some specimens even the lower end of the tarsus. Some examples of *Buteo ferox* have the tarsus feathered in front, even to the base of the toes; and *Buteo leucocephalus* has it covered for at least the upper two-thirds. Failing other characters to separate *Archibuteo lagopus* from *Buteo* it must be included in that group. Contrasted with *Archibuteo lagopus lagopus* and *Archibuteo lagopus sancti-johannis*, the American species *Archibuteo ferrugineus* looks very different, with its broad bill and rather long tarsus; and Mr. C. J. Maynard (Birds Eastern North Amer., pt. 40, 1896, p. 691) has generically separated it under the name *Brewsteria*, because of these differences, its much heavier sterno-trachialis muscle, and the lack of glandular ridges on the proventriculus. The broad bill and rather long tarsi are shared almost completely by *Buteo leucocephalus* and *Buteo ferox*; the glandular ridges on the proventriculus in *Archibuteo lagopus* are, Mr. A. Wetmore thinks, merely adventitious wrinkles; while the heavier sterno-trachialis muscle as compared with *Archibuteo lagopus* is doubtless merely a difference due to the larger size of *Archibuteo ferrugi-*

neus. We do not see, therefore, how *Archibuteo ferrugineus* can be separable, even subgenerically, from *Archibuteo lagopus*; or *Archibuteo lagopus* and *Archibuteo ferrugineus* generically from *Buteo*.

The two species of *Archibuteo* seem, however, to constitute an excellent case for the employment of a subgenus, since they show structural characters connected by intermediates, which is our idea of a subgeneric group. Certainly we can not consistently longer consider the Rough-legged Hawks generically distinct. Their names hereafter should, therefore, be

Buteo lagopus lagopus (Brünnich).

Buteo lagopus sanctijohannis (Gmelin).

Buteo ferrugineus (Lichtenstein).

HARRY C. OBERHOLSER, *Washington, D. C.*

Golden Eagle at East Moriches, N. Y.—A Golden Eagle (*Aquila chrysaetos*) visited East Moriches, Long Island, N. Y., on February 7, 1919. He raided a flock of hens and took one to a telegraph pole where he ate it. On February 10, what I believe to have been the same bird was seen by Mr. Henry D. Terry. I have no report of a previous visit here of this rare bird within the past fifty years. From memory and associated events it was just about fifty years ago that Jonathan Robinson shot one in Manorville, four miles north of this village and my father bought it and sent it to Fulton Market, New York City, for sale.

The Bald Eagle is a resident here and a pair nested for many years on an old dead pine tree about a mile from the village.—HORACE M. RAYNOR, *East Moriches, N. Y.*

Arctic Three-toed Woodpecker at Southampton, Mass.—The article in the 'General Notes' of the January number of 'The Auk' on the Arctic Three-toed Woodpecker (*Picoides arcticus*) prompts me to record one observed recently near Southampton, Mass.

Together with a companion on Lincoln's birthday, I went to find this rare Woodpecker which had been reported in November and December as having always been found in a rather extensive patch of white pine that had been burned over the preceding spring. We succeeded in locating him after a fifteen mile automobile drive over dusty roads that usually at this time of year are buried under a foot or two of snow. This winter is remarkable also for an unusual number of Hairy Woodpeckers, of which we noticed nearly a dozen, with half as many Downies. My companion at length located the Arctic by the tapping sound characteristic of Woodpeckers. But the beat was not as regular as that of the above mentioned species and somewhat slower.

The bird allowed us to approach to the very tree in which he was at work, so that an excellent observation was obtained. The sides we noted instead of being pure white, as in the adult spring plumage, were a dull gray color with small black bars. Whether this is an immature marking or winter

plumage, I have yet to determine. The golden yellow crown patch was distinct as were the characteristic three toes. This particular stand of charred and dead pines is undoubtedly what is keeping him here all winter. Evidence of his search for the particular beetle that bores in the dead wood was on every side and the bark was stripped from many of the pines. He gave us several examples of his method of doing this; firmly secured to the tree by his toes and using the two prominent quill points of his black tail as a support, he would seize the edge of the bark with his long blunt bill and force head, bill, and bark down sideways until a considerable portion of the bark would break off. He also afforded a striking resemblance to a large knot, when with head drawn far back he "froze," — perhaps because of a nearby Hairy that had been working tree by tree nearer until he darted straight at Arctic trying to intimidate or dislodge him, but without success. Of us Arctic showed little or no fear either, for several vigorous kicks against the tree trunk failed to frighten him, while a stick thrown higher up in the same tree merely sent him to another one some ten or fifteen feet away where he resumed his work.

In Vol. XVII of 'The Auk' I note a record in the eastern part of Massachusetts for January 1899. The observer concludes his remarks with the statement: "This record must be pretty far south for this species, especially in such a mild and open winter." Why it is that this boreal bird was not driven south last year when we had one of the severest winters on record and chose this year instead, is one of the as yet unanswered questions pertaining to bird lore. The query uppermost in my mind is — Does the mild and open winter have anything to do with the appearance of the Arctic Three-toed Woodpecker along the southern border of his range?— AARON C. BAGG, *Holyoke, Mass.*

Blue Jay Again in Jefferson Co., Colorado.— In Vol. XXXIV, No. 2 of 'The Auk' I reported the occurrence of three Blue Jays (*Cyanocitta cristata cristata*) one and a half miles south of Broomfield, Colorado. These birds were very wild and it was impossible to get close enough to them to obtain a specimen. On October 27, 1918, I was more successful. On this date I was again startled by the cry of a Blue Jay coming from an apple tree beside a small patch of corn not far from our house. Securing my gun, I hurried to the spot and obtained the specimen, a female, which is before me as I write this article. She was unafraid and seemed perfectly at home beside this patch of corn.— A. H. FELGER, *Denver, Colo.*

Song of the Canada Jay.— The note entitled "The Song of the Blue Jay," which was published in 'The Auk' for January, 1919, interests me much, and causes me to wonder if it is generally known that the Canada Jay possesses a true song also. The following extract from my notes, dated May 7, 1911, may be worth publishing in this connection.

"While walking through the woods between Long Swamp and the

Webster Road near the rear of the farm I met the first individual of this species (Canada Jay) that I had ever seen. He was not at all shy and I observed him for some time with my opera-glasses at a distance of about twenty feet. I also heard his song, which was quite pleasing and somewhat resembled that of the Catbird, though in this instance, at least, it was not so loud, apparently being uttered with closed bill. Besides this he uttered a disagreeable note similar to one of the scolding notes of the red squirrel."

This observation was made in the woodland on my father's farm, near Yarmouth, Nova Scotia. Although I have not infrequently observed Canada Jays in Nova Scotia since the date of this occurrence, I have never since then heard one of them utter any pleasing or musical notes, or anything which could be considered a song.—HARRISON F. LEWIS, *Quebec, P. Q.*

Evening Grosbeak in New Jersey.—On the 1919 Washington's Birthday field trip of the Delaware Valley Ornithological Club, to New Lisbon, N. J., a flock of 27 Evening Grosbeaks (*Hesperiphona vespertina vespertina*) were observed in the same trees where the birds were found on February 22, 1917. This occurrence is surprising since no others have been reported in this vicinity during the past winter and they have apparently not been common in the states to the northward.—WITMER STONE, *Academy of Natural Sciences, Philadelphia.*

The Pine Grosbeak (*Pinicola enucleator leucura*) in Northwestern New Jersey.—Through the kindness of Mr. Justus von Lengerke, I am able to record a flock of four Pine Grosbeaks seen by him at Stag Lake, Sussex Co., N. J., on February 9, 1919.

The birds, two of which were adult males, were observed at a distance of a few feet. Through previous acquaintance with the species they were at once recognized as Pine Grosbeaks.

That these birds seldom reach Sussex County is evident from the fact that, during a residence of many years at Stag Lake, Mr. von Lengerke had never before seen this species there.—W. DEW. MILLER, *American Museum of Natural History, New York City.*

Early Occurrence of the Red-breasted Nuthatch in New Jersey.—On July 18, 1918, I saw a Red-breasted Nuthatch (*Sitta canadensis*) in the Pitch Pines bordering Lily Lake, Cape May Point, N. J., at the southernmost extremity of the state. When first seen it was some distance away and I supposed for the moment that I had a straggling example of the Brown-headed species before me, which occurs regularly in southern Delaware, across the bay, but upon approaching I found it to be the Red-breasted species. I watched it at close quarters for fifteen minutes, but saw no other individuals. This is much the earliest record that I have for southern New Jersey or the Philadelphia district.—WITMER STONE, *Academy of Natural Sciences, Philadelphia.*

The Range of the Short-tailed Mountain Chickadee (*Penthestes gambeli abbreviatus* Grinnell).—The form of *Penthestes gambeli* recently described by Dr. Joseph Grinnell (Univ. Calif. Publ. Zoöl., XVII, No. 17, May 4, 1918, p. 510) as *Penthestes gambeli abbreviatus* is an excellent subspecies. The range given by its describer is "The higher mountains of central and northern California, southern Oregon, (probably this subspecies), and northwestern Nevada." To this we are able so greatly to add from material in the Biological Survey collection, that it seems worth while to put on available record for the benefit of those who may have occasion to use the information, a statement of the geographic distribution of *Penthestes gambeli abbreviatus*, so far as now known. This subspecies breeds and doubtless is a permanent resident north to Thudade Lake in northern British Columbia; west to central British Columbia, western Washington, western Oregon, and central northern California; south to Mt. Whitney in central eastern California; and east to northeastern California, northwestern Nevada, Lardo and Dickey in central Idaho, and Smoky River and the vicinity of Henry House in central western Alberta.—HARRY C. OBERHOLSER, *Washington, D. C.*

Note on Audubon's Labrador Trip.—Mr. James White, assistant to the chairman of the Canadian Commission of Conservation writes me in connection with the meeting between Audubon and Bayfield, that some twelve years ago he had located Capt. Bayfield's Journals of the Surveys in the Gulf of St. Lawrence, in the possession of the Captain's son in Vancouver, B. C. They were later presented to the Canadian Archives and Mr. White had the following extract copied. Opposite the first entry were the names of the Audubon party as follows:

Mr. J. J. Audubon, Senior
 Mr. J. W. Audubon, junior, his son
 Mr. Thos. Lincoln, Maine
 Mr. Josh Cooledge, mate of the Ripley
 Mr. Geo. G. Shattuck, Boston medical student
 Mr. Willm. Ingall, Medical student
 Mr. Emery, Master of the Ripley

22d June, 1833.—Light breezes S. E. with rain. At 3.30 A. M. Tacked and stood in to the E. N. E. & N. E. sounding,—At 6 saw the land but could not make it out for some time on acc^t of the rain. At 7 perceived that it was Little Natashquam — several schooners at anchor inside the rocks made signal for a Pilot with a Gun — At 7.30 the Master of the Shelburne (Phillips) of Liverpool near Halifax came onboard and took us in for which I paid him 20s Cur: Found 6 american Schooners belonging to East Port in the State of Main all belonging to one person who is here with them. We also found another American Schooner here the Ripley of Eastport employed

in a very diff^t way having Mr. Audobon onboard the Naturalist with several young men two of them Medical students of Boston. these take the departments of Botany &c., &c. in short they collect everything. But Mr. Audubon has come principally for the purpose of studying the habits of the water Fowl with which the coast of Labrador abounds and to make drawings of them for his splendid work upon the Birds of America. He sent his card onbd with a polite note & I received him onboard and we found him a very superior person indeed. It is probable we shall meet often as he proceeds along the coast which we are going to survey. Rain all the remainder of the day.

23d June, 1833. Light breezes S. S. W. and fogg^a wear in the early part of the day but cleared before noon. Sent Mr. Bowen to Survey the small harbour &c. Obs^d for Latitude.— returned Mr. Audobon's visit and was delighted with his drawings, the Birds being represented of the same size as when alive, and most beautifully painted.— P. M. obs^d for Time, & diff^t Longitude — also for trace bearing, Variation & angles for the survey of this small anchorage.

At Night the wind hauled more towards the S. E. with fog & drizzling rain.

In walking over the Islets & rocks of the mainland today we found large masses of snow remaining in every part.— Nevertheless 10 or 12 species of Flowers were seen.—

24th June, 1833. Light breezes S. W. with fog and clouds wear. P. M. it cleared and I obs^d for Time and rates. Mr. Bowen finished the survey of the harbour and adjacent rocks— Mr. Audubon dined with us onbd the Gulnare.

Three hundred vessels are said by the owner of the American schooners to be employed in the Fisheries upon this coast averaging 75 Tons & manned by 50 men to each six vessels equal to 2,500 men. of these one half are French, one forth British, and the rest American. Each Vessel takes away one with another about 1500 Quintal of Cod Fish of 112 lbs. pr Quintal. The Fish average about 4 pounds in weight being small on this coast. We heard from the Americans about the Eggers today as a set of people whom we now for the first time heard spoken of collectively as a body. We had previously no idea of the extent of the "Egging business" as our informant termed it. It appears that in some seasons 20 small schooners or shallops, of from 20 to 30

Tons, load with eggs from this coast. Halifax is the principal market for them where they at times fetch a much higher price than Hen's eggs. They are stowed in the hold in bulk and keep for several weeks without any preparation. These men the Eggers combine together and form a strong company — they suffer no one to interfere with their business driving away the fishermen or anyone else that attempts to collect Eggs near where they happen to be. Might makes right with them it is clear — they have arms and are said by the Fishermen not to be very scrupulous in using them. As soon as they have filled one vessel with eggs they send her to market others follow in succession so that the market is always supplied but never overstocked. One vessel of 25 tons is said to have cleared 200 pounds by this "Egging Business" in a favorable season.

21st July, 1833.— Strong breezes S. W. and Squells of wind & rain occasionally. We started early as usual and at $\frac{1}{2}$ past 8 A. M. arrived at Grand Mecattina point and proceeded to the third Islet off it to the S. E.^{wd}. Mr. Bowen arrived soon after and we remained on the island 'till Noon and obs^d for Latitude through the fog which came on at 10 A. M. with a very fresh Gale from the S. W.

Just as we arrived the Ripley Mr. Audubon's Schooner hauled in round the islands intending to anchor in Grand Mecattina harbour but not knowing the place they ran into Portage Bay instead.

At 1 P. M. Mr. Bowen & I ran in for shelter under double reefed sails and were received with the greatest kindness by Mr. Audubon, his Son Mr. Audubon junior the other gentlemen of the party and the Captain of the Ripley Mr. Emery. Mr. Audubon kindly invited us to dine and we passed a very pleasant afternoon with him & his party and encamped in the evening in the same corner.

Mr. A —'s kindness did not stop here understanding that we were in danger of being short of provisions before we could complete the Survey back to the Gulnare he offered me every assistance in his power and I accepted of a Ham and some potatoes which last were kindly offered by Mr. Emery. I purchased from the latter three days allowance of Bread and Beef for the party which set me quite at ease on the score of provisions. The S. W. Gale and Fog continued to night and then we had rain in addition Mr. Audubon and his party came onshore to see us in our Tents in the evening.

— CHARLES W. TOWNSEND, *Boston, Mass.*

Destruction of Sea Birds in Labrador.—The following extract from a letter received from Dr. Robert T. Morris of New York City, is deserving of wide publicity and is therefore placed before the readers of 'The Auk.'

"Dear Dr. Townsend,

Your treatment of the subject of conservation in Labrador in the book, "In Audubon's Labrador," which I have read with great interest, meets with my approval or more than that. On my trips to the Gulf Coast of Labrador and on the eastern coast as far north as Hamilton Inlet I observed that the Newfoundland codfishermen were in the habit of raiding all of the islands and adjacent mainlands on Sunday and making away with the eggs and the young of all of the seabirds. Some of the islands were wholly deserted so far as bird life was concerned and your Captain Jonas told me that in addition to the Newfoundland fishermen a number of men were engaged in the business of egging and that the eggs were preserved in brine and sold to the crews of various vessels. He said that the egg hunt was continued until such a late date in the season that the young birds which were finally hatched were not strong enough to withstand the autumn storms and he had seen thousands of young birds thrown up on the beaches. When I have been on the coast the Newfoundland fishermen not only destroyed young birds and the eggs but they shot many of the mother birds for sport, leaving them where they fell on the ground if they were of species not good to eat.

The waste of food fish also is very great along the Labrador coast. Small cod and hake which are not desired by the fishermen are often smothered in traps or killed when the traps are emptied and I have seen them floating for miles on the surface when the trappers were at work. The cod trappers catch a great many adult salmon by setting their nets in the channels when the salmon first make their way toward the rivers. This is illegal but is winked at by the officials. A remarkable waste of salmon occurs in September when the herring nets are used near the coast. This is the time of year when the smelts are descending from the rivers and putting out to sea. They are captured in quantities in the herring nets." — CHARLES W. TOWNSEND, *Boston, Mass.*

Specific Names in the Nominative Case.—It is a satisfaction to receive corroboration of the *Hirundo erythrogaster* ruling from Dr. Dwight, with his most timely citation of the International Code definition of the sort of words that may be used as specific names (see *Auk*, XXXVI, 1919, p. 117). It is curious, however, that he should reverse his stand when it comes to the subspecific name *salicarius*. In this connection I have again appealed to my senior colleague, Professor W. A. Merrill, head of the Latin department of the University of California. Professor Merrill assures me that although the word *salicarius* is not to be found in any Latin dictionary, it is "in good Latin form" and may be considered *either* as a noun, meaning "something which has to do with a willow tree," or as an adject-

tive, meaning "pertaining to a willow tree." A parallel is afforded in the word *legionarius*, originally an adjective but which came to be used as a noun—a legionary, that is, a soldier of a legion. A great number of similar nominatives are listed by Professor Merrill in a special paper of his (Univ. Calif. Publ. Class. Phil., vol. 2, 1910, pp. 57-65).

It is true that Professor Merrill also says that the combination *Guiraca carulea salicarius* is in poor taste as regards its "Latinity"; that is, the Latins would not have written it that way. This consideration is, of course, immaterial in nomenclatural questions, which questions are now settled by arbitrarily formulated rules, one of which prescribed retention of words of this category unchanged in construction from the form in which they were first proposed.

As originally proposed, the word *salicarius* was a noun, and it must retain its own gender, masculine, irrespective of the genus name with which it is associated; it is, in truth, a "substantive in the nominative in apposition with the generic name." It would thus appear that *Guiraca carulea salicarius* is, from the nomenclatural standpoint, a perfectly tenable combination for the California Blue Grosbeak, and must be kept inviolate.—J. GRINNELL, *Museum of Vertebrate Zoology, Berkeley, California.*

Editions of Baird, Cassin and Lawrence's 'Birds of North America.'—This well known work appeared first in 1858 as Volume IX of the 'Pacific Railroad Surveys' and constitutes a complete summary of the ornithology of the various expeditions as well as of the Mexican Boundary Survey. The separate report on the ornithology of the last as well as of several of the Pacific Railroad expeditions, did not appear until a year or two after Volume IX, but their contents are included in it. While no plates accompanied Volume IX there were thirty-three colored plates published along with the reports of the various surveys and twenty-five with the Mexican Boundary report.

In 1860 Volume IX appeared under a new title, 'The Birds of North America' with the imprint, Philadelphia, J. B. Lippincott & Co. The text is exactly the same from p. xvii of the introductory portion to the end of the volume and apparently printed from the same plates as the original. The four pages of "Preface" are reprinted in three pages, apparently without change of wording but in smaller type, the "Contents" are reprinted and slightly altered, and a page of "Advertisement" is added as well as a different title page.

An atlas of one hundred colored plates accompanied this work. There is a title page identical with that of the text except for the substitution of "Plates" for "Text"; pages i-ii contain a preface; pp. iii-viii, "Explanation of Plates"; and ix-xi "Systematic List of Illustrations."

Of the thirty-three plates of the various survey volumes, thirty-one appear in this atlas, nearly all of them being retouched and some of them redrawn but all these closely resembling the originals, names have been

added to all of them, which were originally lacking, and the plate numbers and references at the top are changed or reengraved. In some cases the plates of the original reports are superior to those in the Atlas while in others the latter are the better impressions. The coloring of the Atlas plates is nearly always better done. Curiously enough the numbers in the upper right hand corner of the original plates of the separate surveys are the numbers of their position in the Atlas and have no reference to their position in the reports. Two of the original plates, that of the Horned Lark and Mountain Bluebird (Report on the 38th.; 39th., and 41st. Parallels; plates XXXII and XXXV) do not appear in the Atlas, their places being taken by new plates of the Florida Grackle and Red-naped Sapsucker respectively. They are however, Dr. Richmond tells me, bound up in Prof. Baird's copy at the U. S. National Museum, in addition to the substituted plates, the Bluebird by the way being uncolored; but this was undoubtedly done for his personal convenience.

Of the twenty-five plates of the Mexican Boundary Report twenty-four appear in the Atlas somewhat retouched and sometimes with the addition of a landscape background lacking in the original. They are numbered I-XXIV as in the original report. Plate XXV however, is replaced by a new plate (LXIII) consisting of a reduced representation of the Black-bellied Tree Duck which occupied the whole plate in the original, and a figure of the Fulvous Tree Duck in addition. The remaining thirty-seven plates appear for the first time in the Atlas.

The above facts are not new, except, perhaps, the exact collation of the plates with those of the original reports, and are given in Coues' Bibliography and doubtless elsewhere, as well as in the preface to the 'Birds of North America' itself. Recently, however, my attention has been called to some other facts about the work which I do not find mentioned in any bibliography. I have before me a copy of the Atlas, bearing the imprint of D. Appleton & Co., New York, 1860; which shows that Lippincott was not the only publisher who handled the work. This edition of the Atlas seems to be exactly like the Philadelphia imprint, and doubtless the text, which I have not seen, is identical. There is, however, another edition which is decidedly different and which bears the imprint; Salem: Naturalist's Book Agency, 1870; with Philadelphia: J. B. Lippincott & Co., 1860, above it in smaller type.

The Atlas of this edition is inferior to that of 1860. Many of the plates have been again retouched and some redrawn often in a decidedly crude fashion, while one plate, No. XIV *Buteo calurus*, is entirely different, the bird facing the other way. In a large number of these plates moreover, the names are lacking, while in the redrawn ones there is no border line and no lettering whatever except the plate number.

The coloring of the Atlas of 1860 is far better done than the plates of either the original reports or those of the 1870 edition while the coloration of a number of the figures differs materially in all three, the Sandwich Spar-

row being pinkish brown in one case and deep olive green in another. There seems to be no record of the names of the artists who were responsible for these plates.—WITMER STONE, *Academy of Natural Sciences, Philadelphia*.

Observations on the Shifting Range, Migration and Economic Value of the Bobolink.—The inclusion of the Bobolink among the birds protected by the recently consummated treaty with Canada for the protection of migratory birds, resulted in an immediate demand for an investigation of its present-day economic status, which was carried on in the states from New Jersey south to Florida, inclusive, in August to October, 1918. A few points were brought forcibly to the writer's attention which perhaps are not wholly realized by ornithologists in general. First, as to the shifting of breeding grounds by the Bobolink, for to my mind that is what is occurring. The trend of the bird's breeding range to the north-west is unmistakable; for instance in the first edition of the A. O. U. Check-List, the Western limit of the breeding range was given as the Great Plains; in the second edition, 1895, as Nevada, Idaho and Alberta, and in the third edition, 1910, as British Columbia. Now unless there has been a considerable increase in the numbers of the species, the population of eastern breeding grounds must have fallen off, and this latter condition is one of which New England observers in particular complain. Rice growers in the South who have the best opportunity of judging the abundance of the species contend that the bird is less numerous than formerly. Putting these two things together, a vastly extended range and no increase, possibly a decrease in number of individuals, diminution of the Bobolink population somewhere is inevitable. This condition has actually been observed in the northeastern states, completing the cycle of evidence that a shift in range has occurred.

The persistence of birds in maintaining migration routes is particularly exemplified by the Bobolink. After extending its range westward, over hundreds of miles and across two mountain systems, the species with insignificant exceptions returns to the Atlantic Coast before turning to the south. The main fall migration path seems to converge into a funnel not far south of the breeding range through which the birds pour in a narrow stream along the coast of southern North Carolina, South Carolina and Georgia, expanding again so as to cover the whole breadth of peninsular Florida. Even farther north, before this migration stream is definitely formed, the birds are much more abundant near the coast than inland as in the wild rice marshes on tidewater from New Jersey to Virginia. Not only do the vast majority of Bobolinks seek a narrow track along the Atlantic seaboard for their southward migration, but they reach all parts of it almost simultaneously. Florida seems to form an exception to this statement, but in Georgia and South Carolina both the earliest dates (July 13-19) of fall migration and the bulk arrivals (August 15-21) are as early as those for the vicinity of Philadelphia. At a plantation on Goose Creek, South Caro-

lina, where ricebirds are expected in large numbers about August 21, they arrived this year August 1.

The migration of the Bobolink is a long drawn out process. It begins early in July, and whilst at its height in the United States from the middle of August to that of September, the species has been known to arrive in numbers in northern South America, early in September, a date prior to the time great damage is still being done by large flocks in the United States. By the middle of October, often earlier, cold weather has driven the birds out of all of the United States but Florida; there Bobolinks linger and, it is claimed by some, winter.

As a result of this straggling habit of migration no large proportion of the species is present in a given area at one time. It is fortunate that this is true, for the Ricebird is as destructive as ever where conditions permit. War prices stimulated the once decadent rice industry of the South Atlantic States and the acreage this year probably is in excess of 6000. The destruction of rice by Ricebirds must average about 25%, and the money loss for rice alone, not including expense incurred in attempts to protect the crop, probably in the neighborhood of \$150,000.

Were the loss much less it would be a mistake to protect the Bobolink, since its depredations fall so heavily upon individual planters whose main money crop is rice. Not only is rice damaged in the fall, but sprouted rice and oats and wheat in the milk suffer almost as heavily from depredations of the birds on their spring migration. From personal observation I regard the Bobolink as the most exasperating bird pest of the United States. Overwhelming flocks of them (I have seen 25,000 to 30,000 on 60 acres of rice) pitch in the ricefields from which it is almost impossible to dislodge them. If by great effort the flocks are put on the wing, they simply wheel and in a few moments are settled upon the rice again. When this cereal is in the milk the birds keep a steady stream of rice milk running through them. In the intestines it seems hardly altered from the state in which it is swallowed, and certainly only a small proportion of its nutriment is used. The Ricebirds not only gorge themselves by day but even continue their feeding on moonlight nights. At length they become so fat and lazy as hardly to be dislodged from the rice by any means. In many fields, half of the rice is destroyed, and in some all of it, or at least so much that harvesting is unprofitable. Fancy yourself a rice planter, seeing the promised results of your investment and labor melting away before the onslaught of these pests, and you may well understand why the Bobolink's song, however attractive, and its insectivorous habits in its breeding range, seem trivial reasons for protection of so destructive a species.

As a consequence of these investigations an order has been issued by the U. S. Department of Agriculture, permitting the killing of the birds, in Pennsylvania, New Jersey, Delaware, Maryland and the District of Columbia from September 1 to October 30 inclusive, and in the states from Virginia to Florida from August 16 to November 15, but no birds may be sold or shipped for purpose of sale.—W. L. McATEE.

RECENT LITERATURE.

'**A Practical Handbook of British Birds.**'— So rapidly does ornithological knowledge increase that new books upon the birds of any country seem to be always in order. Even in England with its wealth of ornithological literature there seems to be a need for a new general work on the bird life, and this being the case none are better able to produce the desired volume than the authors who are associated in the present undertaking.¹

From the introductory note we learn that the work is to consist of keys to the species, subspecies and higher groups; full descriptions prepared on a uniform plan and covering all the plumages and molts, the resources of Lord Rothschild's collections and those of the British Museum having been drawn upon, in this connection. Field characters are also to be described as well as breeding habits, food, geographic distribution and migration; the various authors dealing with the subjects upon which they are authorities.

The present part deals with the Corvidæ, Sturnidæ, Oriolidæ and part of the Fringillidæ. The nomenclature follows that of the 'Hand List' for which several of the authors are responsible, and there are references to the original description of each species as well as to several of the standard works on British birds. Then follows a very complete description with a short paragraph giving the names and characters of the allied continental races, but where two races occur in the British Isles they are both treated at length under separate headings. Under breeding habits are given a brief description of the nest and eggs, with measurements; a statement of the breeding season, length of incubation, fledgling period, etc. The food is briefly summarized and the character and extent of the migratory movement is given, with average and extreme dates. The definiteness and compactness of the whole treatment are admirable and only those who have attempted to collect such information about even our commonest birds can appreciate the difficulty and the labor that are involved. In spite of the vast amount of published matter relating to American birds we doubt if such a compilation on the North American avifauna would be possible today. Let any one make the attempt regarding the birds of his own neighborhood and he will be surprised at the many points about which information is lacking.

Part I, the editor tells us, was printed before the war, but its issue was suspended, so that certain additions are necessary to bring it up to date.

¹ *A Practical Handbook of British Birds.* Edited by H. F. Witherby, F. Z. S., M. B. O. U., Editor of *British Birds* (Mag.) Authors of the Various Sections; Ernst Hartert, Ph. D. M. B. O. U., Annie C. Jackson, H. M. B. O. U., Rev. F. R. C. Jourdain, M. A., M. B. O. U., C. Oldham, F. Z. S., M. B. O. U., Norman F. Ticehurst, M. A., F. R. C. S., M. B. O. U., and the Editor. Illustrated with Colored Plates and Numerous Text Figures. London, Witherby & Co., High Holborn, W. C. I. In Eighteen Parts. Part I (pp. 1-64). March 3, 1919. Price 4s. net per part.

The Shetland Starling is added at the end of the introductory note and other emendations are made on the cover, all of which will be properly incorporated in an appendix in the last part of the work.

Illustrations are numerous but are intended, as is explained, solely as an aid to identification. They are mainly line cuts of heads, bills and feet, etc., and there is one excellent colored plate of the "juvenile" plumages of various finches.

We shall look forward with interest to the succeeding parts of this important work which should easily become the authoritative book of reference upon the British avifauna.—W. S.

Harris's 'Birds of the Kansas City Region.' — Mr. Harry Harris, already well known to the readers of 'The Auk' through his historical articles on Auduboniana, Harris's Sparrow, etc., has prepared an admirable annotated list of the birds of the vicinity of Kansas City, Mo.,¹ where he has resided for many years. The list treats mainly of Jackson County, Mo., but includes also Clay and Platte Counties in that state as well as Johnson County, Kansas and some notes from other adjacent territory.

Under each species is given a brief general statement of the character of its occurrence and then follows an account of its distribution, migration, etc., and some information upon habits, running sometimes to half a page or even more. At the end is a list of species arranged according to time of occurrence, with migrants in order of their arrival in the spring; and also an excellent bibliography.

Mr. Harris's writings are characterized by their high literary quality and great care in editing, and we only wish that all writers would follow his example in these respects.

The paper is a welcome contribution to the ornithology of a region that has not received much detailed attention in the past and it should do much to stimulate bird study throughout the Kansas City region. As a composition and a piece of printing it may well be taken as a model by those contemplating similar lists.

There is one point which calls for comment and that is the quotation of the names given in the 'Lists of Proposed Changes in the A. O. U. Check-List' which are published each year in 'The Auk,' although the author is to be commended for giving them only as alternates to the names in the last edition of the 'Check-List.' Curiously enough he seems to have entirely misunderstood these lists and quotes the names as "proposed" at the dates on which the lists were published. They are simply changes "proposed" by various writers at various times prior to the issue of the list, but usually during the previous year, and are brought together simply for the convenience of the A. O. U. Committee and others who wish to

¹Birds of the Kansas City Region, Harry Harris. Transactions of the Academy of Science of St. Louis. Vol. XXIII, No. 8., pp. 219-371. Issued February 27, 1919. With an introduction (pp. 213-218) by Ralph Hoffmann.

investigate problems of nomenclature. Some of them will probably be adopted and many of them rejected. Dr. Oberholser does not "propose" them for adoption but is simply listing them. In the reviewer's opinion we should adopt in our lists of North American birds the nomenclature of the A. O. U. 'Check-List' until a new edition appears, the names we use then have a meaning to those who constitute the great majority of our readers, otherwise they do not. This is, however, an explanation and not a criticism, as Mr. Harris has properly and consistently used the A. O. U. 'Check-List' names as his main headings.— W. S.

Baileys' 'Wild Animals of Glacier National Park.' — This excellent publication¹ of the National Park Service gives us an authoritative account of the birds and mammals of one of the most interesting of the National Parks. Mr. Bailey, Chief Field Naturalist of the Biological Survey, has prepared a most interesting account of the mammals, treating of their habits and distribution, largely from his own extensive experience. The bird portion by Mrs. Bailey, the well known author of the 'Handbook of the Birds of the Western United States,' is equally well done and places the visitor to the park in possession of just the information that he will desire in order to add to the interest of his trip and to place him in the position of knowing which of his observations may be worthy of permanent record. The keys for identification and the numerous half-tone illustrations from the authors' 'Handbook' and the publications of the U. S. Biological Survey, add greatly to the practical value of the report as well as to its attractiveness. The work, however, is much more than an ornithological guidebook, for Mrs. Bailey has consulted all the literature on the region as well as unpublished data and has thus compiled a report that is a valuable contribution to American ornithological literature, reminding one in many respects of the early faunal reports of the Biological Survey published under the direction of her brother, Dr. C. Hart Merriam.

We only hope that the success of this publication may warrant the Government in preparing similar reports upon the fauna of the other National Parks for many of which, curiously enough, we have scarcely any ornithological publications. Such a report as this on the mammals and birds of the Grand Cañon or the Yosemite would be a most welcome volume.— W. S.

Moseley's 'Trees, Stars and Birds.' — This novel little book² has

¹ Wild Animals of Glacier National Park. The Mammals, with Notes on Physiography and Life Zones. By Vernon Bailey. The Birds, by Florence Merriam Bailey. Dept. of the Interior, National Park Service, Washington. 1918. Government Printing Office. Svo, pp. 1-210, numerous illustrations. Price 50 cents, apply Supt. Documents, Govt. Printing Office.

² Trees, Stars and Birds. A Book of Outdoor Science by Edwin Lincoln Moseley, A. M. Illustrated in colors from paintings by Louis Agassiz Fuertes and with photographs and drawings. World Book Company, Yonkers-on-Hudson, New York, 1919, pp. i-viii + 1-404, + i-xvi, over 300 illustrations. Price, \$1.40.

been prepared by Prof. Moseley as a school field and text book, but will prove of much service to many other classes of field students. The section on trees is especially suitable for autumn use, that on stars for winter and the bird chapters for spring, the whole designed to encourage students to observe and think for themselves. The plan is well conceived and well carried out, with many practical suggestions, pertinent questions and helpful lists of reference works. Better than all, in a work of this sort, each section has been submitted to a number of competent critics who have read the text and offered suggestions.

Taking up the section devoted to birds, we start with some practical suggestions for bird study in the field and then, beginning with the Thrushes, the various groups are considered in systematic order, while chapters on migration, classification, attracting birds, etc., are interspersed as we proceed. The work treats almost entirely of the birds of the Northern and Eastern States, and the extralimital species which are mentioned here and there have not always been wisely selected. The Russet-backed Thrush, the merest variety of our Olive-back, is referred to but no mention is made of the very distinct Varied Thrush, and again there is mention of the Florida Wren which only a specialist would recognize as in any way different from the Carolina Wren, while the Gnatcatcher is omitted altogether. It would we think have been better to have adhered rigidly to a definite geographic area. The same criticism also extends to the colored illustrations. There seems to be no excuse for introducing such species as the California Jay and Black-headed Grosbeak in a work where the other typical western birds are omitted, while worse yet is the labelling of the picture of the Bronzed Grackle, "Purple Grackle" and that of the Prairie Horned Lark, "Horned Lark." With such a wealth of admirable illustrations, too, it is hard to understand why such a wretchedly crude cut as that of the Summer Tanager on its nest should have been included. However, these are but minor points in an admirable book which cannot be too widely introduced into the schools of the east and which could well serve as a model for a similar work on western birds. Our country is too large to attempt to make one text book cover its entire area. The colored plates are mainly those published some years ago by the U. S. Biological Survey in the bulletin 'Fifty Common Birds of Farm and Orchard' and are admirably printed.—W. S.

Miss Ball's 'A Year With the Birds.'—Still another popular bird book¹ which has appeared recently is Miss Ball's 'A Year With the Birds' consisting of a collection of the best poems which have been written about birds together with a number of original verses by the author treating of the other familiar species. These embody the characters of the various

¹ A Year With the Birds, by Alice E. Ball. Illustrated by Robert Bruce Horsfall. 57 Colored Plates. Dodd, Mead and Company, New York City, 1918, Svo. pp. 1-191. \$3.00.

birds to a remarkable degree and the songs and call notes are usually brought into the verse in a very clever manner. Poems are often remembered where prose is forgotten and are moreover particularly attractive to many persons, especially children, so that Miss Ball's book will carry the message of bird study to many who would probably not otherwise receive it.

The various species are arranged in the order of spring arrival beginning with the residents and winter visitants, while tables of arrival and departure dates are interspersed. The numerous colored plates make the work an attractive picture book. Many of these are from the leaflets of the National Association of Audubon Societies, and are referred to in the preface as "Audubon plates"—a rather confusing term—while the rest are drawn by Mr. Bruce Horsfall especially for this work. We trust that Miss Ball's work will meet with the appreciation that it deserves.—W. S.

Gilmore's 'Birds of Field, Forest and Park.'—This attractively gotten-up book¹ is intended to give the would-be nature student an intimate knowledge of our wild bird life. It is distinctly popular in character and covers the birds of the eastern United States as observed by the author at his home in Maine, as well as in New York, New Jersey and "in the Southern States." While usually careful to mention localities the writer occasionally forgets to tell us to which region his observations pertain, an important matter in a work of such wide scope.

Mr. Gilmore is an entertaining writer and a good observer and his accounts of the habits of the birds he has personally observed are well done and full of interest, and especially attractive are the chapters entitled "In the Orchard" and "The Wilderness in June" where the attempt at systematic arrangement of the subject matter is abandoned and he writes of nature as he finds her.

There is always a field for nature books which stimulate the interest of the reader and the main text of Mr. Gilmore's book will give much pleasure and information to a wide circle of readers.

Unfortunately where he has had occasion to compile his information and to write upon the wider problems of ornithology his results have not been so happy—indeed the first two chapters, being largely of this character, could, it seems to us, have been omitted with advantage in a work of this kind. It is here that we find a number of unfortunate statements. Young Grackles, for instance, do not have "spotted coats," nor does the young male bird in species in which the sexes differ in color, "resemble the father, and the young female the mother;" while we cannot agree that in the

¹ *Birds of Field, Forest and Park*, By Albert Field Gilmore, with a Foreword by T. Gilbert Pearson, Secretary of The National Association of Audubon Societies, with Illustrations by R. Bruce Horsfall and Louis Fuertes. The Page Company. Boston, MDCCC-XIX, Svo., pp. i-xii+1-318, numerous half-tone and several colored plates. \$2.50 net.

Sparrow family "there is little or no difference in the colors of the male and female," the Rose-breasted Grosbeak, Blue Grosbeak, Indigo Bunting and Nonpareil being familiar examples to the contrary. Perching birds, the author tells us, have "short legs with slender toes having many joints, the better to cling to the perch," but he will find that the other groups with which he contrasts them have just as many "joints," birds being remarkably constant in this respect and the exceptions few. Again we are told that in the autumn the gay suits of the males of many species "are doffed and sober colored coats better adapted for travel are put on." Had the author paused to think he must have realized that these very birds had traveled successfully in their brilliant spring garb on the northward flight and he would have sought some other reason for the change. There is throughout, a misleading use of the word "variety" for "species." These terms have distinct meanings in natural history and such careless usage tends to bewilder the reader. The author's idea of what is meant by classification is decidedly hazy, since he states that the classification of the A. O. U. is adopted, but apart from the fact that the members of some of the larger groups like the Sparrows and Woodpeckers are arranged together there is no attempt at classification whatever.

These and other misstatements can easily be corrected in another edition but it is a great pity that the book was not placed in the hands of some competent critic before publication, as was done in the case of Mr. Moseley's little work. Mr. Pearson's foreword is well enough as an exposition of the importance of bird study but it is obvious that he was not given the opportunity of reading the manuscript. The illustrations are in part from the leaflets of the National Association of Audubon Societies while others are early efforts of Mr. Fuertes which appeared originally in 'Citizen Bird' and elsewhere.—W. S.

Stephens on the Birds of San Diego County, California.—This well printed list¹ covers 320 species and subspecies which the author has established as having occurred in the county. The annotations are brief and describe the general nature of the bird's occurrence with data for rare captures, while under the family headings are given some mention of the habits of the species. Mr. Stephens is a well known authority on the birds of the region of which he writes and his list is an important addition to the literature of California ornithology. By a slip of the compositor we notice that the Nevada Cowbird appears in the Corvidæ instead of with its allies in the Icteridæ.—W. S.

Swarth on New Subspecies of *Passerella iliaca*.—An exhaustive study of the Californian Fox Sparrows leads Mr. Swarth to separate²

¹ An Annotated List of the Birds of San Diego County, California. By Frank Stephens. Transactions San Diego Society of Natural History, Vol. 3, No. 2, pp. 142-180. February 15, 1919.

² Three New Species of *Passerella iliaca*. By H. S. Swarth. Proc. Biol. Soc. Wash., Vol. 31, pp. 161-164. December 30, 1918.

three more forms making sixteen in all which he now recognizes and which occur at one time of the year or another within the state. The "thick-billed Sparrow" of the Sierra Nevada proves to be different from *P. i. megarhynca* and is therefore named *mariposa* (p. 161), type from Yosemite Park. The breeding locality of the true *megarhynca* is unknown, the specimens being all winter examples from southern California. The Warner Mountain bird is named *fulva* (p. 162) and that breeding in the White Mountains, *canescens* (p. 163).—W. S.

Annual Report of the State Ornithologist of Massachusetts.—Mr. E. H. Forbush's last report¹ contains some novel features besides the usual account of activities in the interest of bird protection. There is a list of collections of mounted birds and skins in Massachusetts with the hours and conditions under which they may be consulted, a most valuable piece of information. These collections number no less than forty-eight.

A census of the Heath Hens on Martha's Vineyard showed 155 birds present, an increase of forty per cent over the year before, while a number of interesting photographs of this bird in its mating dance form a frontispiece to the report. Mr. Forbush has also issued an excellent circular on "Food, Feeding and Drinking Appliances and Nesting Materials to Attract Birds"² which contains more information in a small space and conveniently arranged than any similar publication that we recall.

Noble on the Birds of Newfoundland.³—Mr. Noble spent a portion of the summer of 1915 collecting specimens in Newfoundland in the interests of the Museum of Comparative Zoölogy and presents notes on 61 species. Special permission is required to collect in Newfoundland and a definite limit placed on the number of specimens of each species secured.

Mr. Noble ascertained that Newfoundland was evidently a region in which a dark coloration was beginning to develop in nesting species and he endorses the various recently described races from this country, but regards Howe's *Hylocichla fuscescens fuliginosa* as indistinguishable from the western *salicicola*.

An analysis of the avifauna shows thirteen species in Newfoundland which are unknown in Labrador, and twenty which occur in Labrador but not in Newfoundland, while six others are common in Newfoundland and rare in Labrador.—W. S.

Chubb on New South American Birds.⁴—In the January number of

¹ Eleventh Annual Report of the State Ornithologist. By Edward Howe Forbush. For the Year 1918. From the Annual Report of the State Department of Agriculture. December 20, 1918, pp. 1-21.

² Circular 2, Mass. State Department of Agriculture, pp. 1-31, September, 1918.

³ Notes on the Avifauna of Newfoundland. Bull. Mus. Comp. Zoöl. LXII, No. 14, pp. 543-568.

⁴ Notes on Collections of Birds in the British Museum, from Ecuador, Peru, Bolivia, and Argentina. Part I. Tinamidae—Rallidae. By Charles Chubb. The Ibis, January, 1919, pp. 1-55.

'The Auk,' mention of the new species described in this paper was made in noticing the number of 'The Ibis' in which it appeared. An examination of the paper in detail is somewhat disappointing and exhibits an element of carelessness that is quite unexpected when we consider the author and his opportunities. It is regrettable in the first place that Mr. Chubb has seen fit to consider such a wide extent of country in one paper. It is almost impossible to keep in mind the details of distribution and the literature of the subject unless we consider one region at a time. In this way too, we learn better what are the probable areas in which differentiation may be expected.

In this paper, although the fact is not indicated in the title, the author describes some new birds from Colombia, and, doubtless because this was somewhat incidental, he apparently forgot Dr. F. M. Chapman's painstaking work upon the avifauna of that country. The result is that he was not aware that Dr. Chapman had shown that most of Goudot's specimens came from the region of the Quindio Pass and not from Bogota, so that in describing his new form of *Chamaepetes* he has apparently redescribed the type race, that from Bogota being the unnamed one, if the two are really distinct.

In his treatment of *Odontophorus*, while still failing to refer to Chapman's work, his results are decidedly more nearly in accord with it. So much so, in fact, that he recognizes the Panama race of *O. guianensis* as distinct, just as Chapman did, and in naming it as a new form he uses the same name as Chapman had previously employed for the same purpose (!) and based his name upon one of McLeannan's skins just as Chapman had done. Too much care cannot be taken in the description of new South American birds, as has been previously pointed out in these columns. So many different authors are engaged in the work that unless exceptional care is exercised it will take a great deal of painstaking research to straighten out the synonymy and correct the slips that have been made.—W. S.

The Ornithological Journals.

Bird-Lore. XXI, No. 2. March-April, 1919.

The Warblers of Central New York. By Arthur A. Allen.—Photographs of the Cerulean, Mourning, Chestnut-sided and Blackburnian Warblers and the Chat and an interesting account of their habits.

Notes from a Traveller in the Tropics. III. From Panama to Peru. By Frank M. Chapman.—Describes the abundant sea bird life off the coast of Peru.

Purple Martins on Stuart Acres. By F. A. Stuart. Gives the results of five years of bird protection on a Michigan Farm. 1400 bird boxes have been erected. For Martins there were ten boxes in 1914 occupied by 46 pairs of birds, while in 1918 there were 222 pairs of these birds. One hundred and eleven species of birds have been noted on the estate, either as residents or transients.

Another Purple Martin Roost in the City of Washington. By Harry C. Oberholser.— A further account of the birds described in 'Bird-Lore' for 1917.

The migration and plumage articles describe the Crows, with a colored plate by Fuertes as a frontispiece. In this illustration the difference in size of the bill of the Common Crow and Fish Crow is certainly exaggerated and the latter species lacks the greenish lustre that is characteristic of it, but it is very difficult to get the proper color values in attempting to reproduce these glossy plumages.

The Condor. XXI, No. 2. March-April, 1919.

Nesting of the Rocky Mountain Creeper. By W. C. Bradbury. With excellent photographs of the nest and eggs.

Albert Mills Ingersoll.— An Autobiography.

Notes on the Breeding Habits of the Red Crossbill in the Okanagan Valley, British Columbia. By J. A. Munroe.— Eggs were deposited in March.

Notes on the Nesting of two Little-known Species of Petrel. By George Willett.— *Pterodroma hypoleuca* and *Oceanodroma tristrami* on Laysan Island.

Bird Notes of a Stormy May in Colorado Springs. By Edward R. Warren.

Losses Suffered by Breeding Birds in Southern California. By H. A. Edwards.

Olive Thorne Miller. By Florence Merriam Bailey

Bird Records from the Sacramento Valley, California. By Alexander Wetmore.

Notes from the Feather River Country and Sierra Valley, California. By Joseph Mailliard.

The Marital Tie in Birds. By Loye Holmes Miller.— This is a paper that every student of bird life should read and seldom has the inability of the average observer to properly interpret animal behavior been more clearly explained. Prof. Miller is discussing Mr. F. C. Willard's paper in the October 'Condor,' "Do Birds mate for Life?" which has already been commented upon in these columns. He argues with much force that there is no reason whatever to expect the marital relation in birds to last more than one year while there are many reasons why it is improbable that a bird remates with the same individual. He cleverly shows that the duration of the marital tie is really for the period during which the young are dependent upon parental care. In human beings this, with a normal family, will extend over a period of forty years or more, while in birds it is merely a few months. Why therefore try to impose upon birds human conditions?

The Summer Birds of Hazelton, British Columbia. By P. A. Taverner.

The Ibis. XI, Series I, No. 2. April, 1919.

Some Notes on *Hieraaëtus ayresii* Gurney Sen. (*Lophotriorchis lucani*

Sharpe et auctorum). By C. G. Finch-Davies.—This species and not *H. spilogaster* occurs in South Africa.

Notes on certain recently described Subspecies of Woodpeckers. By H. C. Robinson.

Some Notes on Oriental Woodpeckers and Barbets. By E. C. Stuart Baker.—An important review of many groups in which *Picus canus ricketti* (p. 187), Fokien, China, is described as new.

Notes on Birds observed in Palestine. By A. G. L. Sladen.

A note on the Buzzards of the Ethiopian Region. By W. L. Selater.

Notes on Collections of Birds in the British Museum, from Ecuador, Peru, Bolivia, and Argentina. Part II. Podicipediformes — Accipitri-formes. By Charles Chubb.—*Oreophilus ruficollis simonsi* (p. 262), Challapata, Bolivia, is described as new.

List of the Birds of the Canary Islands, with detailed reference to the Migratory Species and the Accidental Visitors. Part II. Turdidæ — Hirundinidæ. By David A. Bannerman.

Notes on the Height at which Birds migrate. By Collingwood Ingram.—Capt. Ingram, serving with the Royal Air Force in France, presents his observations upon birds observed from aeroplanes. His highest record is 15,000 ft.

Obituary. Frederick DuCane Godman; Theodore Roosevelt, Giacomo Doria and Louis Brasil.

British Birds. XII, No. 10. March, 1919.

Notes on the Birds of a Valley in the Champagne District, France. By E. Arnold Wallis.

Observations on Birds seen in the Northeastern Atlantic Ocean, English Channel, St. George's Channel, August to October, 1917. By D. G. Garnett.—Interesting daily data on the movements of various sea birds.

The South Australian Ornithologist. IV, Part I. January, 1919.

Description of a new Subspecies of *Climacteris*. By J. W. Mellor. *C. erythropus parsonsi* (p. 5) South Australia.

The Birds of the Southeastern Part of South Australia. By A. M. Morgan.

In the Pine and Mallee. By J. W. Mellor.

Revue Française d'Ornithologie XI, No. 117. January, 1919. [In French].

The Principles of Geometry Applied by Birds in the Construction of the Nest. By Dr. F. Cathelin.

Study of a Collection of Birds made by M. E. Wagner in the Province of 'Misiones,' Argentina. By A. Menegaux (concluded).

Revue Française d'Ornithologie. XI, No. 118. February, 1919. [In French.]

Some Observations on the Nest of the Magpie. By A. Labitte.

Ornithological Articles in Other Journals.¹

Bailey, Alfred M. Observations on the Water Birds of Louisiana. (Natural History, XIX, January, 1919.)—A most interesting account of the bird refuges of the Gulf Coast of the State with a wealth of remarkable illustrations from photographs by E. A. McIlheny, Stanley C. Arthur and the author, of Terns, Gulls, Egrets, Pelicans, Geese, etc.

Bridgman, Herbert L. "Four Years in the White North." (*Ibid.*, January, 1919.)—A review of D. B. MacMillan's book with half-tone reproductions of photographs of the nesting of the Knot, its eggs and young.

Zimmer, John T. Some Notes on the Birds of South Palawan, and Adjacent Islands. (Philippine Jour. of Science, XIII, Sect. D., No. 6, November, 1918.)—An annotated list of fifty-nine species, with a description of a new species—*Acmonorhynchus affinis* (p. 384) from Palawan.

Allen, Arthur A. The Water Fowl. (American Forestry, March, 1919.)—A general account of American species with interesting illustrations from photographs including the Mallard and Pintail in the eclipse plumage.

Allen, Arthur A. The Plovers. (*Ibid.*, February, 1919.)—A similar account of the Plovers with illustrations of the Killdeer and Black-bellied Plover.

Oberholser, H. C. Description of a New *Conurus* from the Andaman Islands. (Proc. Biol. Soc. Wash., 32, pp. 29-32, April 11, 1919.)—*Conurus fasciatus abbotti* (p. 29) five races of the species are recognized.

Oberholser, H. C. Mutanda Ornithologica. VI. (*Ibid.*, pp. 21-22, April 11, 1919.)—*Francolinus chinensis* becomes *F. pintadeanus* (Scopoli), *chinensis* being preoccupied; *Cuculus canorus minor* Brehm for the same reason becomes *C. c. bangsi* nom. nov. (p. 22), while *Monasa nigra* (Muller) becomes *M. atra* (Boddaert) and *Alcedo grandis* becomes *A. magalia* nom. nov. (p. 22).

Other "mutanda" by Dr. Oberholser appear in the General Notes of the Proc. Biol. Soc. Wash., pp. 46-48. Here the family name of the Wood Warblers is changed from Mniotiltidæ to Compothlypidæ; according to the author's views *Eumyias* must change back again to *Stoporalæ* and *Passerherbulus lecontei* becomes *P. caudatus*, the latter change is however only necessary if we adopt Dr. Oberholser's extreme views on generic subdivision, if we follow the A. O. U. Check-List no change is required.

Perkins, R. C. L. On a New Genus and Species of Birds of the Family Drepanididæ from the Hawaiian Islands. (Ann. and Mag. Nat. Hist., (9), III, pp. 250-252, March, 1919.)—*Dysmorodrepanis* (p. 250), *D. munroi*

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.

(p. 251), from Kaiholena Valley, Lanai, at 2000 ft. elevation. Only one specimen obtained, though Mr. Monroe, the collector, thought he had seen others on one or two occasions. It is allied to *Psittacirostra*.

Lönnerberg, Einar. Notes on Some Interesting East African Birds. (Archiv. for Zoologi XI, No. 5, pp. 1-5, 1917.) — A Collection made at Elgon and Loudiani B. E. A., by Dr. Leo Bayer. *Astur tachiro tenebrosus* (p. 2) and *Zosterops bayeri* (p. 3) both from the latter locality are described as new. [In English.]

Lönnerberg, Einar. Birds Collected in Eastern Congo by Captain Elias Arrhenius (*Ibid.*, X, No. 24, pp. 1-32). — A list of 184 species of which *Accipiter beniensis* (p. 13) and *Neocossyphus rufus arrhenii* (p. 31), both from Beni, are described as new.

Oberholser, H. C. Diagnosis of a New Genus of Bucerotidae. (Jour. Wash. Acad. Sci. IX, No. 6, pp. 167-168.) — *Platycorax* (p. 167), type *Buceros semigalcatus* Tweeddale. Inasmuch as the number of genera to be recognized is purely a matter of personal opinion and no "proof" is possible we much prefer the expression "appears to be" distinct, rather than "proves to be" which latter Dr. Oberholser and some others employ.

Hanna, G. Dallas. Notes on Birds of the Pribilof Islands. (Jour. Wash. Acad. Sciences, IX, No. 6, March 19, 1919.) — A brief mention of seventeen species new to the Pribilofs and four new to North America, i. e., *Eunetta falcata*, *Heteroscelus brevipes*, *Thalassoaëtus pelagicus* and *Anthus spinoletta japonicus*. It is unfortunate that such important matter should be first published in such an obscure manner.

Oberholser, H. C. Birds of a Washington City Dooryard. (The Amer. Midland Naturalist, VI, pp. 1-3.) — A remarkable list of 100 species, occurring at the author's home in Washington; many, however, were heard or seen flying over. The list covers a period of seven years. Both nomenclature and classification differ from the A. O. U. 'Check-List' but vernacular names are given which are essentially those of the 'Check-List.' Both the Parula and Northern Parula are listed, based upon sight records of a single individual of each!

Gladstone, H. S. Birds and the War. (Nature, No. 102, pp. 488-489, 1919.) — Discusses effects on bird life direct and indirect: The impossibility of feeding birds and wartime restrictions against the practice; the uprising of farmers against birds as destroyers of crops and the efforts to overcome the erroneous impression; effect of noises and of aeroplanes in frightening birds, etc.

Maxwell, Hubert. Note on Supposed Fascination of Birds. (Nature, March 6, 1919.) — Considers that the fantastic actions of the Stoat are not carried on with the intention of killing the bird at all. A similar note (*Ibid.*, February 20, p. 486) describes Australian birds excited by a coiled whip which they took for a snake, though they probably had never seen a snake. The writer argues that the fear of snakes is purely hereditary and cites as a parallel the actions of chickens when a hawk or aeroplane passes over them, although they had never been attacked by a hawk.

Waite, Edgar R. Feeding Habits of Nestling Bee-eaters (Nature, March 6, 1919.)—In a Papuan species the young are said to defecate in the tunnel. Flies are attracted and their eggs hatched in the mass develop larvæ upon which the young feed.

Hilden, Arenas and **Stenbäck**, K. S. On our knowledge of the Daily Fluctuation in the Body Temperature in Birds. (Skandinav. Archiv. fur Physiologie, XXXV, pp. 382-413. 1916.)

Publications Received.—Alabama Bird Day Book, 1919. Issued by the Department of Game and Fish. John H. Wallace, Commissioner. Miss Sophia Watts, Secretary.

Allen, Arthur A. (1) The Plovers. (American Forestry, February, 1919.) (2) The Waterfowl. (*Ibid.*, March, 1919.)

Bailey, Vernon, and **Bailey**, Florence Merriam. Wild Animals of Glacier National Park. Department of the Interior, National Park Service, 1918, pp. 1-210. Numerous halftone illustrations and map. Price 50 cents from Supt. of Documents, Govt. Printing Office, Washington, D. C.

Ball, Alice E. A Year with the Birds. Illustrated by Robert Bruce Horsfall, 57 Colored Plates. Svo. pp. 1-191, Dodd, Mead and Co., New York City, 1918. \$3.00 net.

Forbush, E. H. (1) Eleventh Annual Report of the State Ornithologist for the Year 1918. Mass. State Department of Agriculture, 1919. (2) Food, Feeding and Drinking Appliances and Nesting Material to Attract Birds. State Department of Agriculture, Circular No. 2, 1918, pp. 1-31.

Chubb, Charles. (1) Notes on Collections of Birds in the British Museum, from Ecuador, Peru, Bolivia, and Argentina. Part I. Tinamidae—Rallidae. (The Ibis, January, 1919.) (2) Descriptions of new Genera and a new Subspecies of South American Birds. (Ann. and Mag. of Nat. Hist., Ser. 9, Vol. II, July, 1918.) (3) Notes on the Family Dendrocolaptidae, with Suggestions for its Division. (*Ibid.*, Vol. III, March, 1919.)

Gilmore, Albert Field. Birds of Field, Forest and Park. With a Foreword by T. Gilbert Pearson, with Illustrations by R. Bruce Horsfall and Louis Fuertes. The Page Company, Boston, 1919. Svo., pp. 1-318. \$2.50 net.

Harris, Harry. Birds of the Kansas City Region. With an Introduction by Ralph Hoffmann. (Trans. Acad. Sciences of St. Louis, Vol. XXIII, No. 8, pp. 213-371.) February 27, 1919.

Lönnberg, Einar. (1) Birds Collected in Eastern Congo by Captain Elias Arrhenius. (Arkiv. for Zoologi K. Svenska. Vetenskapsakad., Band 10, No. 24, 1917.) (2) Notes on Some Interesting East African Birds. (*Ibid.*, Band II, No. 5.) (3) Hybrid Gulls. (*Ibid.*, Band 12, No. 7, 1919.)

Moseley, Edwin Lincoln. Trees, Stars and Birds. A Book of Outdoor Science. Illustrated in Colors from Paintings by Louis Agassiz Fuertes

and with photographs and drawings. 12mo., pp. 1-404. World Book Company, Yonkers-on-Hudson, New York. \$1.40.

Oberholser, H. C. (1) *Mutanda Ornithologica*. VI. (Proc. Biol. Soc. Wash., 32, pp. 21-22, April 11, 1919.) (2) Description of a New *Conurus* from the Andaman Islands. (*Ibid.*, pp. 23-32, April 11, 1919.) (3) General Notes. (*Ibid.*, pp. 45-48.)

Stephens, Frank. An Annotated List of the Birds of San Diego County, California. (Trans. San Diego Soc. Nat. Hist., Vol. 3, No. 2, pp. 142-180. February 15, 1919.)

Witherby, H. F. A Practical Handbook of British Birds, edited by H. F. Witherby. Illustrated with Colored Plates and Numerous Text Figures. Part I. March 3, 1919. Price 4s. net per part. Witherby & Co. 326 High Holborn, London.

Ardea, VII, No. 4, December, 1918.

Audubon Bulletin, The, Winter 1918-1919. Illinois Audubon Society.

Avicultural Magazine, (3) X, Nos. 4, 5, and 6, February, March and April, 1919.

Bird-Lore, XXI, No. 2, March-April, 1919.

British Birds, XII, Nos. 9, 10, and 11, February, March and April, 1919.

Bulletin of the American Game Protective Association, 8, No. 1, January, 1919.

Bulletin of the British Ornithologists' Club, Nos. CCXI-CCXLI, February and March 31, 1919.

Bulletin of the Charleston Museum, XV, Nos. 2, 3 and 4, February, March and April, 1919.

Cassinia, 1918 (April, 1919).

Condor, The, XXI, No. 2, March-April, 1919.

Ibis, The, (II) I, No. 2, April, 1919.

Journal of the Museum of Comparative Oölogy, I, No. 1-2 (double number), March 26, 1919.

Natural History, XIX, Nos. 1 and 2, January and February, 1919.

Oölogist, The, XXXVI, No. 3 and 4, March and April, 1919.

L'Ornithologiste, XVI, 1918-1919, Nos. 1 to 6, October 1918-March, 1919.

Philippine Journal of Science, The, XIII, Sec. D, No. 6, November, 1918.

Revue Française d'Ornithologie, XI, Nos. 117-119, January, February and March, 1919.

Scottish Naturalist, The, No. 85-86, January-February, and No. 87-88, March-April, 1919.

South Australian Ornithologist, The, IV, Part I, January, 1919.

Wilson Bulletin, The, XXXI, No. 1, March, 1919.

Zöological Society Bulletin, XXII, No. 1, January, 1919.

CORRESPONDENCE

EDITOR OF 'THE AUK':

It is disappointing to find (Auk, April, 1919, pp. 317-318) that even so careful a reader and reasoner as yourself has failed to grasp my meaning, and the principles that I have attempted to put in practice. If you have failed in understanding me it can be expected that there is further mis-information abroad regarding my aims and methods. Whether this is my fault or that of others, a further statement seems necessary.

You are quite correct when you state that I do not agree to the slightest abandonment of the subspecific principle. Neither am I a binomialist in the common sense of the term, as I hold that the trinomial is the only logical form of name for subspecific races. That I differ with some as to the exact *degree of differentiation* it is *expedient* to recognize in this manner and think that in the past the subspecific fact has been given undue prominence over the specific one, are matters of detail and do not interfere with any generally accepted fundamental principles.

When however you say,—“Mr. Taverner would use this binomial for *some one race* (seen but not positively determined) of *M. melodia*” you are attributing to me sentiments that I do not hold, and I have expressed myself but poorly if you can base them on anything I have said or on examples I have furnished. On the contrary I have consistently applied the binomial *collectively to all the races* of a species, lumping them under the specific title and using the trinomial for *each* of the constituent subspecies. In this I have followed to the letter the principles of the A. O. U. as exemplified in the Check List of 1910 and am in harmony with all who believe in representing the first described race by a trinomial name. The use of the binomial specific heading is an old one, sanctioned by the occasional practice of writers of repute, notably yourself. I have therefore only used a recognized form in a recognized manner, departing from current practice only in its freer use.

You suggest that where the exact subspecific status is doubtful, the abbreviation *subsp?* can be used as indicative of the fact. I grant it, but submit that it is redundant. According to A. O. U. practice there is absolutely no difference in meaning between the forms *M. melodia* and *M. melodia subsp?* except, perhaps, that a little greater emphasis is placed upon the question in the latter case. Of course to those who still cling to the nearly obsolete practice of giving the type race the specific binomial, as if the attendant subspecies were subordinate instead of coordinate divisions, there is a great difference, but this reflects a concept that the A. O. U. has already rejected.

It may be asserted with some justice that the listing of such forms as Magpie, Black Tern, Rough-leg and others as binomials savors of pedantry, as the possibility of American specimens being other than American forms

is, in the majority of cases, very small. I would say that whilst the probability is small it is not negligible. The persistence of *Larus argentatus smithsonianus* in our lists through acceptance of unverified authority, is evidence that this is a practical as well a theoretical source of error. The use of the specific term where the subspecific differentiation is not actually verified is a precaution against perpetuated error that is very cheaply applied. By its very nature it can cause no confusion, for the greater the subspecific certainty, the less *necessity* there is for naming it. When the probability becomes certainty, the subspecific title may be a convenience but it ceases to be a scientific necessity. The further the probability departs from certainty the more advisable subspecific designation becomes but the more cautious we should be in applying it. It would be interesting to know how often since their original description these "American" races have been examined and compared with adequate extralimital material. It would not be surprising if many of them failed to stand modern tests and were found to rest on faith rather than fact.

Your parallel between these subspecific cases and the New-world Titlark is another question. Doubt unquestionably exists with species as with subspecies and if there were as easy a way of generalizing upon them I would advocate its adoption. As there is no such neutral course I do not see that we can do other than get along as well as we can with an imperfect system. Specific difficulties of this kind are comparatively few whilst subspecific ones are legion and that we cannot correct the few former is no argument against progress with the many latter when it can be obtained by simple methods, already to hand, which have received the sanction of leading authorities and the A. O. U.

An objection that has been generally advanced against records made in the manner under discussion is that they are "unquotable." I cannot see that a definite subspecific identification made in a concrete statement in small print is any less quotable than when made by inference in a heading in heavy type. Where such identifications are not definite they certainly can not be quoted as definite. The fault, if fault there is here, lies in the writer, not in the method of presentation, for the latter certainly allows a freedom of action that has great advantages.

If there is no room in scientific literature for other than final results; if no interest lies in specific facts and distributions unaccompanied by subspecific identities, such identifications, definite specifically but indefinite subspecifically, as I have published lately are to be condemned. If however, we admit that a species is worthy of study as a species, and that statements of evidence uninfluenced by preconceptions can be presented as the basis for future generalizations rather than as finalities such lists fill a valuable place in scientific investigation. In attempting an orderly arrangement of our material we have had a tendency towards forcing of facts into pigeon holes prepared for them. The attempt to make every specimen agree with a preconceived scheme is not for the advancement of science. To call intergrading, worn, undeveloped, mutating or wandering

plumages known instead of unknown quantities will not solve zoölogical equations and may produce astonishing results. Our *ab*'s and *xy*'s should be recognized as such and kept separate, the former only being used in final solutions and the latter put aside for future consideration and incorporation in the problem when increased knowledge justifies. Against this there is the constant cry for exact information on the grounds that he who examines material is best qualified to pronounce upon it. Exact information is most desirable but we do not want to obtain an appearance of it by disguising a guess as a verified fact. Of course when our own knowledge or material fails there is always the alternative of submitting the problem to "authority," but the question then is, what authority and how far it should be accepted without verification. It may be admitted that some specialists, through wide experience and specially developed faculties, at times attain an almost uncanny intuition as to the identity of specimens, and their opinions even where they fail to support them by evidence convincing to others carry considerable weight, but we cannot admit that the mere dicta of even such gifted mortals should be accepted without reservation nor can their findings relieve the rest of us from the responsibility. When such determinations are to be included in our presentations they certainly should be given for just what they are, quotations of others, and their source plainly indicated, not only that due credit be given but to protect the writer and that the personality, experience and viewpoint of the authority may be estimated by the reader. For this purpose it seems to me the binomial heading and subspecific discussion in accompanying text offers the most ample opportunities without violating any of the vital principles of modern practice.

P. A. TAVERNER,

Geological Survey,
Ottawa, Canada, April 26, 1919.

[Our "misunderstanding" of Mr. Taverner's practice is we think more imaginary than real. When one sees a single Song Sparrow and being in doubt as to its subspecific identity, uses the term *Melospiza melodia*, it seems that he is using the term for "some one race" just as stated in our previous note. In many cases too he uses the binomial heading with no subspecific discussion whatever in the text, which is the practice that we particularly criticised. However, this is a trivial matter. We understand and are in sympathy with Mr. Taverner's desire to record facts and not guesses, but we still consider that his method is confusing and the use of "subsp?" is necessary if his meaning is to be made clear to the great bulk of readers. The number who do not yet understand the A. O. U. plan as practised in the last edition of the 'Check List' is vastly greater than Mr. Taverner imagines. They still think that *every* binomial indicates one sort of bird!

By introducing a system of this sort, which only a few are likely to follow,

we only cause confusion. Presently some one else will suggest another scheme and before we know it we shall have hopeless chaos and our indexes will lead us nowhere.

To those who have struggled long with the maze of published names and who by the aid of well framed codes are beginning to see the solution of that side of the nomenclatorial problem, it is discouraging to encounter well intentioned innovations such as Mr. Taverner's, and the endless activities of the genus splitter who has forgotten that a name is a name and tries to make of it a phylogenetic expression which changes with every user. There can be no rules to govern such phases of nomenclature which will always be matters of personal opinion. Why not let well enough alone?—W. S.]

NOTES AND NEWS

DR. LOUIS BRASIL, a Foreign Member of the B. O. U., who was elected a Corresponding Fellow of the A. O. U. at the last meeting, died at Caen, France, October 15, 1918, but the news of his death has only recently been received. From 'The Ibis' we learn that Dr. Brasil was born in Paris in 1865 and at the time of his death was only 53 years of age. He was brought up at Caen where he received his education and where he became Lecturer and later Professor of Zoölogy in the University. He also served as President of the Linnaean Society of Normandy.

His work included invertebrate zoölogy and geology as well as ornithology, but on the latter subject he published several important papers. He contributed the sections on Apteryges, Cassowaries, Cranes and Emus to Wyttsmann's 'Genera Avium,' 1905, and in 1914 published a little work on the 'Shore- and Water-Birds of France, Belgium and the British Islands.' Two years before his death he published a paper on the Birds of New Caledonia, containing descriptions of several new forms based on two collections made by French officers in 1865-69 and deposited in the Caen Museum. Dr. Brasil contributed several papers and short notes to the 'Revue Française d'Ornithologie' and also to 'The Ibis.' His writings and his work in general were characterized by care and accuracy.—T. S. P.

FREDERICK BRIDGHAM MCKECHNIE, an Associate of the A. O. U. from 1900 to 1911, was born in Dorchester, Mass., Sept. 19, 1882, and lived there until about 1900 when his family moved to Ponkapog, Mass. He seems always to have been interested in birds, and this move from a suburban district to Ponkapog, a small country town west of the Milton Hills, and in a setting of as wild country as there is in eastern Massachusetts, was distinctly congenial.

Graduating from the English High School of Boston in 1898, he decided to go into business, rather than to put his family to the additional expense of sending him through college; and on January 1, 1899, went to work in Yamanaka's Japanese store in Boston.

Becoming dissatisfied with the somewhat narrow possibilities and uncongenial atmosphere of his position, he decided that he would like to study landscape architecture, and entered my office as a student.

Quiet and careful, with no end of energy, he became a firstclass draughtsman. While he never pretended to be a botanist, he acquired an all-round working knowledge of the trees and shrubs of Northeastern North America, and of the garden varieties of herbaceous perennials. Superintending a good deal of planting and other outdoor work, he became an expert in the handling, planting and pruning of nursery stock, as well as in the building of roads, grading, etc. and in the handling of men.

Besides having a sharp eye, McKechnie was a very careful and reliable observer, and his ornithological records were remarkable for their neatness and scientific accuracy; his personally taken collection of New England eggs was beautifully kept; and the skins which he prepared were always particularly well made. He was also a photographer of no mean ability.

He collected a library of books on birds and mammals, and had an almost uncanny ability for unearthing rare old volumes and papers, which, with an innate Yankee propensity for trading, he usually acquired with promptness and dispatch.

He was not always successful in his quests, however, for I remember how after the death of Joseph M. Wade, McKechnie, who had known him well, spent weeks in rescuing priceless old books and papers, *Wilsoniana* and *Auduboniana*, from piles and barrels en route to the dump, to which they had been consigned by an over-efficient housekeeper, only to find that these treasures, which he had been led to believe had been left to him by Mr. Wade, belonged by rights to some heirs who were fighting in the courts over his estate. McKechnie wisely placed these papers in a safety-deposit vault, refusing to give them up to any of the unappreciative litigants, till the courts should have decided to whom they properly belonged; and then, as he could not afford to buy them himself, made arrangements whereby, through the generosity of Mr. John E. Thayer, the papers went to the Museum of Comparative Zoölogy at Cambridge, where they could be safely kept for posterity.

McKechnie had fine taste in a lot of things, and was particularly happy in his choice of friends, of whom he had many. One of the squarest men I ever met in all the years in which we worked or played together, there was never an unkind or hasty word or even thought; and I never knew him to say or do an unkind thing. No matter what he might be asked to do in the exigencies of a busy season, he did it gladly and to the best of his ability.

In the Spring of 1911, he first showed signs of breakdown, and went on a trip with A. C. Bent to Alaska and the Aleutian Islands, in the hope that

his health might be benefited. His trouble, however, proved incurable, and he died March 1, 1913, after a particularly sad and lingering illness, mourned by his family and many friends.—FRED H. KENNARD.

THE American Society of Mammalogists was organized at Washington, D. C., at a meeting held April 3 and 4, 1919. There was a charter membership of over 250, of which 60 were in attendance.

The following officers were elected: C. Hart Merriam, President; E. W. Nelson, First Vice-President; Wilfred H. Osgood, Second Vice-President; H. H. Lane, Recording Secretary; Hartley H. T. Jackson, Corresponding Secretary; Walter P. Taylor, Treasurer. The Councilors are: Glover M. Allen; R. M. Anderson; J. Grinnell; M. W. Lyon; W. D. Matthew; John C. Merriam; Gerrit S. Miller, Jr.; T. S. Palmer; Edward A. Preble; Witmer Stone; and N. Hollister, Editor. Committees were appointed on: Life Histories of Mammals, C. C. Adams, Chairman; Study of Game Mammals, Charles Sheldon, Chairman; Anatomy and Phylogeny, W. K. Gregory, Chairman; and Bibliography, T. S. Palmer, Chairman.

The policy of the Society will be to devote its attention to the study of mammals in a broad way, including life histories, habits, evolution, palæontology, relations to plants and animals, anatomy, and other phases. Publication of the 'Journal of Mammalogy,' in which popular as well as technical matter will be presented, will start this year.

The annual dues are three dollars, for which members receive the journal. Anyone qualifying before the next annual meeting will be considered a charter member.

WE learn from 'Science' that the Parliament of Quebec has created the colonies of breeding waterfowl on the shores and islands of the Gulf of St. Lawrence, including the famous Bird Rock and the Gannet rookeries on the cliffs of Bonaventure, into one great preserve to be known as the Gaspé Bird Reserves.

IN a notice in the January 'Auk' Dr. Charles W. Townsend calls for notes of interest on the birds of Essex County, Mass., which may be incorporated in a supplement to his volume on 'The Birds of Essex County' published in 1905. Unfortunately the notice stated that these notes should be in hand by November 1, 1918, instead of 1919.

BIRDS IN THE MUSEUMS OF WARSAW.—In the 'Journal für Ornithologie' for April, 1918, pp. 286-287, Prof. Neumann has made an interesting statement regarding the two important collections of birds in Warsaw, Poland, belonging to the Zoölogical Museum of the University and the Branicki Museum.

The nucleus of the University Museum series was a collection made in Silesia by Von Minckwitz in the latter half of the eighteenth and early part of the nineteenth centuries. Both museums are rich in types of birds

from the two general regions of central and eastern Asia and certain parts of South America. The birds of Daurea, the Amur region, Kamchatka, and Korea are represented by the collections of Dybowski, Godlewski, Jankowski and Kalinowski, and form the basis of Taczanowski's great work 'Fauna ornithologique de la Sibirie orientale.' The University Museum also has some of Przewalski's types and Mlokosiewicz's birds from the Caucasus, and the Branicki Museum the Barey collections from the Transcaspian region and the Ferghana District of Turkestan.

From South America the University Museum has the collections of Jelski from Cayenne and Peru, and part of the Stolzmann material from Peru and Ecuador, while the later Stolzmann collections were deposited in the Branicki Museum. These birds formed the basis of Taczanowski's 'Ornithologie du Péron.' Stolzmann's work in Peru was continued by Jean Kalinowski whose collections were worked up by Count von Berlepsch and Stolzmann. The Branicki Museum also contains the birds obtained by Dr. Siemiradski in Argentina and Patagonia and those collected by Count Branicki in Egypt, Tunis and Algeria.

It appears that upon the approach of the German troops about 300 types and the entire collection of hummingbirds in the University Museum were sent to Russia but what disposition was subsequently made of them is not stated.—T. S. P.

THE activity of ornithologists in working up the birds of Africa is clearly shown by the fact that nearly 1000 new species and subspecies were described during the decade from 1905 to 1914. In the 'Journal für Ornithologie' for January, 1918, pp. 61-110, Dr. Reichenow has published a list of 979 new forms which have been named since the publication in 1905 of his work 'Die Vögel Afrikas.'

THE B. O. U. at its annual meeting honored several American Ornithologists. Dr. L. Stejneger was elected an Honorary Member, Dr. Joseph Grinnell and Mr. Outram Bangs, Foreign Members, and Mr. P. A. Taverner a Colonial Member. Mr. J. H. Fleming is likewise a Colonial Member though his name was accidentally omitted in a list recently published in these columns (Auk, 1918, p. 513).

SINCE the death of Dr. F. D. Godman a movement has been inaugurated by the B. O. U. to provide a suitable memorial of the work of Salvin and Godman. While the details of the plan have not yet been received it is understood that the proposed memorial will probably take the form of a gold medal to be given at certain intervals for specially meritorious work in ornithology.

EGG collecting in California seems to be developing along the lines of "Oölogical Museums." One of these, the Woodland Heights Museum of Analytical Oölogy, of which Milton S. Ray is Curator and Rose Carolyn

Ray Librarian, is located at Mr. Ray's home in San Francisco. The material consists of Mr. Ray's collection and some others which he has associated with it.

Another is the Museum of Comparative Oölogy of which Mr. W. Leon Dawson is Director and Secretary and Mrs. Etta A. Dawson Cataloguer. This consists chiefly of Mr. Dawson's collection, and that of Mr. F. C. Willard which was secured by donation. Each museum has a board of directors and list of correspondents or visitors, while the latter one has an elaborate system of fellows, patrons, members, collectors, etc., representing eight grades.

Mr. Dawson has recently issued the first number of the 'Journal' of this Museum, a pamphlet of 35 pages written entirely by himself and consisting of an advertisement of the Museum with an appeal for material and a sketch of the late R. G. Hazard, a trustee of the Museum. It is the hope of the director to secure sufficient funds to erect a museum building at Santa Barbara to house the collection which is now in temporary quarters at his home in that city.

THE 'American Museum Journal,' which under the able editorship of Mary Cynthia Dickerson has developed into one of the most important popular journals of science in America, begins its nineteenth year under the new title 'Natural History.'

This magazine, published monthly from October to May, is furnished to all members of the American Museum as one of the privileges of membership. It may also be secured at any time by subscription, at \$2.00 per year.

THE Franklin Book Shop, 920 Walnut St., Philadelphia, announces 'The Passenger Pigeon in Pennsylvania' by John C. French, edited and published by Henry W. Shoemaker; a volume of 257 pages, fully illustrated. Only 500 copies have been printed, and the work is for sale at the above address only; price \$1.00. A review will be published in the October 'Auk.'

THE Thirty-seventh Stated Meeting of the American Ornithologists' Union will be held in the American Museum of Natural History, New York City, November 11-13, 1919, with a business session of the Fellows and Members on the evening of the 10th. All members of the Society should keep the date in mind and arrange if possible to be present. The scientific sessions of the last annual meeting had to be cancelled owing to the influenza epidemic and only the business session was held, so that there will have been virtually an interim of two years since the last gathering of the Union. The cessation of the war and the return of many members from France will make the coming meeting one of the most noteworthy in the history of the organization.

The By-Laws provide that nominations to the classes of Fellows and Members shall be made in writing, signed by three Fellows or Members and delivered to the Secretary at least three months prior to the Stated Meeting. There is one vacancy in the class of Fellows and there will be opportunities for the election of 5 Members. Nominations should be in the hands of the Secretary not later than August 10 and should be accompanied by a full statement of the qualifications of the candidate including a statement of his work and a list of his publications if any. Nomination blanks may be had upon application.

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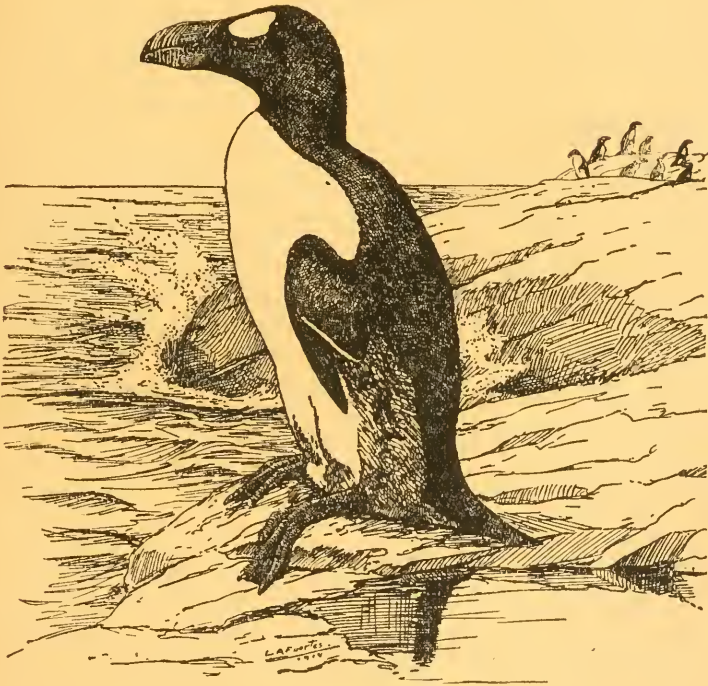
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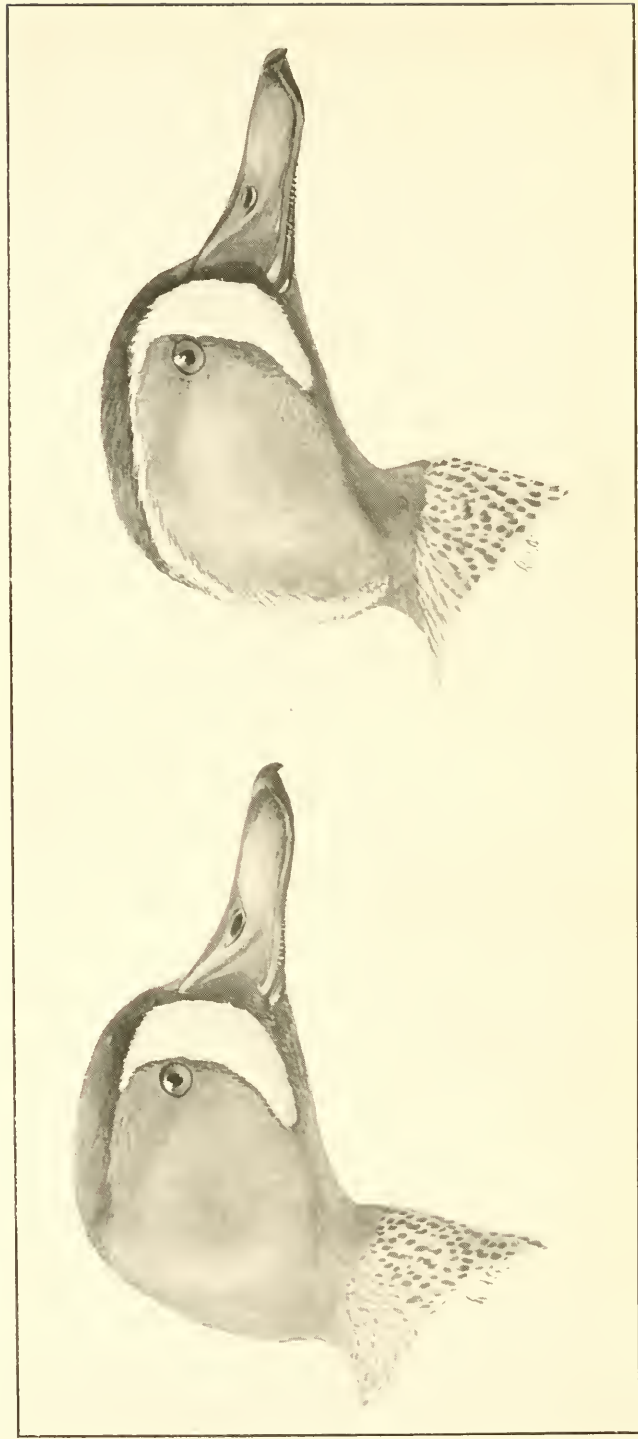
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1. BLUE-WINGED TEAL (*Querquetula discors discors*), Cayuga Lake, N. Y. April 16, 1909.
2. SOUTHERN TEAL (*Querquetula discors albinaucha*) Grand Chenier, La. April 2, 1916.

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NOTES ON A NEW SUBSPECIES OF BLUE-WINGED TEAL.

BY FRED H. KENNARD.

Plate XVII.

On February 2, 1916, I had the good luck to be one of the guests of Mr. E. A. McIlhenny on his extremely interesting family estate at Avery Island, Louisiana. We had been watching the hundreds of wild ducks of several species that were swimming or flying about one of the ponds, when Mr. McIlhenny pointed out what he called a "Southern Teal," which, he said, was the type of Blue-winged Teal that breeds in Louisiana. Now as I had never even heard of a "Southern Teal" and, until then, had never realized that any kind of Teal bred in Louisiana, I was, of course, very much surprised and interested.

The bird was paddling about at a distance of perhaps 150 to 200 feet, and could be told at a glance from its fellows. It was, apparently, an adult male Blue-winged Teal, in nuptial plumage, but with the crescent-shaped white spot in front of the eye continued over the eye as a thin white line down to the nape, where it converged with the line from the opposite side, in a conspicuous white patch.

We saw a number of these birds while staying at Mr. McIlhenny's and later heard of them at Grand Chenier in Cameron Parish, from

Mr. R. B. Worthen, a gunner and collector of wide experience. Later still, while staying on Mr. McIlhenny's houseboat on the Ward-McIlhenny Game Preserve, in Vermilion Parish, we again heard of the bird from his warden there, and saw numbers of them among the other Teal that were wintering in the adjacent sloughs. They are known locally as the "Neektie Teal" among the gunners and natives along the Louisiana marshes, and seem to be recognized by them as the resident breeding birds of the region.

Mr. McIlhenny writes, regarding the white patch on the nape, "all of the birds that nest in the south seem to have the marking faintly, and about fifteen to twenty per cent have it very pronounced."

Mr. Worthen writes, "From what I can learn about the White-crested Teal, they are the birds that breed with us All the Teal that I ever collected with the white crest were in pairs, and I think there is no doubt that they are the birds that stay with us, and the others go farther north to breed."

From the data that I have since been able to assemble, it appears that the Blue-winged Teal from the north begin to arrive along the Gulf Coast about the middle of September, and are there in large numbers until about the middle of October, when many of them leave for the south. By the first of December, the great majority of the large flocks have departed, though some birds remain throughout the winter. Mr. McIlhenny writes that "the regular migration of Blue-winged Teal from the north begins about the middle of September, and most of them have left by the end of October, although a great many stay here all winter," while Mr. Worthen states, "The Blue-winged Teal arrives here from the north from the 15th of September to the 15th of October and stays until the first of December and then goes farther south; some stay all winter."

After spending the winter farther south, these northern birds return to Louisiana, usually some time in March, and, picking up their fellows who happen to have wintered there, wend their way north early in April, practically all of them having departed by May 1. Of this northern movement Mr. McIlhenny writes, "There is a heavy migration in the spring, about March 10th. The birds increase in numbers until April 1st, when they begin to decrease and leave only resident birds in the marshes," and Mr. Worthen,

writing of the northern bird, says, "The Blue-winged Teal stays with us until about the first of April, and sometimes as late as May 1st."

With regard to the Southern Teal, it is difficult to say what proportion pass the winter on their breeding grounds or how many of them migrate. They are common during the winter, according to my own observations, in Iberia, Vermilion and Cameron Parishes, and, presumably, all along the Louisiana coastal marshes. Several specimens have been taken in Florida, where the bird may breed, and even as far east as the Isle of Pines and Andros Island. They have been taken in Texas and in Mexico, where they undoubtedly breed, and as far south as Costa Rica; and I have seen two specimens from Arizona and one from Lower California.

Mr. Louis Agassiz Fuertes writes of seeing them at Waldo, Texas, April 19, 1901, when he made a sketch of a specimen; and again in Mexico, "south of Tampico in the state of Tamaulipas, between April 18th and 21st, 1910," when he saw a flock of seventeen males, several of which were shot, but which unfortunately, owing to press of other work, were not made up into skins.

The Southern Teal starts nesting in Louisiana early in March, for Mr. McIlhenny writes, under date of April 3, 1919, "Blue-winged Teal are now nesting here, and there are a number of broods of young already hatched," and Mr. Worthen writes, "In regard to the breeding season of the Southern Blue-winged Teal, from what I know and what I can learn from the natives here who hunt, they have found the nest as early as the first of March. . . . I have found but one nest, and that was last April. I killed the male bird, and he was a fine specimen, with white running down the back of his head."

During the past year I have examined specimens in several collections, and am in receipt of data from a number of others scattered throughout the United States and Canada. Of the Teal examined, one hundred and thirty-eight were adult males in nuptial plumage, of which fifty-one were without doubt northern breeding birds, taken actually on the breeding ground or on the way there. Of these, twelve, taken in various places from North Carolina and Kansas to Manitoba, showed signs of southern blood, seven with the markings showing fairly distinctly, and five with the markings very faint. This intergradation, however, is only what should

be expected, in view of the mixup of the birds during the winter migration.

Owing to the fact that the Southern Teal begin nesting before the Blue-winged Teal depart for the north, it is difficult to separate the southern breeding birds, but of twenty-eight typical Southern Teal examined, all taken in the south, eighteen were probably breeding birds, while of a series of ten birds that were certainly breeding, collected on the breeding grounds in the second week in May, after all the northern birds had departed, all showed the diagnostic markings very distinctly, in spite of the worn state of the plumage.

Of the one hundred and thirty-eight Teal examined, only three typical Blue-winged Teal were apparently breeding in the south. One was taken at Ingram, Texas, and might have been a wounded bird; and the other two were taken in Arizona, where the two forms seem to meet, as both have been taken there during the breeding season.

Regarding the plumage of the Blue-winged Teal, Mr. A. C. Bent, who has specialized somewhat on the subject, writes me that "the moult into the eclipse plumage begins in July. The eclipse plumage is complete in August and often lasts through September." In this plumage, so far as I know, the male Southern Teal is indistinguishable from the northern bird, and I have been unable to distinguish any difference between the females of the two forms at any season. This would seem to account for the fact that among all the specimens examined there were no autumn birds with the southern marking. Continuing, Mr. Bent says, "The moult out of the eclipse begins in September, but the progress of this moult is so slow that the full plumage is seldom complete before the middle of winter, and sometimes not until March." As a usual thing, however, the Southern Teal seems to acquire its full plumage in February, when the diagnostic markings are most distinct.

The typical Blue-winged Teal of the north is shown in Mr. Fuertes' sketch, and of them, perhaps twenty per cent may have the white crescentic patch in front of the eye, elongated a trifle just above the eye, but this must not be confused with the marking of the Southern Teal, in which the white nuchal patch seems diagnostic.

In the typical Southern Teal, shown by Mr. Fuertes, the cres-

centic patch in front of the eye is continued in a thin white line over the eye down to a conspicuous nuchal patch. The feathers along the lower side of the line have their upper halves white throughout their entire length, while the feathers along the upper side of the line have their lower halves white, thus accounting for the thinness of the line. The feathers of the nuchal patch are variegated, some of them part white, and some of them wholly white, and the markings on this bird should remain distinct until the moult into the eclipse plumage. According, however, to my data, and according to Mr. McIlhenny's observations also, only about one in six or seven of the Southern Teal is so heavily marked. In the majority of cases the diagnostic markings are extremely evanescent, many of the feathers having white tips only, which seem to wear away, until in June, and before the moult into the eclipse plumage takes place, nothing may remain of these markings but a few very worn white-tipped feathers at the nape.

While, personally, I am not quite in sympathy with all the sub-specific separations in which some of our systematic ornithologists at present indulge, it appears to me that the evidence collected would seem to show that the Southern Teal, conspicuously marked as it is, and breeding as it does in a range well separated from its northern cousins, is certainly worthy of sub-specific separation, and I suggest that, with due acknowledgment to Mr. McIlhenny, who seems to have been the first to accord the bird its proper recognition, we give it a descriptive name, as follows:

Querquedula discors albinucha subsp. nov.—SOUTHERN TEAL.

Type.—From Grand Chenier, Cameron Parish, Louisiana. Adult male. Collection of F. H. Kennard, April 2, 1916.

Characters.—Similar to *Querquedula discors discors*, except that in the nuptial plumage of the male, the crescentic white patch in front of the eye is continued over the eye in a thin superciliary line down to the nape, where it meets the line from the opposite side to form a white nuchal patch.

Range.—Breeds commonly in Louisiana, and possibly as far east as Florida, also, undoubtedly, in Texas and Mexico, and possibly as far west as Arizona and Lower California. In winter it has been taken in the Antilles and as far south as Costa Rica.

At first thought it seems odd that a bird so well marked as this should have escaped notice for so many years; but when one takes

into consideration the evanescence of the diagnostic markings, and the inaccessibility of the coastal marshes where the bird breeds, together with the fact that the few ornithologists who seem to have visited them were generally armed only with cameras, it is perhaps not so odd after all.

In assembling the data upon which these notes are based, besides those already mentioned, to whom I am particularly indebted, my thanks are due to Messrs. Stanley C. Arthur, O. Bangs, Howarth S. Boyle, William Brewster, Jonathan Dwight, J. H. Flemming, Harry C. Oberholser, Wilfred H. Osgood, T. S. Palmer, H. S. Swarth, P. A. Taverner, W. E. Clyde Todd, and John E. Thayer.

THE SYSTEMATIC POSITION OF THE RING-NECKED DUCK.

BY N. HOLLISTER.

THE group of fuliguline Ducks now called *Marila* in the American Ornithologists' Union 'Check-List' has had its full share of nomenclatorial shifts and changes, and many schemes have been proposed for its division into genera or subgenera. It has always seemed to me that the question of the number and rank of the named super-specific sections within this group is of little importance in comparison to the error involved in the sequence given the species in the 'Check-List,' where the Canvasback is placed between the Redhead and the Scaups, and the Ring-necked Duck is put at the end of the series in the typical subgenus *Marila*.

From a study of the literature of American Ducks it is evident that the belief prevails that the Ring-necked Duck (*Marila collaris*) is a Scaup, very closely related to the Greater and Lesser Bluebills (*Marila marila* and *M. affinis*), and this error is fostered by the arrangement of the species in the 'Check-List.' One would indeed be led to believe from some accounts that the Ring-neck is not readily distinguished from the Lesser Scaup Duck (*M. affinis*)

and that the brownish ring on the neck and the gray speculum are the only important characters of differentiation. A long acquaintance with the Ring-neck in Wisconsin, where the bird is at times one of the commonest ducks killed over decoys, has led me to associate the Ring-neck in a general way with the Redhead rather than with the Scaups. A recent examination of all the species of the group in the National Museum collection convinces me that I have been correct in considering *collaris* much more intimately related to the Redhead than to the Bluebills, and that it is indeed a Pochard¹ rather than a Scaup. One of the principal characters in general use for the separation of a subgenus *Nyroca* in *Marila* is the virtually parallel-sided bill of most species of *Nyroca* as opposed to the slightly broader-tipped bill of typical *Marila* (the Scaups). In this character the Ring-neck is distinctly Pochard instead of Scaup, and its continued association with the latter is surprising.

The Ring-necked Duck is unquestionably the American representative of the Old World Tufted Duck (*Marila fuligula*), and the color of the speculum and the degree to which the birds are crested are the chief, although of course not the only, differences between them. Our Ring-neck is distinctly crested, the Tufted Duck has a complete crest, while a near relative in New Zealand (*Marila novaezeelandiae*) has virtually no crest at all. In coloration *collaris* resembles certain Pochards quite as much if not actually more than it does the Scaups. It is not infrequent that the generalized coloration of the females, which is a good indication of the close relationship, makes it difficult for the sportsman to be certain if a freshly killed bird be a small Redhead or a large Ring-neck. Aside from its blackish head the male Ring-neck in no way very much resembles a Scaup in coloration, while it has several of the characteristic items of color and color pattern frequently met with in Pochards of various species. The Pochards usually have reddish heads, but the brownish neck-ring in *collaris* is probably the remains of a once reddish neck and head in the species; one of the Asiatic Pochards (*Marila baeri*) sometimes shows a considerable patch of reddish color in its otherwise blackish-green head. In connection

¹ I use Pochard as the English equivalent for *Nyroca* of authors as opposed to the name Scaup for species of typical *Marila*.

with this persistence of the reddish mark on the neck of the male *collaris* it is interesting to note that the brown ring is completely hidden in life when the Duck is in repose. In the National Zoological Park, where the birds may be watched at close range, it often requires continuous observation of a swimming male Ring-neck for a considerable period to get a glimpse of the collar, which is seen then only when the head is extended.

The elimination of *collaris* from the typical subgenus *Marila* would naturally bring up the question of the dismemberment of *Marila* into two or more genera, a problem which experienced ornithologists have attempted without happy results, or after long study have given up as impossible. Groups approximately equivalent to the *Nyroca* and *Marila* of the 'Check-List' have been recognized as genera by many authors, and recently the division of *Marila* into three full genera, *Nyroca*, *Marila*, and *Aristonetta*, has been advocated.¹ In effect of course this does nothing more than to raise the three subgenera of *Marila*, as recognized in the A. O. U. 'Check-List,' to the rank of genera. The Ducks of this group seem to me, considering all the known forms, so intimately blended as hardly to justify even subgeneric division. I am well aware that numerous "characters" may be found to divide them into groups, even to making several full genera; but such distinctions will always be a matter of personal opinion, and sometimes do not show sufficient concern for the apparent derivations of the forms. The genus *Marila* in an unrestricted sense is a fine example of a cosmopolitan, homogeneous group of birds, not large enough to be unwieldy — and why split it up? To be really consistent in such a division of *Marila* as has been suggested, the Redheads would have to be separated from *Nyroca*, as the type of this subgenus (*Marila nyroca*) differs as much in many features, and particularly in the form of the bill, from our Redhead and from *Marila ferina* (the type of *Aythya* Boie, 1822) as all do from the type species of the subgenus *Marila* (*M. marila*), which in turn differs very appreciably in the form of the bill from *Marila affinis*, the Lesser Scaup. As for "*Aristonetta*," I think that the European Pochard (*Marila ferina*) presents almost as perfect an intermediate, in the form and

¹ Oberholser, Proc. Biol. Soc. Washington, vol. 31, p. 98. June 29, 1918.

proportions of the bill, between the Canvasback and the Redhead as one could expect to find among distinct species in nature. It would seem to me just as reasonable to associate *ferina* and *valisineria* together in a group called *Aythya*, with the Redhead excluded, as to put *M. americana* and *ferina* together, leaving the Canvasback in a special genus of its own. Considering both color and structural characters, it would be difficult to say which species, the Canvasback or the Redhead, actually represents *ferina* on the American continent.

The next edition of the A. O. U. 'Check-List' will have two additions to this group, the Tufted Duck (*Marila fuligula*) and the European Pochard (*M. ferina*); specimens of both these species having been captured on St. Paul Island.¹ It seems to me that the birds should be arranged in this next 'Check-List' in the following order: Canvasback, European Pochard, Redhead, Ring-necked Duck, Tufted Duck, Lesser Scaup Duck, Greater Scaup Duck. Personally I do not see any way to separate *Marila* into valid genera, and I think the genus should be left without any subdivision at all; but if we must recognize intergrading subgenera or must have a distinctive name for every minor superspecific group, I hope that such divisions of *Marila* as are deemed necessary will not interfere with this apparently logical sequence for the species.

¹ Evermann, *Auk*, Vol. XXX, p. 17. January, 1913.

JACOB POST GIRAUD, JR., AND HIS WORKS.

BY WITMER STONE.

Plate XVIII.

IT has always seemed to the writer a duty of present-day ornithologists to save from oblivion as many of the facts as possible concerning the lives of those who long ago laid the foundations of our science, and he has accordingly from time to time prepared biographical sketches of some of the older American ornithologists, concerning whom little or no record has appeared in our published literature.

With the object of furthering this work Mr. William Dutcher, at the meeting of the Council of the American Ornithologists' Union in New York City, in November, 1918, submitted to him some memoranda that he had collected relative to the life of J. P. Giraud, Jr., the pioneer writer on the birds of Long Island, a field in which Mr. Dutcher himself is a notable authority and a worthy successor to Giraud. A photograph of the ornithologist was also loaned for reproduction and forms the basis of the plate which accompanies the present sketch.

Finding that there were several gaps in Mr. Dutcher's notes, the preparation of the sketch has been delayed until search might be made for the missing information, and in this connection the writer is under great obligations to Dr. George Bird Grinnell and Dr. T. S. Palmer. Indeed, he feels that his part in the preparation of the sketch has been simply that of arranging and editing the materials that these gentlemen and Mr. Dutcher have brought together.

Jacob Post Giraud, Jr., was born in New York City on August 22, 1811. His father presumably bore the same name, as in the older city directories there are listed Jacob P. Giraud and Jacob P., Jr., and as time went on the younger man occupied the same residence at No. 4 West 13th Street that was formerly the home of the elder. One of Giraud's brothers was the grandfather of the late Daniel Giraud Elliot, while another brother, Daniel Giraud,



Photograph and Autograph of J. P. Giraud, Jr., pasted on the fly-leaf of a copy of 'The Birds of Long Island,' purchased in a book store in Philadelphia and now in the library of William Dutcher.

was the man after whom Dr. Elliot was named. According to Dr. F. M. Chapman's sketch of Dr. Elliot's life (*Auk*, 1917, p. 1) the Giraud family was of French ancestry and settled originally at New Rochelle, N. Y., moving some two centuries ago to New York City.

Giraud was engaged in business at 138 Front St. as a dealer in provisions and resided at 44 Laurel St., 26 Walker St., and at Bergen, N. J., removing later to 4 West 13th St. Dr. Grinnell finds his name in all the directories from 1837 to 1859, in which year or soon after he moved to Poughkeepsie, N. Y., where he seems to have become somewhat of a recluse, and he died at his residence on the South Road some two miles below Poughkeepsie on July 19,¹ 1870.

A letter received by Mr. Dutcher from the late George N. Lawrence, written in 1893, is the best account of Giraud that we have and is unquestionably reliable, as Mr. Lawrence knew him well. He writes: "Jacob P. Giraud was born in New York and his business was that of a dealer in provisions. It seemed to consist mainly of furnishing supplies to the shipping. He had not the lively, companionable manners of his friend P. Brasher, but was rather reserved. He was perfectly reliable, firm in his friendships and very decided in his opinions.

"The publication of his 'Sixteen New Birds from Texas' was quite a surprise, and established the fact that there was something of importance to be done in a scientific way besides making a collection. He did not skin birds, and everything in the way of taxidermy was done for him by John G. Bell. He was careless in examining bird skins, and generally they left his hands with the feathers disarranged.

"After getting married he went to reside in New Jersey on the heights and became quite interested in gardening. He gained some notoriety from having succeeded in bringing two crops of corn to maturity on the same piece of ground in one season.

"I was desirous to get his photograph, but he was averse to having it taken. After he moved to Poughkeepsie and gave his

¹ *Amer. Jour. of Sci. and Arts.* (1870, p. 293) although Poughkeepsie papers gave the date as July 18 (T. S. Palmer).

collection to Vassar College, some of the young ladies induced him to sit for one, and a copy was sent me by Prof. Orton. After going to Poughkeepsie he did nothing more in ornithological investigation, but occasionally delivered a lecture to the college students."

Besides presenting his collection to the college he also bequeathed to the institution \$30,000, to be paid at the time of his wife's death, and two other bequests for the completion of his collection of North American birds. In 1890, probably at the time of Mrs. Giraud's death (she was living in 1887 at an advanced age), the courts revoked one-half of the main bequest and one of the additional ones, leaving only \$2,000 for the purchase of additional birds. With regard to the collection, Prof. Wm. B. Dwight, professor of Natural History at Vassar in 1887, wrote Mr. Dutcher that they had a catalogue in Giraud's own handwriting prepared in October, 1867, which consisted of a list of the specimens with an explanation of the scientific names, but with rarely any additional data. Occasionally a specimen was marked "from Long Island" or "from Texas," but nothing further.

Prof. Spencer F. Baird, when as a young man he visited New York in 1841, met Giraud at the shop of John G. Bell, the taxidermist, and was invited to inspect his collection, which Baird pronounced the finest collection of American birds that he had ever seen. Giraud gave Baird a number of specimens of shore birds and others which he did not have and promised him more the following season. Baird was at this time eighteen years of age, while Giraud was a man of thirty.

Giraud's contributions to ornithological literature were two in number, both notable works and both today rated among the rarest books of their kind.

The first was entitled: "A Description of Sixteen New Species of North American Birds described in the Annals of the New York Lyceum of Natural History. By Jacob P. Giraud, Jr. Collected in Texas, 1838. New York. George F. Nesbitt, printer, Tontine Building, corner of Wall and Water Streets. 1841."

It is a folio of eighteen leaves and eight plates, neither paged nor numbered. Of the sixteen species described only fourteen are figured. The plates are drawn by "A. Halsey Esqur." and the lithography is by N. Carrier, 2 Spruce St., N. Y. This work has been the cause of no little controversy, since, on account of

its rarity, the new names proposed in it were not generally recognized,¹ while the fact that the birds were really obtained in Texas was almost immediately questioned. While many of them have since been actually found in the United States, either in Texas or Arizona, it is certain that the collection as a whole never came from Texas. All of the species occur in Mexico, but it is questionable whether they all came from any one locality in that republic, since some of them, as shown by the types, all but three of which are preserved in the U. S. National Museum, represent races which are found only in southern Mexico. In spite of the widely expressed doubt as to the correctness of the locality, Giraud, according to Dr. Coues, stoutly maintained to the day of his death that they were taken in Texas. He never described them in the 'Annals of the New York Lyceum,' as he states on the title page, nor did he ever present any information as to who collected them or how they came into his possession. The text to the plates consists of descriptions only, with a line or two of dedication in the case of species which were named after individuals. Before the descriptions, however, there is an introductory page on which are given the names of other species contained in his "Texan" collections. This page is as follows: "In adding to my collection a number of specimens of various genera and species received from Texas, I discovered many of those species procured by Dr. Townsend and others during their 'journey across the Rocky Mountains,' which induces me to believe that many of these species that visit the Columbia River pass the winter in Texas. Figured and described in Audubon's American Ornithology." Then follows the list:

- "Harris's Woodpecker. *Picus Harrisii* Audubon.
Red Shafted Woodpecker. *Colaptes Mexicanus* Swainson,
Picus Mexicanus Audubon.
Black Headed Grosbeak. *Coccyzus Melanocephalus* Swainson,
Fringilla Melanocephalus Audubon.
Evening Grosbeak. *Coccothraustes Vespertina* Swainson and
Richardson, *Fringilla Vespertina*, Cooper, Bonaparte, Audubon.
Crimson Fronted Finch. *Pyrrhula Frontalis* Bonaparte
and Nuttall, *Fringilla Frontalis* Audubon.

¹ P. L. Sclater published an account of it (P. Z. S. 1855, p. 65) with the identity of such of the species as had been previously described.

- Western Blue Bird. *Sialica occidentalis* Townsend, Audubon.
 Say's Fly Catcher. *Tyrannula Saya* Swainson and Richardson,
Muscicapa Saya Bonaparte, Nuttall, Audubon.
 Rocky Mountain Fly Catcher. *Tyrannula Nigricans* Swainson,
Muscicapa Nigricans Audubon.
 Audubon's Wood Warbler. *Sylvia Audubonii* Townsend
 and Audubon.
 Yellow Headed Troopial. *Angelanius Xanthocephalus* Swainson
 and Richardson, *Icterus Xanthocephalus* Bonaparte, Nuttall
 and Audubon.
 Arctic Blue Bird. *Sialia Artica* Swainson, Nuttall, Audubon.
 Violet Green Swallow. *Hirundo Thalassinus* Swainson,
Hirundo Thalassina Audubon.
 Townsends Wood Warbler. *Sylvicola Townsendii* Nuttall,
Sylvia Townsendii Audubon.
 Hermit Wood Warbler. *Sylvicola Occidentalis* Townsend,
Sylvia Occidentalis Audubon.
 Arkansas Fly Catcher. *Tyrannus Verticalis* Say, *Muscicapa*
Verticalis Audubon, Bonaparte, Nuttall.
 Brown Song Finch. *Fringilla Crinerea* Gmel and Audubon.
 Oregon Snow Bird. *Fringilla Oregona* Townsend and Audu-
 bon.¹

"With the present heretofore undescribed species, which I have the gratification of introducing into the American Fauna.

Measurement taken from dried Specimens.

J. P. GIRAUD, Jr."

For the convenience of those who may not have access to the original volume, the list of species as given in the text headings, with their present-day equivalents as determined by Mr. Robert Ridgway (Birds of North and Middle America), is appended. The plates contain English names only which differ sometimes in spelling:

"Audubon's Oriole, *Icterus audubonii* [no figure] = *Icterus melanocephalus audubonii*, Audubon's Oriole.

Texan Fly Catcher, *Muscicapa texensis* = *Myiozetetes texensis texensis*, Giraud's Flycatcher.

Lawrence's Fly Catcher, *Muscicapa lawrenceii* = *Myiarchus lawrenceii lawrenceii*, Lawrence's Flycatcher.

¹ Errors and misspellings copied verbatim.

- Buff Breasted Fly Catcher, *Muscicapa fulvifrons* = *Empidonax fulvifrons fulvifrons*, Fulvous Flycatcher.
- Halsey's Warbler, *Sylvia halseii* = *Dendroica nigrescens*, Black-throated Gray Warbler (autumn female).
- Derham's Fly Catcher, *Muscicapa derhamii* = *Myioborus miniatus miniatus*, Red-bellied Redstart.
- Bell's Fly Catcher, *Muscicapa belli* = *Basileuterus belli belli*, Bell's Warbler.
- White Cheeked Titmouse, *Parus leucotis* = *Ergaticus ruber*, Red Warbler.
- Texan Finch, *Fringilla texensis* = *Astragalinus psaltria mexicanus*, Mexican Goldfinch.
- Azure Capped Manakin, *Pipra galericulata* = *Euphonia elegantissima*, Blue-hooded Euphonia.
- White Shouldered Fly Catcher, *Muscicapa leucomus* = *Setophaga picta picta*, Painted Redstart.
- Brazier's Fly Catcher, *Muscicapa brasierii* = *Basileuterus culicivorus brasierii*, Brasher's Warbler.
- Red Fronted Fly Catcher, *Muscicapa rubrifrons* = *Cardellina rubrifrons*, Red-faced Warbler.
- Olive Backed Warbler, *Sylvia olivacea* = *Peucedramus olivaceus*, Olive Warbler.
- White Throated Wren, *Certhia albifrons* = *Catherpes mexicanus albifrons*, Giraud's Canyon Wren.
- Lesser Shore Lark, *Alauda minor*. [no figure] = *Otocoris alpestris chrysolama*, Mexican Horned Lark."

It will be noticed from the above that no less than nine of the sixteen were really undescribed species and still bear today the specific names which Giraud bestowed upon them, while seven have been found to be inhabitants of either Texas or Arizona.

A word about the men after whom Giraud named a number of his new species may not be out of place. All were his personal and ornithological friends. Audubon and Lawrence need no introduction. Abraham Halsey, who drew the plates, was according to Giraud, the president of the Brooklyn Lyceum of Natural History; Derham he refers to as "the lamented Cassimere H. Derham." In the 'Annals of the New York Lyceum' of which society he was a mem-

ber, his name appears as H. C. DeRham. The failure to capitalize the second part of his name in Giraud's work has resulted in the bird being sometimes quoted as *Durhami*, so anxious are some to emend names to a supposedly correct form! John G. Bell was the well-known taxidermist, "devoted to natural history," to quote Giraud, and Philip Brasher was a close friend and collector of Long Island birds who apparently did not appear as the author of any ornithological contributions. His name also suffered two misspellings, as may be seen above. The appearance of Giraud's own name in connection with the Texan Horned Lark *Otocoris alpestris giraudi* in later works, requires a word of explanation. Mr. Henshaw in his review of the Horned Larks (Auk, 1884, p. 260) states that this Texan race is the bird that Giraud described as *Alauda minor*, as he ascertained by examining the type, but this name being pre-occupied he renamed it in honor of its original describer. Mr. Ridgway, however, examining the same type many years later, decides that it belongs to the Mexican race *O. a. chrysolæma*. Be this as it may, I am sure no one will begrudge Giraud the well-merited recognition that was in error conferred upon him.

Giraud's other work "The Birds of Long Island," published by Wiley and Putnam, 161 Broadway, New York, in 1844, was the best piece of local ornithological work that had appeared up to that time, and is still the leading authority upon Long Island birds, though of course important additions have been made to the list of species by later ornithologists who have followed in Giraud's footsteps.

The work, moreover, is of great historic value today, since it gives us a reliable picture of water-bird life in early times, when many species now rare were of common occurrence, while there is frequent incidental mention of birds from other parts of the eastern United States. He who possesses a copy of this classic with the gilded representation of the Heath Hen on the back of the cover may well count himself fortunate. Dr. Elliott Coues apparently did not estimate this work of Giraud's at its true value in his 'Bibliography,' as he dismisses it with very curt mention. His remark, "Audubon's classification and nomenclature," moreover, is not strictly correct, and several species not mentioned by Audubon are added. That the latter fact escaped Dr. Coues' keen eye is rather remarkable. The changes from Audubon's nomenclature

are the substitution of *Turdus minor* Gmelin for *T. solitarius* as the name of the Hermit Thrush, and the recognition of the generic name *Calidris* for the Sanderling.

Anas penelope, the European Widgeon, is added to the fauna of North America on the basis of a specimen secured by Mr. George N. Lawrence, while two new species are described, *Turdus olivaceus*, the Olive-backed Thrush, and *Fuligula minor*, the Lesser Scaup Duck. In the latter case Giraud was anticipated by a few years by Eyton, who described the bird as *F. affinis*, while in the former he unfortunately selected a name that was already in use for another bird, so that neither of his technical names stand, though both of the vernacular names that he proposed are still in use.

In view of the rather crude nature of the text of his earlier work, as may be judged from the introduction quoted above, the style of "The Birds of Long Island" is rather surprising, and one wonders if it did not receive some editorial supervision from another hand. This, however, would in no way affect the value of the contents nor the credit due the author.

It is a favorite, though somewhat dangerous practice, to speculate upon the influence of one man upon the career of another. Foster in his bibliography of the writings of George N. Lawrence says: "Fortunate was it for ornithological science when, in 1841, Prof. Baird and Mr. George N. Lawrence formed an acquaintanceship, which soon ripened into a close and lasting intimacy. Stimulated by this, Mr. Lawrence then commenced the scientific study of birds." Mr. Foster evidently did not stop to think that, on the occasion of the meeting he describes, Lawrence was a man of thirty-five years of age and the possessor of a fine cabinet of birds, while Baird was a youth of eighteen, on one of his first trips from his home in Carlisle, where he had made a small collection but had as yet published nothing!¹ If the meeting produced any result, it was rather due to the influence of Lawrence upon young Baird, and doubtless the youth was even more influenced by Giraud, whose collection he saw and praised so highly. Moreover if we may be pardoned for engaging in speculation, Lawrence's mention of the publication of Giraud's 'Sixteen New Species,' in his letter to Mr. Dutcher, as being a surprise and establishing the fact that

¹ In this connection attention might be called to the brief obituary notice of Giraud in the Amer. Jour. of Science and Arts, 1870, p. 293; in which he is referred to as a particular friend of Alexander Wilson. As Giraud was but two years old at the time of Wilson's death the intimacy could hardly have been close!

there was something of importance to be done in a scientific way besides the making of a collection, is significant. Only a few years later Lawrence, who up to then had published nothing, began to issue the first of the long series of ornithological papers and descriptions of new species which made him famous. Audubon at this time must have dominated the ornithological field, and perhaps Giraud, in launching out on his own account, did even more by his example, to advance ornithological science than by the actual value of his publications.

FURTHER NOTES AND OBSERVATIONS ON THE BIRDS OF HATLEY, STANSTEAD COUNTY, QUEBEC, 1918.

BY H. MOUSLEY.

IN the present paper I propose to adopt the same principle as in my previous one (Auk, Vol. XXXV, 1918, pp. 289-310), *i. e.*, of first giving a general account of the season, following this up with an annotated list of the five new species added during the year while carrying on the numbering from where it left off in 1917.

In addition to these five new species, the breeding list has been increased from seventy-seven to eighty-three species, the six new ones, whose nests, eggs or young had not been previously taken, being the Virginia Rail, Ruby-throated Hummingbird, Wood Pewee, Purple Finch, Bay-breasted Warbler and House Wren, whilst circumstances point to the fact of the Olive-sided Flycatcher, Cape May Warbler and Golden-crowned Kinglet having bred also, so that a dagger may now be added to their names in the list already given of the birds to be found at Hatley, as well as a star to the above-mentioned six species.

Now on reference to the above paper it will be seen that the months of November and December, 1917, had been conspicuous for the almost entire absence of winter birds, and as the intense cold

still prevailed during the first few months of 1918 it hardly seemed likely that I would obtain any early records, and yet how often the unexpected happens. The last few days of 1917 had seen the thermometer down to as low as minus twenty-two degrees, with a rise, however, in the New Year on January the second, to zero. On the ninth of this month a Brünnich's Murre was picked up to the south of the village in an exhausted condition, dying the next day. This bird no doubt had been driven in by the easterly gales that raged in the early part of December, as two others were obtained (as already recorded) about the middle of that month at North Hatley. It was mounted by Mr. Greer for its captor, Mr. Will Hunter of Hatley, and weighed 1 lb. 6 oz., being in an emaciated condition. From the ninth to the twenty-fifth nothing was seen except a few small flocks of Snow Buntings, but on the latter date a Northern Shrike paid a visit to my garden, and I think took toll of an English Sparrow. A few days previous to this or, to be precise, on the twenty-second, I was looking over some birds at Mr. Greer's, and had the pleasure of identifying a Ring-billed Gull which was then in the flesh. The bird had been taken in a marsh adjoining Lake Massawippi, and not so far from the village of the same name, somewhere about the ninth of December, it having been driven in also, no doubt, by one of the severe easterly gales already referred to. The bird, which was to be mounted for Mr. E. H. English of Massawippi, was a young one, apparently in the first winter plumage, being irregularly mottled and with other immature traces besides. It has already been recorded in 'The Auk,' Vol. XXXV, 1918, No. 2, p. 241.

Nothing further of interest occurred until February 25, when the first Crows were heard, this date forming a record one, as my previous earliest was March 1, 1915 and 1917. On the last day of the month a large flock of Snow Buntings was observed, also two Prairie Horned Larks, this date being just two days ahead of any previous year.

More than a week now elapsed before the first real surprise came in the shape of a rosy male Purple Finch and three females. On March the ninth, or nearly six weeks ahead of the previous earliest record, April 19, 1916. The next arrival was a Robin on the twentieth, and the day following a Bluebird and Song Sparrow, all of

these three being records by just a few days, the most being six in the case of the Song Sparrow.

On the twenty-second another surprise came, a Marsh Hawk and Meadowlark being seen on that day, both of these records curiously enough being twenty days ahead of time, the previous earliest being April 11, 1917, in the case of the former, and April 11, 1915, in that of the latter. Bronzed Grackles and Red-shouldered Hawks were also seen on this date, and the day following a Junco and Red-winged Blackbird, and a Migrant Shrike on the thirty-first, but none of these call for any special notice.

Phœbes, Tree Sparrows, Goldfinches, Savannah and Vesper Sparrows as well as a Sharp-shinned Hawk were seen between April the first and sixth, and on the seventh I obtained my first spring record for Fox Sparrows, having only seen them in the fall previously. Another surprise came on the eighth, a Flicker being noted ten days ahead of previous records, and on the twenty-fourth I found a Migrant Shrike's nest with five eggs, my previous earliest being May 10, 1916, for a full set.

The month of May was responsible for many interesting items, not the least being the abundance of many of the Warblers, especially the Blackburnian, Black-throated Blue, Black-throated Green, and Canada, as well as a fair sprinkling of the Nashville and a few Northern Parulas. The Tennessee, Pine, Yellow Palm and Wilson's Warblers, however, did not put in an appearance, or at least if they did I failed to detect them, although they were all recorded in the fall migration. It may be interesting in passing to compare my experience with that of Mr. Robert Barbour and others as recorded in 'The Auk,' Vol. XXXV, 1918, No. 4, pp. 484-485; wherein it is complained of the general scarcity of birds this year and especially of the Warblers both at Montclair, New Jersey, and also in Central Park, New York.

Cowbirds were again scarce, and no instance came under my notice of any Warbler or other species having been victimized. White-crowned Sparrows reverted to the old order of things and were scarce this spring, the only one seen being on the fourteenth in my garden, although in the fall they appeared (for them) in goodly numbers again.

On the twenty-fourth one male Indigo Bunting was seen about

three miles to the north of Ayers Cliff, also four Yellow Warblers as well as a Meadowlark. As regards the latter species, things have not materialized as I had expected, for, although their very early arrival gave promise of an increased number of breeding pairs, I have failed to notice them, in fact the bird mentioned above is the last record for the year so far as my own observation goes, although Mr. Greer saw one on November 12. The pair that nested in the meadow near my house in 1917 failed to do so this year, although they frequented the same ground from March 22 to April 20 and then disappeared, probably to carry out the decree of nature by extending their range in these parts, as they certainly are new birds to the area within recent years. On the twenty-seventh a pair of Warbling Vireos visited our orchard, and I had hopes of their remaining to breed, but they left in the afternoon. Two days later the unmistakable notes of a Whip-poor-will were heard, and on the thirty-first or last day of the month I obtained a male example of a Black-poll Warbler out of an apple tree in our orchard, this elevation being rather over 1,000 feet above sea level. This example made the second only seen in eight years, the previous one being near Ayers Cliff on May 28 of last year as already recorded, the elevation of that locality not being much over half that of the present one.

The advent of June brought high hopes of an abnormal nesting season for Warblers, and such proved to be the case, for never in my experience have I located so many breeding pairs of Black-throated Blue, Black-throated Green, Blackburnian and Canada Warblers. In addition to finding the nests and eggs of all the above (one nest of the Canada Warbler being a beautifully domed example similar in every respect to a miniature Ovenbird's), I also came across those of the Northern Parula, Magnolia, Chestnut-sided and Maryland Yellow-throat.

The greatest red-letter day of all, however, was June 24, when I saw for the first time in summer a pair of Bay-breasted Warblers and later on discovered their nest and set of four eggs. This nest was entirely different from that of any other Warbler I have come across so far, being characterized by its large size and the irregularity of outline given to it by the long coniferous twigs which composed its exterior, some of these twigs measuring $7\frac{1}{4}$ inches.

It was situated in a small fir tree close against the trunk, nine feet above the ground and three feet from the top of the tree, and was composed outwardly of the above-mentioned coniferous twigs as well as grasses, being lined inside with finer grasses and a large quantity of very fine black rootlets. The site was only seven yards from the center of a logging road, and although the nest was in a somewhat exposed position it blended so well with its natural surroundings that I was a long time in finding it. The eggs, which were four in number, were also of a distinctive type and different from any Warbler's eggs that I had hitherto found. The ground color was bluish green spotted with brown, three of them having confluent blotches at the larger end mixed with lilac, while the fourth was nearly evenly marked all over, with no decided zone at the larger end. The average dimensions of the set are .65 x .54, the short length as compared with the width giving them a rather rotund appearance. The dimensions of the nest irrespective of the spread of the coniferous twigs are as follows, viz.: outside diameter $3\frac{1}{2}$, inside $2\frac{1}{8}$ inches; outside depth $2\frac{1}{2}$, inside $1\frac{1}{4}$ inches. Both the nest and set of eggs I presented to the Victoria Memorial Museum at Ottawa.

The locating of a pair of Cape May Warblers from June the eleventh to the twenty-sixth, under circumstances which left no doubt as to their breeding, was also another source of gratification, while the nesting again of the little Northern Parula was no less pleasing. A curious fact in connection with the Cape May and Bay-breasted Warblers was, that I almost failed to detect them during the migration, only one example of the former being noted on May the fifteenth (the following up of which gave me my first specimen of that glorious little orchid *Calypto bulbosa*) and one of the latter on May the twenty-first, so that their subsequent breeding was totally unexpected, and more especially so as I had never seen either of them here before in the summer.

Yellow Warblers were seen on several occasions, more especially near Ayers Cliff, and the same remark applies equally well to the Water Thrush (*Sciurus. n. noveboracensis*). The almost entire absence of Redstarts, at least on the ground over which I ranged, seemed somewhat remarkable, and I did not see many pairs of Chestnut-sided Warblers either. Nashvilles were certainly not as

numerous during the migration as last year, but I noted two or three pairs breeding as against only one last year. Speaking of the nesting of many of the Warblers, it seemed to me that the dates were quite a week or ten days in advance of previous years, a nest of the Black-throated Blue, for instance, containing much incubated eggs this year on June the eleventh, whereas in 1916 a nest found on June the nineteenth contained perfectly fresh ones.

Black-billed Cuckoos were first noticed on the third near our orchard, and I have seen and heard them oftener since than in previous years, with the exception of 1912, when I found three nests. That beautiful songster, the Rose-breasted Grosbeak, of which I have only found one nest so far, certainly bred here again this year, a singing male being located in a large wood throughout the month of June, but its nest escaped detection. In this same wood and period also, a male Scarlet Tanager poured forth his fine notes, and added my own confirmation to that of Mr. Greer's that at rare intervals it may be found breeding here also. The status of the bird in these parts during the years 1836-39 must have been very different from what it is today, for I find that Gosse in his 'The Canadian Naturalist,' 1840 (referred to in the annotated note on the Passenger Pigeon), speaks of having seen many birds in the ploughed fields and pastures at the end of May, one day in particular in his orchard there being scarcely a moment in which three or four might not be seen within a few rods of each other! As a present-day contrast to the above I may say I have never seen more than two together, and my total record for the past eight years consists of six birds only, five males and one female. The Rose-breasted Grosbeak Gosse does not mention at all, so probably it was quite as scarce then as it is now. The number of birds enumerated in the work, however, cannot have been by any means complete, as from a list I have made there appear to be only 67 species recorded as against my 168 at the present time. The Baltimore Oriole apparently was an unknown bird here then, for Gosse distinctly states that he was unacquainted with it; a most striking fact, when we consider that today it is one of the features of almost if not every village. Of the Warblers only two species are spoken of with any degree of confidence, and strange to say they are two of the rarer class, *i. e.* the Blackburnian and Bay-

breasted Warblers, both of which today are still regular migrants if not regular breeders also, at least as regards the first named.

On June ninth and sixteenth I saw a Pine Siskin and had previously seen one on May the sixteenth, a somewhat interesting fact in view of their total absence during the winter, but the same thing occurred in 1917, when on May 31 I shot an example out of a small flock, the birds not having been observed during the winter of 1916-17.

The eighth and eleventh of the month were both red-letter days, for on the former I found the Purple Finch breeding for the first time and on the latter added the Olive-sided Flycatcher to my list, a pair being under constant observation from this date to the thirtieth, and again in the first week of August. My efforts to discover their nest were unavailing, however, although it was evident they were breeding, as on two occasions I observed one of the birds trying to break off small twigs from a tall hemlock tree.

Just previous to the eleventh I flushed a female Ruffed Grouse with her brood of chicks, the only lot seen during the summer.

Shortly after the middle of the month, or to be exact on the twenty-first, I found my first Wood Pewee's nest, but as it was about 12 feet out on a slender bough of a large maple tree, and 25 feet above the ground, I had to content myself with a photograph of its location. The nest was over a fork, and being composed outwardly of lichens it looked exactly like a natural swelling or knot in the branch.

On the twenty-fourth I came across a nest and set of four eggs of the Olive-backed Thrush, this apparently being about my usual yearly allowance. Red-eyed Vireos were more in evidence again, and I came across three or four nests during the month, but none of the Warbling or Blue-headed were found, although I had seen a few pairs of each earlier in the season, and had hopes that it was going to be another "Vireo" year similar to that of 1912. For the next fortnight or until July 15, nothing of particular interest occurred, but on this date a number of immature Golden-crowned Kinglets were observed, this date being three weeks ahead of any previous record, and may possibly be taken as indicative of the birds having bred in the district. Strange to say, they were not noted in the spring migration, although Ruby-crowned Kinglets

were somewhat numerous. On the evening of the twentieth a Catbird was heard "mewing" at 8.45 P.M., this being one of the very few birds observed, the other records being earlier in the season and near Ayers Cliff, where the bird is more usually found than around Hatley. I did not locate a single nest.

Perhaps it may not be out of place to here mention that the following birds have been more than usually numerous, viz.: Chickadees, Goldfinches, Baltimore Orioles, Kingbirds, Purple Finches, and Ruby-throated Hummingbirds, while Red-breasted Nuthatches have been entirely absent, my last record going as far back as October 3, 1917, since which time up to the present date of writing (July 28) I have not seen a single example. Its habits here certainly seem comparable to those of the Crossbills, eccentric, erratic, irregularly sporadic, as the late Mr. Ora W. Knight says of the latter birds in his 'Birds of Maine.'

On the twenty-eighth a young Sparrow Hawk was shown to me in the flesh, which had been shot a day or two before, and the party obtaining it said there were several more, evidently a family party. This evidence further corroborates that of Mr. Greer, who saw the parent birds with young near Waterville last year. The month of August opened auspiciously, for on the first I came across the Olive-sided Flycatcher again, on the outskirts of the same wood where I had previously located it in June, only rather more than a mile to the north of the former spot. I had visited this place purposely, as I was anxious to see whether my House Wrens of August 6, 1917, would return this fall. I did not come across them on this occasion, but three days later or on the fourth I located two of them in almost the identical spot as last year, and also saw the Olive-sided Flycatcher again. The day previously I saw a Prairie Horned Lark, this being the latest date so far that I had noticed the bird in the fall, but later on another example was seen by my son on October the twelfth, he being well acquainted with the bird.

On the tenth I again visited the Wren locality, and had the very great and unexpected pleasure of finding their nest, with four fully fledged young. The site, which was a quarter of a mile or so away from any house, was on the outskirts of the wood already referred to, and the nest was located some eighteen inches down from the top of a small hollow cedar stump, which stood four feet, six inches

above the ground. The inside of this little stump seemed fitted by nature for the home of a Wren, for the branches where they had been cut off from the outside extended through the bark to about the center of the stump, and where two or three came together from opposite sides they formed a natural support, of which the Wrens had taken advantage, not only for the foundation of their nest to rest upon, but also to hold up the dome. The supports of this latter (which was two inches in height, and composed of small fir twigs and some feathers) were sixteen inches down from the top of the stump, the inside diameter of which was $3\frac{1}{4}$ inches. At one side of the dome, of course, there was an aperture allowing the ingress and egress of the birds to the bed of the nest below, which was $2\frac{1}{2}$ inches from the underside of the dome. Below the bed to the foundation supports there was a further space of $3\frac{1}{2}$ inches, which was made up of small fir twigs, pithy chips, feathers and some horsehair for a lining, upon which rested the four fully fledged young. It will thus be seen that the total height of this nest from the foundation to the top of the dome was eight inches, but there will always be a lurking suspicion in my mind as to whether the dome was really intentional or only accidental. It could easily have been the latter, for the supports holding it up may possibly have formed an obstacle to the easy conveyance of materials to the nest below, and so in time a number of twigs may have had to be left behind by the birds, and so have formed an unintentional dome. However, this is one of those little nature problems that are constantly presenting themselves, and of which, as in the present case, there appears to be no immediate solution.

On the fifteenth I had yet another surprise, which enabled me to add one more breeding bird to my list, in the shape of the Virginia Rail, a parent bird of which was seen in a little marsh near Hatley Centre accompanied by her brood of young. This is the second time only that I have come across these Rails, the last occasion being in July, 1915, when I saw two of them in "the marsh" near my house. It is somewhat difficult this year to say exactly when the fall migration of warblers set in, as apparently there was no very decided wave, but I fancy it commenced on August the twentieth; at all events this is the first occasion on which I appear to have any decided increase of entries in my notebook. From this

date, however, to the end of the month things were very quiet again in the Warbler line, and it was not until the first week in September that there was another marked increase. On the twenty-first of August Nighthawks were seen at Ayers Cliff, this being my earliest date for the species, and two days later a Red-breasted Nuthatch was noted, my last record, as already mentioned, dating as far back as October 3, 1917. This day was also memorable, as I was able to add yet another new species to my list in the shape of the Philadelphia Vireo.

On the twenty-sixth, while en route to climb Mount Orford, 2,860 feet, the following birds were noted, viz.: Broad-winged Hawk at Ayers Cliff, Loon and Sora near Magog, and an Osprey near the top of the mountain. All of these birds were of interest to me, the first being new to my list, although it might have been included before, as I know I must have seen the species on two or three other occasions. The Loon I had not seen here before, although it occurs regularly on Lake Massawippi in the fall, while the Sora is an uncommon summer visitant at Hatley, one nest so far being all that has fallen to my lot. The Osprey also up to now had only been noted in the spring migration, one or two having generally paid a visit to "the marsh" for the past four years during the early part of May. Nothing of any particular interest was noticed for the next few days, with the exception of a pair of Pine Warblers and a Yellow-bellied Flycatcher until September the third, when a male Wilson's Warbler was seen at close quarters, and another on the eighth, together with a female, the latter being the first I have seen here so far. On this latter date a Cape May Warbler was also seen, and on the following day an immature Tennessee Warbler was shot, which constituted my first fall record for the species. Another interesting item noted on this same day was an example of the Acadian Chickadee, a specimen of which was obtained a few days later, or on the eleventh, while others were recorded up to the fifteenth, after which they disappeared and were not seen again during the year. On the night of the tenth there was a severe frost, in fact, this has been an abnormal year for frosts, one on the eighteenth and nineteenth of June causing considerable damage to the bean crop. After this last one in September the weather, which had been very dry for several weeks (causing many of the

wells and nearly all the brooks to run dry in August), broke down, and a period of nearly incessant rain set in, which lasted well into the middle of October. This state of things made bird hunting no sinecure, it being next to impossible to locate small Warblers or any other birds for that matter in a downpour of rain. However, I did fairly well considering, as another Broad-winged Hawk was noted on the fourteenth as well as a Yellow Palm Warbler, the only one seen in either the spring or fall migration. The most interesting event, however, was the locating of a few Blackpoll Warblers between the eighteenth and thirtieth of the month, these birds being first noted in the orchard near our house, and afterwards along the roadside, an example on one occasion being taken to insure correct identification. This is the first time of meeting them in the fall, and in the spring, as already stated, only two males have so far been located. The scarcity of this species is an interesting problem to which I have drawn attention in last year's notes. On the afternoon of the twentieth a flock of twenty-six Blue Jays passed at close range. It is not often that one sees so many of these birds together, the greatest previous number I can call to mind being seven. With Robins, however, it is a different matter, for on the twenty-third I saw a large flock, consisting of two hundred or more, which frequented exactly the same locality as they did last year, only the date was rather later then, it being the middle of October. Brown Creepers put in an appearance about now, these little birds being by no means plentiful here. White-crowned Sparrows were also seen on the twenty-third and remained until October 14, being more abundant at this time than in former years. A flock of American Pipits, consisting of seventy-five to one hundred birds, was seen on October 4, but they only remained a few days, being gone by the eighth. Sparrows of all kinds were very plentiful just about now, the Tree and Fox putting in an appearance on the tenth and twelfth respectively. Of the latter I never see very many in a season; possibly half a dozen or so would about be an average. On the fourteenth I returned to my old residence near "the marsh," not having done so at the end of last year, as intimated in my Notes for 1916-1917. For many reasons this has been a considerable advantage, as it has enabled me to form a more accurate idea of the great difference a matter

of only three miles can really make in the bird life of a place, as well as in its flora. The more swampy nature of the country round this latter residence, as I have already indicated elsewhere, has put me in touch with birds and flowers that I rarely and in many cases never came across in my old hunting grounds. Among the birds might be cited the Nashville and Tennessee Warblers, and of the wild flowers the orchids stand out prominently, no less than a dozen new species having been added to my list, which now stands at eighteen, or about a quarter of all the orchids known to occur in eastern North America. My first visit to "the marsh" was paid on October the fifteenth, when six Wilson's Snipe were flushed and one Solitary Sandpiper seen. The conditions existing at this date were very different from those of August the twentieth, when the marsh might be said to be non-existent, there being hardly a drain of water in it, and consequently none of the Limicolae were seen. Now the whole of it was nothing but a sheet of water with no mud beds whatever, the Snipe and Solitary Sandpiper being found in the cat-tails round the margins, where little patches of ground not entirely submerged gave them an opportunity of feeding. Certainly this has been my very poorest year for Sandpiper records, as, with the exception of the above one for the Snipe and Solitary Sandpiper, I have only seen one Greater Yellow-legs, one Least and a few Spotted Sandpipers, and these for the most part were noted during my infrequent visits to "the marsh." The seventeenth saw the last Myrtle Warbler, and I never remember having seen less in the fall than this year.

On the twenty-third a flock of about twenty to thirty Pine Siskins were noted and remained in the district for some little time. Nothing of further interest occurred until November the sixteenth, when the first flock of Redpolls was seen and a week later two small ones of Pine Grosbeaks, one in my garden and the other in the woods three miles away, this latter consisting of seven birds, five of which were highly plumaged males. On the twenty-sixth a large flock of Canada Geese were reported as well as one on the ninth, and I also received a letter from Mr. Greer telling me that he had seen a single female Pine Grosbeak on the twenty-third (the same date as I had observed them) and a flock of eight on the following day, among which were two full plumaged males. He

also informed me that he had seen a Meadowlark on the twelfth and a Crow on the twenty-third, and that a female Merganser had been shot on Lake Massawippi on the sixteenth. The month closed without further incident, and it was not until December the fourth that anything occurred worth chronicling. On that day two more Crows were seen, a rather unusual thing, but brought about by the mild open weather that had prevailed up to this date, the thermometer never having registered anything below zero until the first of the month. On the ninth I received another letter from Mr. Greer, informing me that he had seen a Herring Gull on the sixth, and a flock of fourteen Golden Eyes on Lake Massawippi on the fourth, out of which he and a friend had secured two females. I find Gosse in 'The Canadian Naturalist,' 1840, p. 54, records these ducks as occurring early in March (1836-39) on unfrozen parts of the Massawippi River, which looks as if they are regular although somewhat rare migrants.

On the fourteenth it became very mild, with heavy rain, so that on the following day the fields were green once more, and from this date onward fine open weather continued until the twenty-fourth, when a heavy fall of snow converted what otherwise looked like being a green Christmas into a white one. All through this period, however, and up to the end of the year very few birds were noted, only the usual small flocks of Redpolls; Pine Grosbeaks, and Chickadees being in evidence, with a few Blue Jays and a Pileated Woodpecker on the fifteenth. The other winter birds, such as Evening Grosbeaks, Snow Buntings, Northern Shrikes, and Goshawks, have not put in an appearance, or at least if they have done so I have failed to notice them.

Appended will be found the annotated notes on the four new and one extirpated species added to my list during the past year.

164. *Larus delawarensis* (Ord.). RING-BILLED GULL.—Rare transient. Probably this Gull is merely an accidental transient, blown inland by easterly gales, one of which had been raging in the first week of December, 1917, just previous to an example being taken in a marsh not so very far from Massawippi Railway Station. I saw and identified the bird (which had been kept in a frozen condition) in the flesh while calling upon Mr. Greer on January 22, 1918, and have since seen it mounted ready for its present owner, Mr. E. H. English of Massawippi, who, however,

was not the captor. It was evidently in the first winter plumage, being irregularly mottled, the back showing partly pearl blue, the primaries black, the first one with the white spot near the end, but, of course, no white tip, as in the Herring Gull, the remainder, however, showing traces of these white tips, while the bill had the band of black around it at the angle well developed, as in the adult, the tail, however, still showing immature traces, as the broad black band at the end of it was still there and the feathers were more or less mottled. The exact date of capture is not quite clear, but it was probably December the ninth.

165. **Buteo platypterus platypterus** (Vieillot). BROAD-WINGED HAWK.—Not uncommon transient August 26, September 41, possibly breeds. There is no doubt I have seen this Hawk on some few occasions previous to the above date in August and it might have been included in my list at a much earlier date had I felt disposed to depart from my usual plan of not including any Hawk or Owl unless I have actually handled it in the flesh or seen a mounted example taken in the district, or been in possession of some other equally good evidence to warrant its inclusion. However, on this occasion I had good reason for departing from my usual custom, as Dr. Charles W. Townsend was with me at the time, and being more familiar with the bird was able to verify my identification.

I saw one other example on the date given in September. In the spring they probably pass through between April 15 and May 25 and in some cases may remain to breed, although I have come across no evidence of their having done so as yet.

166. **Nuttallornis borealis** (Swainson). OLIVE-SIDED FLYCATCHER.—Rare summer visitant; May ?, June 11 to August 4.

On the above date in June I was fortunate enough to locate a pair of these birds in a spot ideally suited for breeding. For several days however, I watched them without being able to discover the nest, although I knew they were breeding from their actions. Then a dire misfortune happened, for the farmer who owned the land, being evidently in need of dollars and cents, proceeded to cut down every spruce and fir (for pulp wood) on the ground, in one of which the nest no doubt was, for the birds became restless and uneasy and deserted the spot, and it took me some little time to trace their whereabouts. However, I succeeded at last in doing so, and on June 27 had the satisfaction of seeing one of the birds break off a small twig from a tall hemlock tree, which, however, it unfortunately dropped. Further attempts to break off another having failed, the bird eventually gave up, and I no doubt lost my one and only chance of discovering the site of their second venture, as just at that time circumstances prevented me from keeping a further watch over their movements, and it was only by accident that I came across one of them again on August 1, about a mile from the spot where I had last seen them on June 30. They are interesting birds and not at all shy, and their notes are very varied, the ones uttered when I first came across them sounding like a shrill whistled pi-pee. The more general notes, however, seemed to be 'Whip-you-see,

Whip, whip, Pip, pip,' and 'Pip, pip, pip,' possibly, the 'Whip, whip' ones being the most often used.

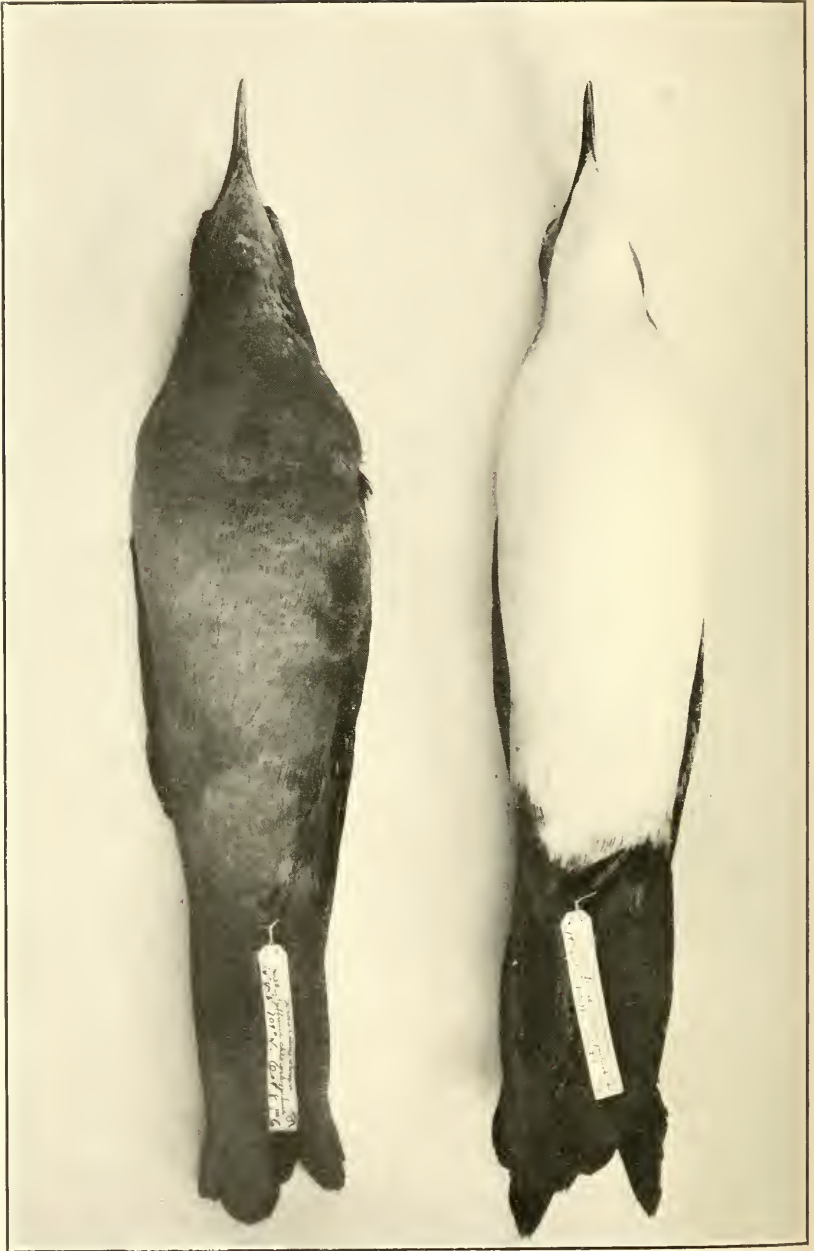
167. **Vireosylva philadelphia** (Cassin). PHILADELPHIA VIREO.— Rare transient. August 23. On the above date in August while working through my favorite Warbler wood about a mile to the north of Hatley Village, I was fortunate enough to get a glimpse of one of the above birds, although the view at the time was really so imperfect that had it not been for my good fortune in having Dr. Charles W. Townsend with me at the time, I should hardly have felt justified in making the record public. The Doctor, however, who was some little distance away from me at the time, was fortunate in getting a much clearer view of it than I did, and having seen the bird in life before was in a better position to affirm that it was certainly a Philadelphia Vireo.

From what I saw of it, possibly its smaller size as compared with the other Vireos was the most dominant feature that impressed itself upon my mind at the moment.

168. **Ectopistes migratorius** (Linnaeus). PASSENGER PIGEON.— Formerly a summer visitant, but now practically if not entirely extirpated.

During the present year I have been fortunate in securing a book of much local interest entitled 'The Canadian Naturalist,' written by P. H. Gosse and published in London in 1840.

Gosse it appears came to Compton, a village about seven miles to the northeast of Hatley, in 1836 and remained there until 1839. During these three years he wrote a general account of the flora and fauna of the district, which includes the first specific reference as to the dates of the occurrence of the Passenger Pigeon in these parts that I have seen. The book is written in the form (then somewhat prevalent) of a series of conversations supposed to pass between a father and son. The first reference occurs on page 199, where the son asks, "What birds are those flying so swiftly in a small flock?" (the date apparently being about June 10, 1838); to which the father replies as follows, viz.: "That is the celebrated Passenger Pigeon (*Columba migratoria*) and the first flock I have seen this year. They do not appear to make their migrations, as birds in general do, to avoid ungenial seasons, but to obtain in abundance that food which is most suited to their wants; hence their appearances are very uncertain as to time. They are common enough in this country every summer, but I have never seen anything like the innumerable hosts of pigeons that fill the sky in the forests of the west." Later the father goes on to say, "They are much sought after for the table, as the flesh is delicate, and many are killed during their sojourn with us." Again on page 293, in the first week in September the son asks, "What birds are those which are hovering in a cloud about yonder field of buckwheat?" to which the father replies, "They are the Common Passenger Pigeon (*Columba migratoria*); they devour a great quantity of that grain in seasons when they are numerous with us. It is, I believe, the only mischief we sustain from them; and the gun takes ample revenge."



DARK AND LIGHT PHASES OF THE WEDGE-TAILED SHEARWATER.

From the above quotations it appears evident the birds were quite numerous about 1838, some seasons appearing in greater numbers than in others, the date of their arrival, however, always being somewhat erratic.

So far, unfortunately, I have been unable to obtain any reliable information from the older inhabitants concerning the date of the last pigeons seen here, but probably they disappeared between 1880 and 1885, although it is possible a few stragglers may have lingered even up to 1896, the date of the last one recorded in Maine.

DICHROMATISM IN THE WEDGE-TAILED SHEARWATER.

BY LEVERETT MILLS LOOMIS.

*Plate XIX.*¹

THE Wedge-tailed Shearwater (*Puffinus chlororhynchus*) appears to be restricted to the warmer areas of the Indian and Pacific oceans. It has been definitely reported as breeding on the Seychelle and Mascarene islands in the western Indian Ocean, on islands off the west and east coasts of Australia, on Lord Howe, Norfolk, Kermadec, and Surprise islands in the southwestern Pacific, and in the North Pacific on Volcano and Marcus islands, the Leeward group and Kauai of the Hawaiian Archipelago, and San Benedicto of the Revilla Gigedo Islands. Specimens have been obtained in the Caroline, Marshall, Phoenix, Fanning, and Society islands. Whether any of the colonies are migratory, remains to be determined.

In the extreme dark phase of this Shearwater, the general color aspect of the upper parts is dark brown and that of the lower grayish brown, becoming gray on the foreneck. In the extreme light phase, the general aspect is grayish brown above and white below, except on lower tail-coverts. Intermediates have the white

¹ The photograph reproduced in this plate was kindly taken for me by Mr. L. R. Reynolds.

of the lower parts more or less obscured with gray or grayish brown.

A difference exists in the geographic range of the two phases. The light phase is predominant in the Hawaiian Archipelago, dark-breasted birds being of rare occurrence. On San Benedicto Island the dark phase is in the ascendency, greatly outnumbering the intermediates and white-breasted birds. In the Kermadec Islands only the dark phase is represented. On the east coast of Australia and in the Indian Ocean dark birds also prevail; but sporadic white-breasted ones may occur, for Gould figures such a specimen in Volume VII of his 'Birds of Australia.'

Although there is a difference in their distribution, the phases of this Shearwater do not correlate with climatic conditions after the manner of geographic variation. On Sunday Islet of the Kermadec group, where the light phase is absent, both phases of the Neglected Petrel are abundant, witnessing that there are no climatic barriers excluding light phases. In continental dichromatic species the factor of island isolation is eliminated and the lack of harmony of phases with environmental conditions is still more apparent. For instance, the light phase of the Red-tailed Hawk prevails in the humid Eastern States, while both the dark and light phases occur in the arid Western States, along with the gray phase of the Screech Owl and the dark and light phases of Swainson's Hawk. Further examples of the distribution of phases, independent of environment, may be found among the Herons¹ and other groups having dichromatic species.

Like geographic variation, dichromatic variation has frequently been mistaken for characters of specific rank, giving rise to numerous apocryphal species. The light phases of *Puffinus chlororhynchus* and *Pterodroma neglecta* have been respectively designated "*Puffinus cuneatus*" and "*Æstrelata leucophrys*."

Dichromatic and individual variations have evolutionary possibilities, and there are just as good reasons for treating dichromatic variations (possible mutations) on the subspecies basis as there are for treating geographic variations on that basis. Whatever course is pursued, the fact remains that the subspecies rests on no better foundation than a theory that begs the question; for we do

¹ Cf. Bangs, Auk, Vol. XXXII, 1915, pp. 481-484.

not know the remote future of any of these variations, nor the manner in which existing bird species were evolved.

The subspecies theory has often been justified on the ground that it is a convenient method of handling geographic variations.¹ One has only to read Dr. Oberholser's "Monograph of the Genus *Chordeiles*"² to learn that the attempt to give definiteness to indefinite variations involves the student in an interminable maze. It is maintained that the only way out of the subspecies dilemma is to treat geographic variation in the same manner as dichromatic and individual variations are commonly treated.

THE NEST AND EGGS OF WAYNE'S WARBLER (*DENDROICA VIRENS WAYNEI*) TAKEN NEAR MOUNT PLEASANT, S. C.

BY ARTHUR T. WAYNE.

THE hope of finding the nest and eggs of this new bird was eagerly looked forward to during the spring of this year, and on March 20, 1919, I visited the place where the type specimen was taken on April 25, 1918. A few males were heard singing from the topmost branches of some tall, gigantic, deciduous trees, and were also seen to fly into very tall pines, which latter trees the birds seemed to prefer.

On March 31 I again visited the place, and although convinced that the birds were mated and the females engaged in constructing nests it was impossible to catch even a glimpse of the latter, and the males left no clue as to the whereabouts of their mates. Although much discouraged I had not given up hope, and on April 18 Mr. J. H. Moessner, who accompanied me and who took me on the previous trips in his automobile, made every effort to locate the

¹ Cf. Dwight, Auk, Vol. XXI, 1904, p. 64.

² U. S. Nat. Mus. Bull. 86, 1914; see especially pp. 16-18.

female and, if possible, find the nest. About 4 o'clock P. M. on April 18 I discovered a female, and with the aid of Mr. Moessner, who watched her closely, we saw the bird make a long flight and apparently stop in or near a live oak tree. We hastened to the spot, and finding no trace of her began to lose heart, when Mr. Moessner called my attention to a minute, dark spot on the terminal end of a live oak limb among numerous twigs which were branching in every direction. I then suggested to him to throw some small sticks near the nest so as to startle the bird, if the minute object was, in reality, the nest. This he did, and after some dozen ineffectual efforts succeeded in striking the limb, which at once caused the sitting bird to leave.

The nest, as I have said, was built in a live oak tree and on the end of a horizontal branch among twigs which radiated in every direction, and was absolutely concealed, being about thirty-eight feet above the ground. I of course made an attempt to secure the prize at once, although I knew the nest was inaccessible without rope or some other material for assistance, as there were no limbs above or beneath that upon which the nest was situated, and, although I tried, my attempt proved a failure. On April 21 I went again with Mr. Moessner, he bringing about 200 feet of Manila rope with which to draw in the limb to another live oak tree about twelve feet away, which I climbed, and after I had adjusted the ropes over the limb, which he was then to draw in to me, I requested him to go slowly, but the limb yielded only a little, although considerable pressure was exerted. Sad to relate, without a moments warning, the limb snapped off and the four fresh eggs that the nest contained were dashed to fragments on the ground. My hopes were likewise shattered, and I would have gladly fallen in order that the eggs might have been saved!

The nest, which is a beautiful object, is small and compact, measuring $1\frac{3}{4}$ inches in height by $1\frac{1}{2}$ inches in depth. It is constructed of strips of fine bark and weed stems, over which is wound externally the black substance that invariably is present in the lining of the nests of Bachman's Warbler (*Vermivora bachmani*). The interior of the nest is chiefly composed of a beautiful ochraceous buff substance, doubtless from the unfolding leaves of some fern, and a few feathers. The remnants of the eggs were sorrow-

fully but carefully examined and were found to be white or whitish, speckled and spotted with brownish red and lilac in the form of a wreath at the larger end.

On April 28 I again visited the locality, and was accompanied by two ladies, Miss Louise Petigru Ford of Aiken, S. C., and Miss Marion J. Pellew of Washington, D. C., both of whom are enthusiastic students of ornithology, and acquainted with most of the land birds found in the eastern United States. Our visit to the swamp was with the hope of finding the female (whose eggs were destroyed on April 21) in the act of building another nest, but although this was partially accomplished, as far as seeing the bird and watching her closely from tree to tree, she finally eluded us and could not be found again.

A very young bird just from the nest and unable to fly more than a few feet was being fed by the male parent, which shows that the birds breed irregularly. This young bird was collected (after about twenty minutes deliberation) and proved to be a male. At last I suggested to my companions to visit a spot about a mile and a half from the place where the female had eluded us, as I had seen a pair of the birds in question frequenting two magnolia trees of large size in the densest portion of the swamp. Upon arriving at the place and pointing out the magnolias to my friends, my attention was arrested almost at once by a Warbler coming from the northward of the magnolias, and which I soon identified, as a female *Dendroica virens waynei*. We kept our eyes riveted upon her, each of us taking stands around the two magnolias and thus encircling them. Miss Ford being on the southern side of one of the trees saw the female go to her nest and informed me of the fact at once. This nest was built near the extremity of a very long, drooping magnolia limb, but on the horizontal portion of it and about twenty-five feet above the ground. Near at hand, about ten feet away, a very slender ash tree grew, whose topmost branch reached the top of the nest on a level. I climbed this tree, and with the aid of a long limb that I cut from the ash drew in the limb and then attached it by two leather field-glass straps to the sapling and abstracted the four heavily incubated eggs that the nest contained.

This nest was concealed from above by the large magnolia

leaves. It measures $2\frac{1}{2}$ inches in height by 2 inches in depth and is constructed of strips of bark externally, over which is Spanish moss and hypnum moss held together by a large quantity of caterpillar silk. The interior of the nest is lavishly lined with the beautiful ochraceous buff substance from the young fern leaves, as in the first nest.

The eggs are of a white or whitish color speckled and spotted in the form of a wreath around the larger end with brownish red and lilac, and measure $.60 \times .50$, $.60 \times .50$, $.60 \times .50$, $.60 \times .49$ inch. I have known this bird ever since May 4, 1885, when I took a male at Caw Caw Swamp, Colleton County, S. C., while on a collecting trip with my friend the late William Brewster. I gave the bird to him in the flesh, and in his collection it still remains, but the nest and eggs have remained unknown until brought to light by this season's research.

My thanks are extended to Misses Ford and Pellew, who rendered me such valuable assistance on this memorable occasion.

A HERONRY ON LAKE CORMORANT, MINNESOTA.

BY HORACE GUNTHERP.

LAKE CORMORANT is located in the southwest corner of Becker County, Minnesota, and really consists of a chain of four or five small lakes extending in a general east and west direction with the exception of the last one in the series, which is situated north of the most western one. In a dry season, like the past summer, these lakes are almost, if not entirely, separated from each other by mud flats covered with a rank growth of rushes. In a wet year a rowboat can be polled through these shallow connecting straits with comparative ease. The shores of the lakes are in some places rocky, being composed of piles of glacial boulders, while in others they are shallow, with a muddy bottom in which rushes and submerged water plants grow abundantly, while here

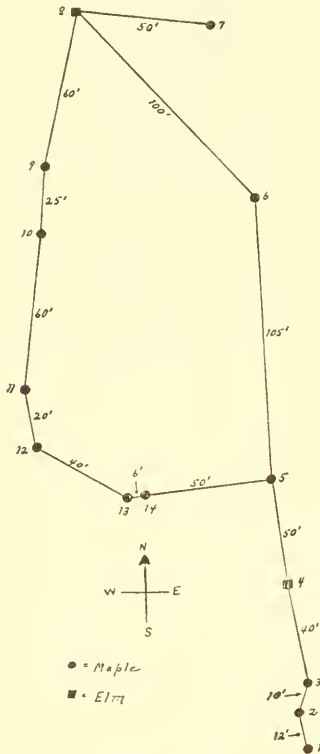
and there an occasional inlet is filled with water lilies. As the lakes are well stocked with fish, these numerous marshy spots form excellent feeding grounds for the shore waders. The surrounding country is rolling, and was once covered with a forest of elm, hard maple, and birch, with an occasional oak. At the present time a considerable portion of the land has been cleared and is under cultivation, the woods being confined mostly to the lake shores. All the salable timber was taken out some forty years ago, and as a result few large trees are seen, most of them ranging up to sixteen or eighteen inches in diameter.

Less than a quarter of a mile from the junction of the two western lakes, near the center of a heavily wooded knoll, stands a group of larger trees in which the Great Blue Herons have built their nests, forming a heronry of no mean size. These birds have been here at least ten years, according to farmers living in the neighborhood, and from all available information are increasing in numbers. A few years ago their nests were confined to a large elm (4)¹ near the south end of the heronry, but they have gradually spread, both north and south, from this original tree until now they occupy fourteen trees, the extreme limits of which cover approximately two hundred eighty-five feet in length and one hundred feet in width. The State laws in Minnesota give adequate protection to the Herons, as they not only impose a heavy fine for the destruction of the birds, but also specify that trees containing Herons' nests shall not be cut down. But besides the State protection, it is fortunate that the land on which the heronry stands is held by a group of gentlemen living in North Dakota, who use it for a summer home, and who are very much interested in preserving the woods and its life in as near a wild state as possible.

The opportunity came to the writer to make a survey of the heronry during the month of August, 1918, while spending a short time camping on the neighboring lake. Several trips were made to the trees containing the nests, but, owing to the lateness of the season, only four young birds were seen in their nests. The large size of the heronry was not suspected by the owners of the land, their explorations having taken them no farther than the first

¹ Numbers in parentheses refer to trees shown in accompanying diagram.

large elm tree (4) near the south end of the heronry. In the accompanying sketch the measurements between the trees were



Trees occupied by Herons.

roughly paced off, the trees not occupied by nests being omitted. Also, the size of the trees is only approximate, as no tape line nor rule was available for more accurate measurements.

The shape of the whole group is roughly a parallelogram with the long sides extending some one hundred seventy-five feet north and south, while it is about one hundred feet wide. From the southeast corner of this extends a row of four trees, the farthest one being one hundred ten feet from the corner. All of these trees are hard maple except two, and vary in size from eight to thirty-six inches, the majority of them being twenty or more inches in diameter. The two exceptions are elms, one (8) being located in the northwest corner, and the other (4) being the fourth from the south end of the detached line. Near the last-mentioned tree is the fallen trunk of another elm of good size which

has been dead for some time and which blew over last spring. Probably it held nests of the Heron at some past date, but not last year, as no remnants of nests were in or near its fallen branches. The hard maple (5) located at the southeast corner of the parallelogram has two trunks of about the same size, twenty inches.

The total number of nests in the trees and on the ground under them numbered sixty-six. Eight of this number were on the ground, but were in good condition, and had evidently been used

during the nesting season just closing. The large elm (4) seems to be the center of the colony, it having a total of thirty-three nests, five of which had fallen out. It is evident that the Herons in this particular heronry prefer the elm to the hard maple, as the only other elm (8) has the next largest number of nests in it, five. At first it was thought this was due to the greater height of the elms, as Herons prefer the highest trees, but in this case the hard maples used seem to be of practically the same height as the elms, but the latter have tops that spread more and so probably furnish more and better places for the placing of the nests. In the following table is given the size of each tree in the heronry, the number of nests it supported, and other data:

No.	Variety	Size in inches	Nests	Remarks
1	Hard maple	16	2	
2	" "	20	4	
3	" "	8	2	
4	Elm	36	33	
5	Hard maple	20	4	2 young birds
6	" "	24	4	
7	" "	20	1	
8	Elm	28	5	
9	Hard maple	20	1	
10	" "	22	1	
11	" "	36	2	
12	" "	24	3	2 young birds
13	" "	15	1	
14	" "	20	3	

In each case mentioned above the two young birds were in the same nest, and were well grown and able to move around with considerable ease among the branches of the tree in which the nest was placed.

The fallen nests were examined and found to consist of a mass of twigs forming a platform in some cases three feet in diameter and eighteen inches in thickness. No cementing material was used except on the upper surface, which was floored with mud. Whether this formed part of the original material used in the construction

of the nest, or was simply an accumulation of mud brought to the nest on the feet of the parent birds from their frequent trips to the marshy shores of the lake, is not clear. The solid nature of the structure of the Herons' nests is shown by the fact that a fifty-foot fall was apparently not able to damage them in the least.

The remains of different species of fish were on the ground under the trees together with parts of crayfishes. In regard to what Herons eat, Barrows¹ says, "The Blue Heron feeds mainly on fish and frogs, but also eats immense numbers of crayfish, small snakes, salamanders, insects (among them grasshoppers), meadow mice, and almost anything of an animal nature. So far as we know it never eats vegetable substances of any kind." On the other hand, Wilson² states (Vol. 2, p. 448) that it "also eats the seeds of that species of *nymphæ* usually called splatterdocks, so abundant along our freshwater ponds and rivers." When disturbed, the birds disgorge partly digested fish and other food. Heads and backbones of fish were numerous under the occupied trees, showing that the larger animals are torn to pieces and the bones picked by the young birds. This refuse accounts for the presence of numerous carrion beetles found under sticks and logs under the heronry.

A careful survey of the heronry at Lake Cormorant was made and is here recorded because it is located where it will in all probability be protected for years to come, and thus it will be possible to record the future growth of the colony accurately, and so we shall be able to form some estimate of the status of the Great Blue Heron in Minnesota and the Northwest.

¹ Barrows, Walter Bradford, 'Michigan Bird Life,' Lansing, Mich., 1912.

² Wilson, Alexander, 'American Ornithology,' 3 Vols., New York, 1877.

BIRD LIFE IN SOUTHWESTERN FRANCE.

BY THOMAS D. BURLEIGH.

THESE notes were taken during 1918, while I was serving in France with the American Expeditionary Force. I was then with the 10th Engineers, a forestry regiment that was engaged in cutting pilings, ties, and lumber of various dimensions. We were located in the Department of Landes during our entire period of foreign service, so I had an opportunity to make a detailed study of the bird life in this part of France. Our work necessarily kept us busy for six days out of the week, but our Sundays were usually free, and, being in the woods as we were, there was an opportunity of picking up odd notes even while at work. From the first of February until the 14th of September, and again for a week in December, from the 19th to the 26th, I was at Ponteux, while from the 14th of September to the 19th of December I was at Sore.

Ponteux is a small town in the extreme southwestern part of France. The surrounding country is, with the exception of occasionally scattered sand dunes, level and largely covered with long stretches of maritime pine. Small streams are numerous, and bordered here and there with alders and a sprinkling of oaks. In places the water has spread out and formed tangled alder swamps. Such cultivated land as there is lies about the town and the scattered farms. Ten kilometers west of Ponteux lies a large lake, Etang Aureilhan, formed by the damming up of a large creek, which flows from here to the ocean, a distance of eight kilometers.

Sore is fifty kilometers northeast of Ponteux. Here the country is not different from that about the latter town, although there is even less cultivated land and no large bodies of water within many miles. The Seyre River flows through the town, but is a comparatively small stream.

The following are the birds observed, with notes on their actions, migration, and nesting habits. Few of them are found in America, but many are so similar to our species, and some of them so different, that it was thought that my list would be of general interest to the readers of 'The Auk.'

1. **Turdus viscivorus viscivorus** L. MISTLE THRUSH.—In a large alder swamp close to the town three of these birds could be heard singing during the early morning and late afternoon throughout the spring and early summer. High in one of the larger trees they would pour out their varied whistles, trills, squawks, etc., for hours at a time. Always timid, they would become silent at the slightest alarm, only to begin again in a short time from another tree some distance away. The last bird was heard singing on July 16, and once quiet they were not seen again. This one swamp was the only place where any of this species were found.

2. **Turdus philomelos philomelos** Brehm. SONG THRUSH.—This species was a migrant only, flocks of varying size appearing in the spring and fall. They frequented thickets and underbrush about water, and were usually timid, disappearing with a sharp, sparrow-like chip when approached. The first ones were seen on March 24. By the 29th they were plentiful and singing. On that day some thirty of them were found in the tops of the pines at the edge of a stretch of woods, all singing. The song was a rich broken warble, and uttered by many of the birds at the same time was very pleasing. From the first of April on they gradually disappeared, and by the end of the month none were left. They were first seen again on October 3, when one bird was found feeding in a thicket bordering a stream. October 24 numerous small flocks were seen. The last record for the year was December 14, one bird again being seen.

3. **Turdus musicus musicus** L. REDWING.—On November 21 one bird was seen. It was feeding at the edge of a thicket, and on being approached flew up into a sapling where its red flanks and the line over its eye were easily noticeable.

4. **Turdus pilaris** L. FIELDFARE.—But two birds were seen, flushed on November 18 from underbrush bordering a small stream. They were very timid, flying into the top of a large tree and then into the woods some distance away.

5. **Turdus merula merula** L. BLACKBIRD.—Plentiful and resident, and found about thickets and underbrush close to water. Although wary and hard to approach, they would invariably utter a sharp spluttering outburst on flying, and this frequently attracted notice to them where otherwise they would have been passed by unobserved. Another note they had was a low cluck. By the end of March they were frequently heard singing, especially toward dusk. The song was a loud, rich warble. During early summer family parties were occasionally encountered instead of the single birds seen before. On the 18th of November these birds were unusually plentiful, as many as ten being frightened from one thicket. Although largely resident, some had evidently wandered in from farther north.

6. **Œnanthe œnanthe œnanthe** (L.). WHEATEAR.—A pair of these birds were first seen on April 12 at the edge of a slashing. They lingered here for a week, being last recorded on the 19th. They returned again early in the fall, three birds being seen on August 18. By the 25th of this month they were fairly plentiful, but for a short time only, soon

gradually disappearing. They were always found about open fields or slashings, and although inconspicuous on the ground, their white rumps caught the eye when in flight. With the exception of a low note of alarm when too closely approached, they were always silent. Occasionally one might be seen on a fence post or on a brush pile, but they seldom left the ground. On October 20 the last bird was seen, feeding at the edge of newly plowed ground.

7. **Saxicola rubetra rubetra** (L.). WHINCHAT.—A scarce summer resident, found invariably about fields or slashings overgrown with briars and furze. Erect, and with nervously jerking tail, they could be seen on the top of a furze bush, dropping occasionally to the ground for food or flying to another bush a short distance away. Usually they were in pairs and always silent. April 26 the first bird was seen, October 13 the last one.

8. **Saxicola torquata rubicola** (L.). STONECHAT.—Although less plentiful during the winter months, these birds were seen throughout the year about fields and slashings overgrown with briars and furze. Like the preceding, they remained in the tops of the bushes, dropping to the ground for food, but never remaining there long. On being approached they would fly from bush to bush, uttering a harsh, rolling chatter. On the 20th of May a male was seen in the top of a small tree, singing. The song was a weak, even-toned, drawn-out trill.

9. **Phœnicurus phœnicurus phœnicurus** (L.). REDSTART.—On April 7 one bird was seen in underbrush bordering a pond. Two were seen on April 16 in alders bordering a small stream, and from then on they gradually became plentiful, and were found entirely about houses and sheds. In the town of Mimizan-les-Bains they were much in evidence, singing from the gables of the roofs or from the tops of the chimneys. The song was loud and clear, a short, rich, thrush-like trill. On June 8 fully grown young, out of the nest several days at least, were seen about an unused house. During the summer and early fall these birds became very scarce, and never became very plentiful again. The last one was seen October 13.

10. **Dandalus rubecula rubecula** (L.). ROBIN.—Resident and very plentiful, with their small size, long tilted gray tail and habit of feeding about thickets and brush piles, these birds reminded me much of Wrens. They were found at the edge of the pine woods, but were seen largely in the neighborhood of houses. They sang at all times throughout the year, in good weather and bad, although their song, disconnected, of short warbles, trills, and occasional unmusical, wiry notes, was more evident in early spring and late fall, when other birds were largely silent. Their commonest note was a sharp chip.

11. **Luscinia megarhyncha megarhyncha** Brehm. NIGHTINGALE.—A plentiful summer resident, frequenting thickets and underbrush at the edge of fields and roads. The first bird was seen on April 25, singing from a dense thicket. The song reminded me much of our Catbird's, although it was richer and fuller. By the 28th of April the birds were quite plentiful and many were heard singing. On May 20 the first one

was heard at night. After the first week in June their singing ceased entirely and very few were seen after that. The last one was seen August 11 in some underbrush at the edge of an open field.

12. *Prunella modularis modularis* (L.). HEDGE SPARROW.—On November 21 two birds were seen, singly, feeding in thickets. They were far from timid and easy to approach. This species is evidently but a straggler, or at best a scarce migrant here.

13. *Sylvia communis communis* Lath. WHITETHROAT.—About thickets and hedges bordering open fields and woods this species was quite plentiful during the summer months. First seen on April 17, they were soon much in evidence, creeping about the hedge rows or fluttering overhead, uttering their bubbling, rollicking song. In late summer they became silent, but were not at all scarce. The last one was seen October 1.

14. *Sylvia hortensis hortensis* (Gm.). GARDEN WARBLER.—This bird was but a scarce migrant and seen but once. On April 25 five birds were found silently feeding in underbrush at the edge of a stretch of woods.

15. *Sylvia atricapilla atricapilla* (L.). BLACKCAP.—This species was fairly plentiful, but occurred as a migrant only. The first one was seen on March 24, and within a week many could be found feeding in thickets and low underbrush. The song which at this time was frequently heard was a short low warble, broken by gurgling calls and low trills. By the middle of April all had disappeared and none were seen again until September 26, when an adult male was found feeding in underbrush bordering a stream. They were last seen October 24, but were quite plentiful on that date.

16. *Sylvia undata undata* Bodd. DARTFORD WARBLER.—Resident and plentiful about fields and slashings overgrown with briars and furze. Here they could be seen creeping about the underbrush, where with their long tilted tails they appeared much like Wrens. On June 16 they were feeding young out of the nest. On that date a male was heard singing; the song was a short, weak, slightly harsh warble.

17. *Cettia cetti cetti* (Marm.). CETTI'S WARBLER.—This small reddish brown Warbler was common during the summer about small streams and ponds, the edges of which were bordered with reeds. Although shy and seldom seen, it was conspicuous by its loud ringing song. This consisted of two sharp, abrupt notes and then a short trill. The first bird was seen April 6. On September 2 one was heard singing for the last time.

18. *Acrocephalus schœnobæus* (L.). SEDGE WARBLER.—This bird was seemingly but an irregular migrant, being seen only during early spring and early fall. As its name implies, it was found in reeds or alders bordering water. The two times it was seen were March 24, two birds, and August 11 one bird.

19. *Phylloscopus trochilus trochilus* (L.). WILLOW WARBLER.—A plentiful spring and fall migrant, haunting underbrush at the edge of open fields or woods. Although plain plumaged and small in size, they were easily noticeable because of their great activity. Flitting from limb to

limb or flying out after an insect, they were never still, for even when pausing for a moment they nervously jerked their tail continuously. The first bird was seen March 23, but it was several weeks before they became plentiful. On April 7 one was heard singing for the first time, a short, sweet warble. From the middle of April on they gradually disappeared and by the first of May none were left. They were first seen again on August 11 and within a week were quite plentiful. On August 18 a large flock was seen. After the middle of September they became scarce, but one was occasionally seen until the first week of December.

20. **Regulus ignicapillus ignicapillus** (Temm.). FIRE-CRESTED WREN.—This little bird resembled in every respect our Golden-crowned Kinglet—size, appearance, actions, and notes. It was a plentiful winter resident, occurring in small flocks, either alone or with wandering flocks of Long-tailed or Blue Tits. In the spring the last bird was seen on March 10, several feeding in the tops of the maritime pines at the edge of a stretch of woods. In the fall they were first seen on September 22, and were soon of common occurrence.

21. **Ægithalos caudatus**. LONG-TAILED TIT.—Plentiful and resident, and occurring in loose, wandering flocks. Always noisy and with a great variety of notes these birds, although small, were far from inconspicuous. Most frequently heard was a deep-toned chip and a thin, high-pitched call identical with that of our Golden-crowned Kinglet. They nested early, for on April 28 two nests were found with newly hatched young. These were large balls of moss lined with feathers and well covered externally with lichens. The entrance was a small opening at the side, barely large enough to permit the bird to enter. One nest was thirty feet from the ground at the outer end of a limb of a large cork oak at the side of a road. The other was but five feet from the ground in a large briar at the side of a road, in the middle of a large mass of dead leaves lodged there during the winter.

22. **Parus major major** L. GREAT TIT.—This species was not so plentiful as the last, and occurred usually in pairs or at most three or four birds. They were resident, and being of a wandering disposition could, except during the nesting season, be found almost anywhere, even in the middle of the larger towns. Always noisy, they were especially so in the spring, uttering for long intervals at a time a repetition of two unmusical, high pitched notes. A late nest was found July 15 with almost fully fledged young. It was three feet from the ground, in a natural cavity in the trunk of a large maritime pine at the edge of a stretch of woods, and was a matted bed of green moss, bits of wool, and considerable cow's hair.

23. **Parus cæruleus cæruleus** L. BLUE TIT.—Plentiful and resident. Next to the Long-tailed Tits these birds were the most frequently observed of this family. Like the others, they occurred in small wandering flocks and frequently were found with them. A nest found the sixth of June with large young was twelve feet from the ground in a natural cavity in the trunk of an oak at the side of a road through the woods. Another

found June 12 with almost fully fledged young was in the hollow of a large shell lying on the ground near a munition works.

24. **Parus cristatus mitratus** Brehm. CRESTED TIT.— This species was resident and plentiful except during the nesting season. At this time these birds evidently retired to the deep pine woods to nest. During the fall and winter they were found with others of this family, and were easily recognized by their crest and dull plumage. On March 17 one was heard uttering a loud, clear, two-syllabled whistle.

25. **Sitta europæa europæa** L. NUTHATCH.— With the exception of the black line over its eye, this species resembled very closely our Red-breasted Nuthatch. It was found throughout the year wherever there were stretches of woods and was frequently seen associating with the Tits. Its loud, querulous notes made it noticeable wherever it occurred. On March 24 one was heard uttering a loud, clear, rolling whistle. Toward the end of May young, fully grown and out of the nest, were seen.

26. **Certhia familiaris** subsp.? CREEPER.— This species resembled in every respect — size, actions, and notes, and general plumage — our Brown Creeper. It was noisier, however, and far more agile, feeding with seeming ease on the smaller limbs, where it was often seen. It could be found throughout the year in the pines, and was often seen with the Tits and the Nuthatch. A nest found May 7 with four fully fledged young was three feet from the ground, in a crack in the trunk of a large maritime pine at the edge of a stretch of woods, and facing an open field. It was composed largely of green moss with a few feathers, soft grasses, and bits of wool.

27. **Troglodytes troglodytes troglodytes** (L.). WREN.— This, the only one of the family found in Europe, reminded me much of our Winter Wren. It was of the same size, actions, and notes, even down to its song, which could be heard at any and all times. Although found at times about houses, it was largely seen in the pine woods, feeding in the tangled thickets of briars. It was resident and plentiful at all times. Several old nests were found in pockets in upturned roots, balls of small twigs and green moss.

28. **Sturnus vulgaris vulgaris** L. STARLING.— This bird was seemingly an irregular straggler only in this part of France, for I have but two records of its occurrence. On October 24 a flock of ten birds was seen in the tops of several chestnut trees at the edge of a field, and on December 22 a flock of eight was noticed flying by overhead.

29. **Garrulus glandarius glandarius** (L.). JAY.— Resident and plentiful, occurring, except during the nesting season, in noisy, wandering flocks. With their dull brown plumage they would be far from conspicuous but for their white rump and harsh cries. Feeding in the tops of the pines at the edge of the woods, they were seldom quiet, and so always much in evidence.

30. **Pica pica pica** (L.). MAGPIE.— This bird was seemingly in every respect like our Magpie. It was resident and plentiful in the more open country, but was never seen deep in the pine woods. On May 12 a bird

was seen flying from a nest seventy feet from the ground, in the top of a large maritime pine at the edge of a short stretch of woods.

31. **Corvus corone corone** L. CARRION CROW.— In appearance and actions these birds resembled very much our Common Crow. Their vocabulary was more varied, however, some of their notes reminding me much of the Raven. They were at all times quite plentiful and occurred equally often in the open country and deep in the woods. They were usually seen singly or in pairs, although on February 24 sixty were found feeding together in a large field. During early spring they were occasionally seen circling and soaring high overhead.

32. **Lanius excubitor excubitor** L. GREAT GRAY SHRIKE.— On November 2 two birds were seen on a telephone wire at the side of a road. This was my only record for the occurrence of this species. In appearance they reminded me of our Northern Shrike.

33. **Lanius collurio collurio** L. RED-BACKED SHRIKE.— As its name implies, this bird was easily recognized by its reddish brown upper plumage. It was a scarce and irregular summer resident, haunting thickets and underbrush bordering open fields. The first bird was seen June 2, and on July 7 several were found about thickets at the lower end of the lake. They were invariably silent and timid.

34. **Lanius senator senator** L. WOODCHAT SHRIKE.— This bird, with its conspicuous plumage, underparts white, wings and tail black, and top of head and neck light brown, was a plentiful summer resident about thickets and underbrush bordering open fields or roads. In habits it was typical of its family, stationing itself in the top of a bush or tree, from which at intervals it dropped to the ground for food. The first bird was seen April 24, and on May 5 one was heard singing for the first time, the song being a hoarse, erratic warble. On August 11 the last bird for the year was seen in the top of a tree at the edge of an open field.

35. **Muscicapa striata striata** (Pall.). SPOTTED FLYCATCHER.— This dull plumaged little Flycatcher was a plentiful summer resident. It was seen largely at the edge of the pine woods or in the small scattered groves of oaks or alders, and never far from open fields or streams. The first bird was seen May 5, and within a few weeks they were of common occurrence. Always silent, however, and a little timid, they were far from conspicuous. The last bird was seen on October 21 feeding at the edge of a field.

36. **Muscicapa hypoleuca hypoleuca** (Pall.). PIED FLYCATCHER.— Throughout the spring and summer none of these birds were seen, but during the fall migration they were quite plentiful. The first bird appeared on August 25, and within a short time they were much in evidence. Unlike the preceding species, they were more or less noisy, uttering most of the time a sharp chip. They were seen largely at the edges of the woods, frequently in company with the Tits. The last bird was seen October 6, several being observed on that date.

37. **Hirundo rustica rustica** (L.). CHIMNEY SWALLOW.— In appear-

ance this bird closely resembled our Barn Swallow, and in habits and notes differed from it in no way. Flying by overhead or circling about the barn in which was its nest, it had the same cheery twitter and the same happy disposition. It was plentiful about both the scattered farms and the towns, and nested indiscriminately under the eaves of the sheds, the barns, railroad stations, and houses. The first bird was seen March 29, five being observed flying low over a field, and by April 13 they could be found everywhere. On June 6 young nestlings of the first brood were well grown. On June 12 a nest with four fresh eggs was found on a beam under the eaves of a railroad station. The nest was of pellets of mud and grasses, with a lining of feathers. The eggs were white, spotted over the entire surface with varying shades of brown. Another, on the 27th of June, held five fresh eggs, and was on a beam under the eaves of a small shed at the side of a road. A third, on July 10, held three slightly incubated eggs and was under the eaves of a railroad station. A fourth, found at Dax on the 12th of July, held four slightly incubated eggs and was on a beam in the roof of a balcony of a hotel. By August 18 the birds were found gathering into flocks, fifty being seen at one place on telephone wires at the side of a road. On September 1 a flock was noticed noisily convening in the top of a large sycamore. This habit of alighting in trees was found to be a common practice with this species. The last birds for the year were seen November 10, a flock of ten being found at the edge of Sangon, feeding about an old church.

38. *Chelidon urbica urbica* L. HOUSE MARTIN.—In appearance this bird, with the exception of its white rump, resembled closely our Tree Swallow. It was a plentiful summer resident about all the towns, there being none in which one pair at least could not be found nesting. The first bird was seen April 28, and on May 16 a pair were seen working on a newly started nest under the eaves of a house. A nest found June 14 held four fresh eggs and was under the eaves of a railroad station, on the top of an old nest of the Chimney Swallow. This was an unusual situation, for all the others found were plastered against the sides of the buildings, with no support of any kind. The nests were flask-shaped, of pellets of mud and grasses, with a lining inside of grasses and feathers. The eggs were white, unspotted. Fully fledged young were seen still being fed in the nest on July 28. The last birds for the year were seen October 24, a flock of ten being found feeding over an open field with a number of Chimney Swallows. At all times these birds were quite sociable, and it was seldom that a single pair were found nesting alone.

39. *Riparia riparia riparia* (L.). SAND MARTIN.—This bird is of course our familiar Bank Swallow. It was for some reason but an irregular migrant, although there were many banks suitable for it to nest in. During the spring it was seen but once, five birds being found April 28, feeding over the lower end of the lake. August 11 it was seen again, this time twenty birds being found on a telephone wire at the side of a road. August 18 a flock of fully a hundred was observed at almost the same spot.

It was seen for the last time September 22, a single bird feeding over an open field with several Chimney Swallows.

40. **Chloris chloris chloris** (L.). GREENFINCH.— This was a plentiful summer resident about the towns and the scattered farms. With its dull greenish plumage, it would have been easily passed by but for its characteristic song, a prolonged lazy drawl. This was frequently heard during the heat of the day, when other birds were silent, and so was more noticeable. The first birds were seen April 21, a flock flying into the top of a tree ahead of me. They were soon plentiful and remained so until early fall. In flight they uttered a note much like that of a Crossbill, and this resemblance was heightened by the way in which they tore apart pine cones for the seeds they contained. September 26 a small flock was seen for the last time.

41. **Carduelis carduelis carduelis**. GOLDFINCH.— This pretty little bird proved to be but a migrant only. During the spring it was very scarce, for it was seen but once. On April 24 one bird was seen in the top of a small tree at the edge of a field. From early fall on, however, it was almost plentiful and small flocks were frequently encountered. September 2 fifteen were found feeding on weed seeds at the edge of a millet field, and flocks of this size were of more or less common occurrence for the next few months. On October 22 fully a hundred were found feeding together in an open field. The last record for the year was November 21, two birds flying by overhead.

42. **Spinus spinus spinus**. SISKIN.— For a few weeks in early spring this species was fairly plentiful, feeding in the alders and scattered poplars along the streams. It was seen for the first time on March 10, when a flock of fifty of these birds was found feeding in the alders bordering a small creek. They were very restless, seldom remaining quiet long, and uttering a harsh twitter as they moved about. Another note that was commonly heard was a low call quite like that of our Goldfinch. On March 29 the last birds were seen, several flying by overhead.

43. **Serinus canarius serinus** (L.). SERIN FINCH.— In size and actions this species resembled the last, but in plumage was quite unlike it. The throat and breast were yellow, the sides of the latter well streaked with brown. The cheeks were reddish brown. The upper parts were brown, with a patch of yellow on the neck. It was a plentiful summer resident in the open country about the edges of the towns and about the scattered farms. The first bird was seen April 21, singing from the top of a tree at the edge of a field. The song was buzzing in nature, prolonged, and far from musical, and so distinctive that the birds were easily recognized whenever heard. On May 27 a nest was found with one fresh egg, fifteen feet from the ground at the outer end of a limb of a small oak at the side of a road. It was made of fine rootlets and bits of wool, well lined with chicken feathers, and sparingly covered externally with lichens. Another found June 5 with newly hatched young was fifteen feet from the ground, at the outer end of a limb of a small maritime pine at the edge of a stretch of woods. It was made of grasses, well lined with chicken feathers, and covered

externally with lichens. By the first of September the birds were seen in small flocks, but a few were still singing. October 22 three were found feeding at the edge of a field, and were the last seen for the year.

44. *Passer domesticus domesticus* (L.). HOUSE SPARROW.

45. *Passer montanus montanus* (L.). TREE SPARROW.—These two species were found in the towns and about some of the farms, and were plentiful and noisy wherever seen. They were much alike in appearance, the latter differing from the former in having the white of the throat extending up and forming a collar on the lower part of the neck. They appeared to associate indiscriminately, and one was about as much of a nuisance as the other.

46. *Fringilla cœlebs cœlebs* L. CHAFFINCH.—This species was undoubtedly the most plentiful of any of those found in France. It was resident, and although seen largely in the open cultivated country was of common occurrence in the pine woods, feeding in the upper branches of the larger trees. During the winter the birds wandered about in small flocks, and although never scarce they became unusually numerous during late February and early March, when their numbers were probably augmented by those which had wintered farther south. By the middle of March they had begun to scatter out and were soon seen commonly in pairs. On the 17th of March the first bird was heard singing. The song was a rapid, rich warble, reminding me much of our Vesper Sparrow, but fuller and clearer. On April 21 a female was seen gathering bits of wool from the side of a road, and on May 12 the first nest was found. This, like all the others later seen, was made of green moss, lined with soft grasses, feathers, and horsehair, and well covered externally with lichens. It held four fresh eggs and was fifteen feet from the ground, in a crotch against the trunk of a large cork oak at the side of a road. The eggs were bluish gray-clouded at the larger end with lilac, and sparingly spotted with brown. Another nest found the same day held three slightly incubated eggs, and was twenty-five feet from the ground, at the outer end of a limb of a large cork oak at the side of a road. A third nest, the 19th of May, held four slightly incubated eggs and was eight feet from the ground, in a crotch of a small maritime pine at the edge of some underbrush bordering a road. The last nest found the 7th of July, with four slightly incubated eggs, was thirty feet from the ground, at the outer end of a limb of a large sycamore at the side of a road. Toward the end of July the birds were gathering into small flocks again and soon few individual birds could be seen. On October 6 a flock of fully five hundred of these birds was found feeding at the edge of a large millet field.

47. *Pyrrhula pyrrhula europæa* Vieill. BULLFINCH.—This species, one of the handsomest in France, was seen only during the fall migration, but it was fairly plentiful then. The first bird was seen October 27, when one adult male was found feeding in a thicket at the edge of a field. It was a little timid, and on being approached flew away with a low, querulous note, distinctive of this species alone. For the next two months these birds

were frequently encountered in small flocks, usually two or three together, and never more than four. They seemed to show a preference for water, for they were largely found in alders and underbrush bordering streams and ponds. They probably remained until early spring, for several were seen as late as December 22.

48. ***Emberiza calandra calandra*** L. COMMON BUNTING.— This bird was seen only during the fall migration and then it was very scarce. But two birds were recorded, one October 22 and the other October 25, feeding each time in underbrush bordering an open field. In general appearance and actions they reminded me much of our Song Sparrow.

49. ***Emberiza cirlus*** L. CIRL BUNTING.— On December 14 one bird was seen feeding with a small flock of Reed Buntings at the edge of a millet field. This was my only record for the occurrence of this species.

50. ***Emberiza schœniclus schœniclus*** L. REED BUNTING.— It was only during the fall migration that these birds were seen, but they were fairly plentiful then. They occurred in small flocks and were largely found feeding in millet fields. The first birds were seen October 22 and the last small flock December 22. When approached they did not fly until almost stepped on, and then flew up suddenly, uttering as they went a characteristic high-pitched note. This, with their white outer tail feathers, made them easy to identify.

51. ***Motacilla alba alba*** L. WHITE WAGTAIL.— Resident, and plentiful about open fields, especially those under cultivation. Although seen occasionally on a fence post, they were rarely found off the ground, and were essentially birds of the meadows and pastures. On one occasion, however, September 15, three were frightened from an alder thicket in the branches of which they had evidently been feeding. They occurred largely singly or two or three birds together. Small flocks were encountered but very seldom. On June 1 five fully grown young were seen, out of the nest several days at least.

52. ***Motacilla flava flava*** L. GRAY-HEADED WAGTAIL.— Unlike the last this bird was only a winter resident. It was common about water, and there were no ponds or streams of any size about which one or two could not be found feeding during the fall and winter. Single birds were frequently seen, but small flocks were of equally common occurrence. In the spring the last bird was recorded March 17. The first one appeared again August 25, and within a week they were quite plentiful. On September 8 they were unusually numerous along the shore of the lake, and were observed in small flocks, feeding close to the heads of grazing cattle. This habit was later found to be a common one with this species. On September 15 a flock of fully fifty of these birds was seen, scattered about several cows in the middle of a field.

53. ***Anthus trivialis trivialis*** (L.). TREE PIPIT.— In appearance and actions this bird was very similar to our Pipit. It was resident and plentiful throughout the year. During the fall and winter it occurred in

- flocks of varying size, feeding in cultivated fields and pastures, but on the

approach of spring the flocks broke up and the birds were soon seen singly or in pairs scattered through the pine woods. Here they were frequently flushed from the ground, but were as often seen in the trees. The song, which was frequently heard during the spring and early summer, was given on the wing while fluttering overhead or from the top of a tree.

54. *Alauda arvensis arvensis*, L. SKYLARK.— This bird occurred as a migrant only. During the spring it was scarce and was seen but twice. February 24 a flock of fully a hundred of these birds was found feeding in a newly plowed field, and on March 17 two were flushed while crossing a millet field. In flight they uttered a low, gurgling note, but otherwise were silent and inconspicuous. October 19 they were seen again for the first time and almost at once were plentiful, small flocks being frequently encountered, flying by overhead or feeding in the cultivated fields. At this time they were restless and noisy, seldom remaining on the ground long, and continually uttering their low gurgling note and another short, high-pitched call. On October 25 two hundred were seen in one flock. The last bird was seen November 21, two being flushed from the edge of a millet field.

55. *Lullula arborea arborea* (L.). WOODLARK.— On September 22 five birds were found at one place circling high overhead over a large field, singing. Occasionally one would drop down into the top of a tree, or to the ground, only to fly high into the air again, still singing. This was my first record for the occurrence of this species, and I saw it but once again when, November 18, two birds were flushed from the edge of a newly plowed field.

56. *Apus apus apus* (L.). SWIFT.— In size and general appearance this bird resembled our Chimney Swift, but differed in having a forked tail, the end of which was smooth, without barbs. It was a summer resident and plentiful in and about the towns. The first bird was seen May 5 and within a few days they were of common occurrence. On May 16 many were feeding over the town of Pontoux toward dusk, and were noisy and mating then, chasing each other about with an often repeated, high-pitched squeal. On July 7 birds were noticed evidently feeding young, five being seen entering crevices in the tile roof of a house. Although still numerous up to the middle of July, they suddenly became scarce, and on July 21 the last ones for the year were seen, several circling and feeding overhead.

57. *Caprimulgus europæus europæus* L. NIGHTJAR.— This bird closely resembled in appearance and actions our Whip-poor-will and was a plentiful summer resident in the pine woods, especially at the edge of slashings or fields overgrown with furze and briars, in which places they nested. On June 18, while crossing a slashing, a female was flushed from two well-incubated eggs lying on a litter of pine bark at the foot of a briar. The eggs were creamy white, marbled with lilac and brown. On June 27 a bird was seen at dusk calling from a tree at the side of a road through the woods, uttering a deep rolling, churr-r-r-r, with a rising and falling in-

flection. This note was frequently heard for the next month, but about the first of August the birds became silent and soon disappeared.

58. **Dryobates major** (L.).¹ GREAT SPOTTED WOODPECKER.—In general appearance and notes this bird resembled our Hairy Woodpecker, but there was one striking difference. The under tail coverts were a bright red. Like our species, it was noisy but wary, and although frequently heard, for it was resident and plentiful in the pine woods, it was usually seen from a distance. A nest found June 2 held large young and was thirty feet from the ground, in the trunk of a sycamore at the edge of a stretch of woods bordering a pond.

59. **Dryobates minor** (L.). LESSER SPOTTED WOODPECKER.—On May 17 two birds were seen at the edge of a slashing in the woods. This was my only record for the occurrence of this species. In appearance they reminded me much of our Downy Woodpecker, being like the preceding species, but much smaller.

60. **Picus viridis viridis** L.¹ GREEN WOODPECKER.—At a distance this bird reminded me much of our Flicker, for it was practically the same size, and had the same bounding flight and the conspicuous white rump. A close view, however, showed the greenish yellow tinge of its plumage, from which it received its name. It was resident and plentiful throughout the pine woods, but while noisy and often heard it was less often seen, for it was wary and hard to approach. Several times, however, birds were found feeding on the ground at the edge of a slashing or of a field, and then did not fly so quickly. On May 26 a nest was found with six fresh eggs, fifteen feet from the ground, in the trunk of a small oak in the middle of a short stretch of woods. The cavity was fully a foot and a half deep, and on the chips on the bottom of it the glossy white eggs were lying.

61. **Jynx torquilla torquilla** L. WRYNECK.—On September 2 one bird was seen feeding on the ground at the side of a road. This was my only record for the occurrence of this species.

62. **Alcedo ispida ispida** L. KINGFISHER.—This bird was but an irregular straggler and was seen but twice along the same small stream, October 27 and November 1. On the latter date the one bird, as it flew by me upstream, uttered at intervals a short, shrill note.

63. **Upupa epops epops** L. HOOPOE.—This bird was a summer resident and fairly plentiful in the open cultivated country. The first one appeared about the middle of April, and from that date on one could frequently be heard uttering its loud, rolling cry from the top of some large tree. On May 29 a nest was found with small young, eight feet from the ground, in a natural cavity in the trunk of a large oak in a grove of trees about a farm house. There was no evidence of any attempt to construct a nest, the young lying on the foul-smelling decayed wood. Both the male and female were seen feeding their young. The female herself refused at first to flush from the nest, and on attempting to remove her she fluttered violently about, uttering a loud, hissing grunt and seeming, with her long neck

¹ Subspecies undetermined.

and raised crest, almost formidable. August 11 the last birds were seen for the year, four flying by overhead.

64. **Cuculus canorus canorus** L. CUCKOO.—A plentiful summer resident. On April 11 one was heard for the first time uttering its loud "cuckoo" from the edge of a stretch of pine woods, and within a few days they seemed to be everywhere. On April 17 they seemed to be especially noisy and could be heard anywhere and at any time during the day. In appearance they were about the same size as our Sparrow Hawk and had the same narrow build and flight, and so reminded me much of this bird. May 5 two were seen mating, the male chasing the female about with drooping wings and tail outspread, uttering meanwhile a low, hoarse grunt. June 16 several were heard, but after that date they became silent and disappeared entirely.

65. **Strix aluco aluco** L. BROWN OWL.—Two birds were seen September 14 in a Lombardy poplar at the side of a road, harassed by a small flock of Long-tailed Tits. This was my only record for the occurrence of this species.

66. **Circus æruginosus** (L.). MARSH HARRIER.—On August 18 one bird was flushed from the edge of the woods bordering the lake. It was surprisingly unsuspecting, not flying until approached within a few feet. This was my one record for the occurrence of this species.

67. **Circus cyaneus** (L.). HEN HARRIER.—On December 19 one bird, an adult, in the light bluish plumage, was seen circling and beating low over a large slashing in the pine woods. This was my only record for the occurrence of this species.

68. **Buteo buteo buteo** (L.). COMMON BUZZARD.—This bird was the most plentiful and the most frequently seen of any of this family. It was resident, and was observed throughout the year, flying low through the pine woods or soaring high overhead. During early spring it was rather noisy, and its scream was remarkably like that of our Red-shouldered Hawk.

69. **Pandion haliaëtus haliaëtus** (L.). OSPREY.—Two birds were seen June 23 hovering over the lake, and were the only ones of this species recorded. Observed from a distance, they appeared to differ in no way from our Osprey.

70. **Accipiter nisus nisus** (L.). SPARROW HAWK.—This bird was evidently resident and fairly plentiful in the pine woods. In appearance it was very similar to our Sharp-shinned Hawk and possessed the same habits and notes. On August 18 two were seen circling and soaring noisily overhead.

71. **Falco tinnuculus tinnuculus** L. KESTREL.—This bird closely resembled our Sparrow Hawk in appearance, actions, and notes. It was resident and fairly plentiful in the open cultivated country, where it was frequently seen hovering with rapidly beating wings over open fields.

72. **Ardea cinerea** L. COMMON HERON.—In size and general appearance this bird was much like our Great Blue Heron. It was but an irregular straggler, for it was seen but twice about the lake. On July 7 four birds

were flushed from the edge of the water at the upper end of the lake, and September 1 two birds were found at almost the same spot.

73. **Anas platyrhynchos platyrhynchos** L. WILD DUCK.— This bird resembled in every way our Mallard — size, plumage, habits, etc. It was a scarce migrant, and was found along the small streams or in the alder swamps. April 13 the first birds were seen, a male and female being flushed from a small pond at the edge of a stretch of woods. For the next few weeks one or two were occasionally observed, and April 29 the last ones for the spring were recorded. Three were seen that day circling over an alder swamp, and seemingly mating. The only record for the fall migration was December 25, four birds being flushed from a small stream.

74. **Columba palumbus palumbus** L. WOOD PIGEON.— This bird reminded me much of our common domestic pigeon, the main difference being the white wing bar, conspicuous in flight. It was also, however, somewhat larger. It occurred as a migrant and was, especially in the fall, very plentiful. In the spring it was seen but one day, February 24, but on that day was much in evidence, large flocks going by overhead for hours at a time. October 24—it was seen again, a flock of fully five hundred birds flying by high overhead. This was the largest number observed at one time, for, although for the next three weeks flocks of varying size were encountered, seventy-five were the most found together, and occasionally eight or ten only. They were seen in the tops of the pines and appeared to feed there entirely, never being flushed from the ground. December 15 the last birds for the year were seen, four flying from the edge of a short stretch of woods.

75. **Streptopelia turtur turtur** (L.). TURTLE DOVE.— This bird reminded me much of our Mourning Dove, but unlike it was a very scarce summer resident. The first bird appeared April 26, one being flushed from the upper branches of a pine at the edge of a stretch of woods. From that date on one was seen at infrequent intervals, flying by overhead or feeding at the edge of open fields. August 18 two birds were found feeding at the edge of the woods, but none were observed after that date.

76. **Gallinula chloropus chloropus** (L.). MOOR HEN.— This bird, so much like our Purple Gallinule in appearance, was seen but once. On July 28 two adult birds, with one half-grown young, were found feeding in the lily pads at the edge of a stretch of reeds bordering the lake.

77. **Fulica atra atra** L. COOT.— This bird was a scarce and irregular migrant, although several times it was seen in large numbers. March 10 some sixty of them were found at the lower end of the lake, feeding among the reeds close to the shore. None were then seen until August 18, when two of them were observed, this time at the upper end of the lake. December 15 one bird was flushed along a small stream, and December 22 fully a hundred were found feeding along the shore of the lake. In appearance this bird closely resembled our Coot.

78. **Squatarola squatarola**. BLACK-BELLIED PLOVER.— On May 12 four birds in full summer plumage were seen feeding in an open field at the

edge of a pool formed by an overflow of the lake. This was my only record for the occurrence of this species.

79. **Charadrius hiaticula hiaticula** L. RINGED PLOVER.—On May 19 two small flocks were seen, one on the ocean beach and the other on a sand bar in the middle of a stream. This was the only day on which this species was found here.

80. **Vanellus vanellus** (L.). LAPWING.—On April 28 one bird was seen feeding on marshy ground at the edge of the lake. This was my one record for the occurrence of this species.

81. **Scolopax rusticola** L. WOODCOCK.—On November 21 one bird was flushed from the edge of a stretch of woods bordering a stream. This was my only record for the occurrence of this species.

82. **Gallinago gallinago gallinago** (L.). COMMON SNIPE.—In appearance, actions, and notes this bird resembled in every way our Wilson's Snipe. It was a scarce migrant and was found in open, marshy places. During the spring it was seen but once, two birds being flushed on March 3 from the edge of a small stream in an open field. For the fall migration there were but two records, two birds on September 1 circling noisily high over the lake, and two on September 2 feeding at the edge of a marshy field.

83. **Pelidna alpina alpina** (L.). DUNLIN.—This little Sandpiper was easily recognized by the conspicuous black on its flanks. It was seen but once, four birds being found on May 19 feeding on a sand bar in the middle of a stream.

84. **Tringa ocropus** L. GREEN SANDPIPER.—This bird, so similar in appearance to our Solitary Sandpiper, was seen but once, one bird being found on April 11 feeding at the upper end of a large pond.

85. **Tringa glareola** L. WOOD SANDPIPER.—On June 23 one bird was seen feeding in a marshy field bordering the lake. This was my only record for the occurrence of this species.

86. **Actitis hypoleucos** (L.). COMMON SANDPIPER.—This bird closely resembled in actions our Spotted Sandpiper, being a common summer resident about the streams and the few scattered ponds. It was first seen April 21, and within a week was already fairly plentiful. In late summer small flocks began to appear, and on August 25 fully thirty of these birds were found feeding together at the upper end of the lake. The last one for the year was seen September 28 about a small stream.

87. **Tringa totanus** (L.). COMMON REDSHANK.—As its name implies, this bird was easily recognized by its long bright red legs and also by the white in its wings, conspicuous in flight. It was fairly plentiful as a spring migrant, and one pair remained late enough to have possibly nested. The first birds were seen May 19, six being found feeding on a sand bar in the middle of a stream, and for the next month or so small flocks were occasionally encountered, either on the ocean beach or along the shore of the lake. At the latter place two lingered until July 28, and there is a bare chance of their having bred there.

88. *Tringa nebularia* (Gunner). GREENSHANK.—In appearance this bird reminded me much of our Lesser Yellowlegs. It was seen but once, five birds being found on April 28 feeding in an inch or so of water in an open field at the edge of the lake.

89. *Larus fuscus fuscus* L. LESSER BLACK-BACKED GULL.—On March 10 twenty birds were seen feeding along the ocean beach at low tide. This was my only record for the occurrence of this species.

90. *Larus argentatus* L. HERRING GULL.—This bird was seen but once, some twenty of them being found on December 26 feeding along the ocean beach.

NOTES ON BIRDS OF THE CHICAGO AREA AND ITS IMMEDIATE VICINITY.

BY C. W. G. EIFRIG.

WHILE using the Christmas vacation of 1918-19 to transcribe an accumulated mass of bird notes from my "day book" into my "ledger," *i. e.*, entering them under the names of the species, an intention of several years standing was strengthened into action, namely, to write up some interesting or striking experiences with and observations of birds and to record several rare occurrences. In the latter phase of the work, my friend and companion on many trips, Mr. H. L. Stoddard of the Harris Public School Extension of Field Museum, now in France, has lately rendered yeoman service by recording the seeing or taking of such rare species as the Long-tailed Jaeger, Black Rail, Roseate Tern, *Picoides arcticus*, Hoary Redpoll, Evening Grosbeak, Prairie Warbler and others (Auk, Vols. XXXIII and XXXIV). This present writing, then, is in part at least a continuation of his work, with the addition of such material as seems to me to be worthy of record. Many of my trips for years past have been to the Sand Dunes of northwestern Indiana, extending along the south shore of Lake Michigan from Gary on the west — the city made to order — to Michigan City on the east, a distance of twenty-five miles, by one to two miles wide. This is an immensely interesting region for various classes of nature

lovers and nature students, to which frequent trips, one may almost say pilgrimages, are made by such varied organizations as the Geographic Society of Chicago, the Ornithological Society, the Prairie Club, the Friends of Our Native Landscape, and numerous classes in geography, geology, botany, zoölogy and especially ecology from the local universities and other institutions of learning. A part of this unique region is now proposed to be made into a national park before it falls prey to the further encroachments of steel mills, etc., as at Gary, and all members of the A. O. U. having a chance to aid in advocating this plan should not fail to do so.

Hydrochelidon nigra surinamensis. BLACK TERN.—The breeding grounds of this species, the large cattail swamps, are being sadly encroached upon by filling in and draining, and are replaced by large industrial plants or by fields. This is notably true of two of their once greatest breeding grounds in the country, the Calumet marshes, in the southern part of Chicago, around Lake Calumet and Wolf and Hyde Lakes, and the other, the famous Worth region, now drained by a large drainage canal. The fields now started there, and the chemical works going up in their place, with their pestilential effluvia and smoke, may be a necessity, but one hates to see this change. Still, we have seen hundreds of these Terns on Lake Calumet, September 4, 1915, and at Millers, Indiana, August 30, 1916, where they were diving into the schools of minnows near the water's edge of Lake Michigan, flying parallel with it, a few yards from shore. While most of the adults are then in their winter plumage, several were seen in the deep black nuptial dress.

Sterna caspia. CASPIAN TERN.—This large Tern may be seen on certain days during migration in large numbers over the lagoons in Jackson and Lincoln Parks, and in the places named under the preceding species. When there is a strong east wind, Lake Calumet, in the southern part of the city, is alive with them, as well as with the Common, Forster's, and Black Terns, and the Herring, Ring-billed, and Bonaparte's Gulls. This also holds good for the south end of Lake Michigan.

Sterna forsteri. FORSTER'S TERN.—In the large Tern flocks along the lake shore near Millers, this species often predominates in number. On the wing it can be told from *Sterna hirundo* by its larger size and whiter, more silvery appearance, especially on the lower parts. August 30, 1916, we saw about 200 near Millers, Lake County, Indiana.

Phalacrocorax auritus auritus. DOUBLE-CRESTED CORMORANT.—This species, still breeding along the Illinois River, in the central part of the state, is not common here. A female in my collection was shot here, on the lake, October 16, 1917,.

Mareca penelope. EUROPEAN WIDGEON.—I have in my collection a male bird of this species which I obtained from Mr. K. W. Kahmann, a

Chicago taxidermist. Unfortunately he did not record nor remember the place and date of its capture, but was positive that it had been taken near Chicago.

Somateria spectabilis. KING EIDER.—On November 29, 1917, six or seven of this species were shot out of a flock of about thirty, off the Municipal Pier. They were all birds of the year, and one of them is now in my collection. Woodruff's 'Birds of the Chicago Area,' 1907, does not give it.

Chen caerulescens. BLUE GOOSE.—Stoddard saw a flock of about forty of them, together with six Snow Geese (probably *C. h. hyperboreus*), on the lake shore near Gary, October 21, 1916, from which he took a fine adult male Blue Goose. He thinks they are probably rather common on certain days during the fall migration at the south end of the lake.

Branta canadensis. CANADA GOOSE.—While the wedge-formed battalions and the martial honking of this migrant are by no means uncommon here, I would like to record the red-letter day for numbers, that has been unique in my experience here or in Canada or elsewhere. It was October 23, 1917. We had the first snow of the season, the prelude to that memorably severe winter; the atmosphere was thick, there was no sun. At 1 o'clock in the afternoon a flock of from 500-1000 appeared from the west; apparently right over my house in River Forest, a suburb of Chicago, they seemed to become bewildered as to the direction of their course, and after loud consultation they turned north, where they seemed to settle in a prairie about a mile from here. At 4.30 o'clock 30 flocks were seen, each wedge-shaped and touching here and there; at 7 o'clock the air was again full of cries of large numbers, as also at 10 o'clock P.M. Whether any, and if so how many passed while I was in the class room, I do not know.

Some winters a flock remains in the vicinity, spending the day out on the edge of the ice in the lake, and the night inland on some cornfield of the previous season. Thus, January 23, 1916, about 200 were flying south. March 18, 1916, Stoddard and I came upon what seemed a convention or debating club of about forty of them. They were on the edge of the ice in the lake near Millers, and were all talking at once at the top of their voices. As the ice is then piled up high by the winter's storms, on the south end of the lake, we could not get within a quarter of a mile to them, and they seemed to know it, and kept right on. On April 1, 1916, while in the same place, a flock of thirty came from the south; at first they were in the usual formation; suddenly, as if by command, they straightened out in company line, and then suddenly and simultaneously they dropped to the lake, head first, as if they wanted to dive to the bottom. It was a most remarkable sight; the quickness and precision of the movements were baffling.

Nycticorax nycticorax naevius. BLACK-CROWNED NIGHT HERON.—This species must find it hard to hold its own against the army of boys and men with shooting irons pouring out from the great city into the sur-

rounding country on certain days. But they seem to be able to do so. In addition to the Addison heronry, which I reported several years ago, I found another large and flourishing one at Orland, about twenty miles southwest of the city. On May 19, 1917, there were from 150 to 200 nests in it, all 30-40 feet up in oak trees; some contained young recently hatched, others eggs on the point of hatching, or fresh. Two sets of five were seen. This in spite of the fact that this spring was the coldest one known in many years hereabouts there being frosts till the end of May, and slight ones up to June 16. May 30, 1914, I also saw a flock of eight at Elk Grove, in a swampy wooded tract, which probably had their nests near by.

Grus mexicana. SANDHILL CRANE.—A friend of mine at Crete, about thirty miles south of here, who is familiar with this species from a twenty years' residence in Texas, reported six flying over his village, September 11, 1915. Stoddard, who lived among them in Florida, saw three at Dune Park, April 7, 1917.

Steganopus tricolor. WILSON'S PHALAROPE.—Mr. E. W. Nelson, in his 'Birds of Northeastern Illinois,' 1876, says of the status of this species for our area, "Very common summer resident in this vicinity. Found in abundance about damp prairies and on grassy marshes." This has changed for the worse. Its former haunts are now turned into fields and factories. Personally I have seen it twice only, once at Addison, May 12, 1910, and the other time at Hyde Lake, May 31, 1912. In the still extensive marshes about this latter place a small company of them still nests nearly every year. Nests with eggs have in the last years been found by Stoddard, Abbott, and Mr. W. D. Richardson.

Tringa canutus. KNOT.—Probably less rare than supposed in migration. Stoddard took a male in breeding plumage near Millers, Ind., June 2, 1917, others September 2, 1916. I collected one out of a flock of Sanderlings on the beach near Millers, September 25, 1916.

Pisobia bairdi. BAIRD'S SANDPIPER.—A rare migrant. Stoddard took one at Dune Park, Porter County, Indiana, August 23, 1916, and two near Millers, September 2, 1916.

Tryngites subruficollis. BUFF-BREASTED SANDPIPER.—Another rare migrant. Stoddard took one at Millers, August 30, 1916.—Perhaps these rare Sandpipers would turn out to be less rare, if one could patrol the beach from Gary to Dune Park daily during migration.

Bartramia longicauda. UPLAND PLOVER.—Early in May, 1917, my son told me of a bird acting strangely near their baseball diamond, a few rods from the house. I took it to be a Killdeer, and paid no attention to it. On the 11th one of the students told me of having found a nest in the grass near my house, containing four large eggs. On the 14th I got him to show it to me, and imagine my surprise when I found it to be the nest of this species. I had seen none of the birds there all spring, but here were the eggs. Unfortunately a Crow had found them before we came, because

three of the eggs were out of the nest and picked open, only one remaining whole.

Ægialitis meloda. PIPING PLOVER.— While this nimble beach sprite is no longer so plentiful as when Mr. Nelson wrote, who counted thirty breeding pairs within two miles along the beach north of the city, it has not suffered itself to be brushed aside entirely. In a walk along the beach from Millers to Mineral Springs, Indiana, a distance of twelve miles, one may see two or three pair of these diminutive Plovers, as on April 22, 1917.

Bonasa umbellus umbellus. RUFFED GROUSE.— As is to be expected, this handsome forest bird has vanished from all its former haunts near the metropolis. Only in the Dunes it has been able to hold out. Even here its hold is rendered precarious by hunters and more so by the Great Horned Owl. March 11, 1916, I flushed three at Mineral Springs, where one may usually see one or two in the tamarack swamp, but we have also seen them near Millers. Dr. A. Lewy found the remains of one in a Great Horned Owl's nest.

Cathartes aura septentrionalis. TURKEY VULTURE.— This species is rare here. In nine years I have seen it once only, and that on April 21, 1917, when one passed low over Thatcher's woods, River Forest. Stoddard saw three at Tremont, Indiana, in the Dunes, July 4, 1917.

Circus hudsonius. MARSH HAWK.— This is the commonest Hawk here, with the possibility that in parts of our area the Red-shouldered may be more numerous. The large and small swales in the sand dunes are especially attractive to it, and here one may find five or six nests within a mile or two, as Stoddard has actually done at Mineral Springs. We found a bird here as early as January 6, 1917, and five to six on March 11, 1916. Nests are found the second half of May.

Astur a. atricapillus. GOSHAWK.— There were large flights of birds of this species in the fall of 1915, and again 1916. Mr. Kahmann, the taxidermist, got 30 or 40 to mount each season. One in my collection was taken at Orland, October 28, 1916.

Buteo swainsoni. SWAINSON'S HAWK.— Nelson says of this bird in his list of 1876, "As this species breeds in southern Illinois, it probably also breeds in the northern portion of the state." Woodruff quotes this, but adds no instances of it having been seen or secured. In nine years I have seen only one of what I took to be this Hawk, at Addison. Mr. Kahmann tells me that among the hundreds of Hawks he has mounted, he never received one Swainson's Hawk. Therefore he was much puzzled when, on October 27, 1917, he ran into a migrating flock of fifty or more which were circling about in bewildering fashion. Finally he secured one, which proved to be this species. The rest were all like it. It is now in my collection.

Haliaeetus l. leucocephalus. BALD EAGLE.— As late as twenty years ago this species nested regularly in the Dunes, as Woodruff states, but does so no longer. Now and then, however, they seem to return as if to once

more survey their ancient realm. Stoddard saw one at Millers, October 15, 1916; ten days later, on the 25th, one passed over our campus here in River Forest, and June 17, 1917, Mr. W. D. Richardson saw three at Mineral Springs, Porter County, Indiana, in the dune country.

Falco sparverius sparverius. SPARROW HAWK.—This handsome little falcon is by no means common here, either as migrant or summer resident. In the territory that I visit I know of only three or four breeding pairs, one in some big elms on the banks of the Desplaines River, and two pair at Schaumburg, Cook County, where the parent pair nests year after year in a small wooden pinnacle or turret over a buttress in the Lutheran church, and the other in a chimney near by. March 25, 1911, I saw one dart around among the flocks of *Calcarius lapponicus*, then in the fields at Addison, causing a great panic among them, but as long as I watched he did not catch any.

Aluco pratincola. BARN OWL.—Very rare here. To the one recorded by Mr. Stoddard (Auk, Vol. XXXIII, p. 328), I can add another. It was a male bird, shot at Orland, September 29, 1917, and sent to me.

Asio wilsonianus. LONG-EARED OWL.—This seems to be almost as rare as the preceding species. In the fall of 1916 I had an interesting experience with a pair, or at least two of them. November 29, while out with several boys in "Northwood," a large tract of park-like real estate,, we found one in a Norway spruce. Judging from the number of pellets below, it or they, as it turned out, must have been there for some time. It was there again, on the same limb, on December 3. On the 17th there were two, also on the 20th, one always on the same limb. I asked every visitor to my house, whether ornithologically inclined or not, whether he or she would like to interview a pair of Owls, and, usually getting an affirmative answer, would take them to that spruce, it being near my home, and the birds were always there, allowing close inspection. Once I showed them to some boys, and next time I came there they were gone. I gathered what pellets remained after the snow was gone, sent them to the Bureau of Biological Survey at Washington, whence I learned that they contained the remains of thirty meadow mice, one white-footed mouse, and two shrews.

Strix varia varia. BARRED OWL.—This seems to be rarer than the preceding species. In nine years only one has come to my notice. This was shot in the village of River Forest, August 6, 1915, by a dairyman, who objected to it coming to his poultry yard for several days in succession, where it was critically eyeing his chickens.

Cryptoglaux a. acadica. SAW-WHET OWL.—Another rare species. Saw one only in nine years, and the manner of seeing it was somewhat unusual. While with some boys in what I call "Waller's Park," now called "Northwoods," near my home, an Italian workman came along who wanted to throw a bird, whose head he had wrung off, into a fire. I asked him for it, and it turned out to be this Owl. He said he had caught it with his hands in a juniper bush near his house, because it disturbed his

sleep at night by its calls. He said there were more around, but close search by us failed to reveal them. Stoddard has taken it twice in the Dunes.

Bubo virginianus virginianus. GREAT HORNED OWL.— In addition to the records given by Mr. Stoddard (*Auk*, XXXIII, p. 329), I would add these: February 25, 1917, he found a nest at Dune Park, about 30 feet up in a Banksian pine, in an old Crow's nest, containing two eggs; March 4 there were three, which are now in my collection. In 1918 another one was found by Dr. A. Lewy at about the same place and time, containing two eggs. This was then photographed in all its phases—eggs, young, the female on the nest and flying off—by Mr. W. D. Richardson. The female would fly off when the pine, which contained the old Crow's nest, was touched, but did not mind the closest kind of approach from the neighboring pines, from which the pictures were taken.

Nyctea nyctea. SNOWY OWL.— Every year I hear of two or three occurrences of this species. March 14, 1915, one was seen at Proviso in this township; November 10 of the same year one was taken at Huntley, which I saw after it had been mounted.

Melanerpes erythrocephalus. RED-HEADED WOODPECKER.— A number of these occasionally winter in the Dunes, when the acorn crop is large. November 30 last I saw fifteen there, near Millers; December 21, however, only one or two, and on the 27th, two.

Colaptes auratus luteus. NORTHERN FLICKER.— For four years a pair has nested in an electric wire post at the rear of my garden. I think it is the same pair, because the first or second Flicker I see about our house in the spring usually flies directly to the hole in that pole. It is about four feet above ground. June 19, 1917, I witnessed an amusing incident of Flicker family life. While working in the garden within a few yards of the nest, the male flew to the entrance, rather noisily, as if in great glee, whereupon the female, who was inside, darted out at him; her eyes seemed to me to flash anger, and she seemed to scold him fearfully. He hastily withdrew, apparently much abashed and chagrined. December 22, 1917, I saw one still lingering at Riverside, four miles south of here, and February 17, 1917, we saw one at Mineral Springs, in the Dunes.

Antrostomus v. vociferus. WHIP-POOR-WILL.— This species must be called rare here. In nine years I have seen only ten. I believe it is decreasing in numbers over large parts of its range. During visits to western Maryland and other places, where it was formerly common, I have lately not seen or heard one. April 18, 1914, which, by the way, was an unusually early occurrence of it here, I had a unique experience with one in a woods at Whiting, Indiana, near the Illinois state line. There were two there, one of which repeatedly darted at my head.

Chordeiles v. virginianus. NIGHTHAWK.— I have so far not found a breeding pair here, although there are a few such on record. In spring they arrive about May 15 and pass through till the 31st, although in 1912 I saw one May 3, 5, and 9. They seem to me to be extending their

fall migration, however. Wherever I have been so far, in Indiana, Maryland, and Canada, they begin to return about August 12 to 15, winding up with a few stragglers during the first week in September. Of late years, however, I find them later and later, as witness these dates: September 14, 1915, 17, 1917, 22, 1916; October 4, 1914, 10, 1917; 5 and 9, 1918; I saw five each time. Two or three years ago Mr. Kahmann, who knows birds well, told me of having seen a flock of Nighthawks on, I think he said, October 29. I did not believe it then, but I believe it now.

Corvus b. brachyrhynchus. CROW.—It has often seemed to us that there is a crossing of migration routes on the south end of Lake Michigan. This can best be followed in the case of migrating Crows, because their flocks are so conspicuous. In fall, many coming along the west shore of the lake seem to be turning southeastward, and those coming along the east shore, southwestward. In the spring this is, of course, reversed.

Xanthocephalus xanthocephalus. YELLOW-HEADED BLACKBIRD.—This northwesterly species still breeds here, even if in steadily diminishing numbers. Colonies are found in the swamp and lake region on either side of the Indiana-Illinois state line, in the southeastern part of Chicago, where in June, 1917, ten to twenty pair were found. I found several pairs in a swamp near Elk Grove, May 30, 1914, which was their last nesting there, because the following summer the swamp was drained and all vestige of its former bird fauna, which included Pied-billed Grebes, Coots, Black Terns, Blue-winged Teal, King Rails, Marsh Wrens, etc., disappeared. There is also a colony in Butler's Lake, near Libertyville. Two or three years ago Stoddard told me about a few pairs in a small slough near 77th Street, Chicago, a site on which houses were built the next year.

Molothrus ater ater. COWBIRD.—

Sturnella magna argutula. MEADOWLARK.—I have repeatedly found nests of the Meadowlark near my house, which is on the edge of the prairie, with one or more eggs of the Cowbird, and one or more or all eggs of the rightful owner apparently rolled out. An example of this was one found June 24, 1917, with two Cowbird eggs inside and four Meadowlark eggs outside. The Cowbird is a decided nuisance in the Dunes, where hundreds may be seen prowling around in nesting time. The Meadowlark of this section seems to be the small southern variety *argutula*, not the large-sized *magna* of the East, as Mr. H. K. Coale has pointed out.

Icterus spurius. ORCHARD ORIOLE.—I have never seen this species here, but it occurs, with a curious, localized distribution. Mr. Edward R. Ford finds it in one or two places along the Drainage Canal, near Willow Springs, and where it flows out of Lake Michigan, at Evanston, but nowhere else.¹

Icterus galbula. BALTIMORE ORIOLE.—In June, 1918, Mr. G. Friedrich, a member of the Chicago Ornithological Society, had under

¹The past summer I found the only pair in my ten years residence here. They were nesting at Cary on the Fox River.

observation the building of a nest of this species. But, however hard and long he watched, he could never see the female. After the nest was finished and the complement of eggs laid, the nest was destroyed by an accident, and then he took one of the two birds in male plumage. Upon skinning and sexing it he found to his surprise that it was a female. Mr. Kahmann also saw the skinned bird, and he corroborates this. He tells me that he once before found the same thing. Mr. Friedrich kindly gave the skin to me. While the bird is not as brilliantly plumaged as some old males, it is more so than some young males I have seen, and is, at any rate, not in the plumage of the female at all.

Hesperiphona v. vespertina. EVENING GROSBEEK.—We have found this species to be rather numerous, if only locally so, during the last three winters, in the Sand Dunes of northwestern Indiana. This has been reported by Stoddard (*Auk*, Vols. XXXIII and XXXIV). In the phenomenally cold spring of 1917 several were seen in Jackson Park, Chicago, as late as May 15, and Mr. H. K. Coale saw some as late as the 21st, if I remember correctly. They are keeping this up during the present winter. November 30, 1918, I saw about eighteen near Millers, the flock being made up of males and females. They were industriously gleaning the buds of oak trees, but the stomach contents of three, which I sent to the Biological Survey at Washington, were reported as being almost entirely made up of the seeds of some species of dogwood (*Cornus*).—December 21 last, Mr. C. J. Hunt and I saw about fifty to sixty, one flock again industriously budding, another flying over. They have a remarkably swift and direct flight, something like some of the *Limicolae*, while the flocks are very compact. On the 27th we were there again, but we saw only four, having missed the main flock. They feed on the berries or seeds of fragrant sumac (*Rhus odorata*), and poison sumac (*R. toxicodendron*) and probably others, besides the *Cornus* mentioned above.

Pinicola enucleator leucura. PINE GROSBEEK.—So far as I know this northern winter visitant has not been seen here for years past. It was therefore with some pleasure that I saw two near Millers, November 30, 1918, one of which was taken.

Carpodacus p. purpureus. PURPLE FINCH.—This species is strangely rare here, and as erratic in its coming and going as can be. I have seen it seven times only in nine years, as follows: January 6, 1917, one only in the tamarack swamp at Mineral Springs in the Dunes; February 7, 1912, one all alone in the large Addison woods; April 1, 1916, two near Millers; May 2 and 3, 1916, a flock of ten in "Waller's Park," near my home; October 6 and 9, 1916, flocks of six at La Grange and Crete.

Acanthis l. linaria. REDPOLL.—Besides the large numbers we have seen in the Dunes, reported by Mr. Stoddard, I have seen many here at River Forest in the fall and winter of 1916-17, from November 15 to March 9. December 27, 1918, I again saw about twenty-five near Millers.

Calcarius l. lapponicus. LAPLAND LONGSPUR.—After much searching for this species in various parts of our area, I find them rare in most

places in the proper season, but Addison, where I first made their acquaintance, continues to be the paradise for them that I called it in an article in 'The Auk,' Vol. XXX, p. 238. To the bare, wind-swept fields around the old windmill they still come by the hundred or thousand every season. April 8, 1916, we found them there in great numbers, and on a day evidently to their liking. It was 33°, dark, and a strong northerly gale was blowing so hard as to make walking and seeing difficult. Yet in spite of that, or probably because of it, they seemed to be enjoying themselves, chasing each other and singing in a general frolic. Many males were in nearly their full nuptial dress. In specimens taken at this time of the year Mr. Stoddard and I have repeatedly found numbers of pinfeathers on head and neck, which would indicate that this acquisition of the nuptial coloring is not entirely due to abrasion, but wholly or in part to moulting. It has, after much observation of them, always seemed strange to me that the high colors of their nuptial plumage should by abrasion appear so suddenly and so symmetrically. These pinfeathers show that it is not due to abrasion only, if at all.

Passerherbulus h. henslowi. HENSLOW'S SPARROW.—Given its weedy pastures, preferably with water near by, this queer Sparrow may be met with in all parts of this region. It is most common in the large swale at Mineral Springs, where the Marsh Hawk is found in numbers.

Passerherbulus lecontei. LECONTE'S SPARROW.—A rare migrant and still rarer breeder. Stoddard took one October 10, 1916, and Mr. E. R. Ford found a nest, as probably reported elsewhere.

Passerherbulus n. nelsoni. NELSON'S SPARROW.—Since the taking of two specimens at Addison, August 31, 1910, and September 16, 1911, previously reported, I have found no more.

Spizella p. passerina. CHIPPING SPARROW.—Another species strangely rare here. As a breeder it is almost absent. The last two or three years, however, a pair or two bred near my house; last year a nest was in an Austrian pine on my lawn, five feet up, where the incubating female almost allowed one to touch her.

Junco h. hyemalis. SLATE-COLORED JUNCO.—In the exceptionally cold spring of 1917 members of this species were seen unusually late. I saw several May 11, and Dr. A. Lewy, a member of the Chicago Ornithological Society, as late as the 13th and 19th, in Jackson Park, whereas, ordinarily, the last are seen during the last week in April.

Peucæa æstivalis bachmani. BACHMAN'S SPARROW.—Since their appearance here in River Forest, May 9, 1915, when I saw them till July 1, I have seen no more. Dr. A. Lewy, however, saw one in Jackson Park, June, 1918.

Spiza americana. DICKCISSEL.—This species seems to be yearly getting rarer or more erratic or both. In 1916 and 1917 I saw only two pair in each year, and these near my home, in clover fields. In the former year they came June 9, in the latter, June 19. In 1918 I saw none.

Petrochelidon l. lunifrons. CLIFF SWALLOW.—This species seems

to me to be becoming one of the rarest of birds. I have seen none for several years in the Chicago Area and next to none in various other localities visited by me. I hope there is a corresponding increase in their numbers elsewhere, but I am skeptical about it. The large, flourishing colony at Addison, twenty miles west of Chicago, consisting of about fifty pairs, has disappeared.

Iridoprocne bicolor. TREE SWALLOW.

Stelgidopteryx serripennis. ROUGH-WINGED SWALLOW.— June 10, 1915, I saw a pair of each of these species nesting in a dead cottonwood on the top of a dune at Millers. In each case the female looked out of the hole and the male perched as close by as he could. The Tree Swallow was formerly a common summer resident, but is now rare as such, only common in migration. The latter is uncommon here, but becomes abundant just a little south of us. Along the Kankakee River, I saw about thirty, April 28, 1917.

Bombycilla cedrorum. CEDAR WAXWING.— This species is decidedly on the increase in number in several parts of our region, notably in River Forest and the Dunes. The last two years many have been nesting in Waller's Park, now called "Northwoods," here.

Lanius ludovicianus migrans. MIGRANT SHRIKE.— The number of birds of this species is deplorably declining here. When I first moved to River Forest there was a pair nesting near my house yearly, but in the last years I have seen none anywhere. In other regions I find the same condition. There is a pair nesting yearly at Mineral Springs in the Dunes, also at Addison, where it occupies the same hawthorn bush year after year.

Protonotaria citrea. PROTHONOTARY WARBLER.— This handsome species is extending its range northward along the Desplaines River. Several years ago it was found nesting at Riverside by Mr. M. O. Schantz, and since then it has been seen twice in River Forest, as on May 31, 1917. On the Kankakee, sixty miles south, it is abundant.

Dendroica caerulescens caerulescens. BLACK-THROATED BLUE WARBLER.— In the spring of 1917 I did not see a single one of this otherwise so common migrant. Other Warblers, such as the Blackburnian, were almost equally rare. It was that extraordinarily cold spring, when we had frosts till about the middle of June. I have no doubt whatever that there must have been a great mortality that spring among Warblers, Swallows and other purely insectivorous species, as in that memorable spring of 1907, when conditions were similar over a large part of North America.

Dendroica p. palmarum. PALM WARBLER.— In the same spring this species was seen hereabouts till May 31, when five were still in my garden. This Warbler seems to me to be increasing in numbers.

Dendroica discolor. PRAIRIE WARBLER.— A very rare species here. To the one recorded by Mr. Stoddard lately, I can add another, namely, one seen by Dr. A. Lewy at Tremont, in the Dunes, July 19, 1916.

Oporornis formosus. KENTUCKY WARBLER.— Another exceedingly

rare species here. We saw two May 27, 1917, in a tract of moist woods, near where the Desplaines River and Drainage Canal meet.

Mimus p. polyglottos. MOCKINGBIRD.—Since the one we saw near my house May 18, 1916, I have seen no more, nor have I heard of others having seen them.

Cistothorus stellaris. SHORT-BILLED MARSH WREN.—What may almost be called a nesting colony of them is located at Mineral Springs, in the Dunes, in the same large swale where the Marsh Hawk and Henslow's Sparrow are common. May 20, 1916, I saw about fifty there; their song resembles the syllables *psit tsit tsit*, ending in a sharp, rapid trill, which sounds like the knocking together of pebbles. The Prairie Marsh Wren (*Telmotodytes palustris iliacus*) is abundant in all larger sloughs and ponds.

Sitta carolinensis carolinensis. WHITE-BREASTED NUTHATCH.—This species seems decidedly on the decrease in numbers. The last two or three years I have seen them two or three times only each year.

Bæolophus bicolor. TUFTED TITMOUSE.—This Carolinian species is common enough 40-50 miles south of Chicago, but nearer the city it is rare. It seems to make short, rambling flights north of its breeding range in winter. I have seen it in River Forest, Riverside, Cary on the Fox River, and Millers, Indiana.

Penthestes a. atricapillus. CHICKADEE.—At Mineral Springs, Indiana, I have repeatedly seen this species, as well as *Dryobates pubescens medianus*, attacking the cattail stalks of the previous season, which probably contained larvæ of some kind.

Regulus c. calendula. RUBY-CROWNED KINGLET.—In the cold spring of 1917 this species stayed here in numbers until May 17, and their fine song could be heard daily. The Golden-crowned stayed about as late too.

Sialia s. sialis. BLUEBIRD.—This most attractive member of our avifauna I have found nowhere so abundant as, I am happy to say, near my home in River Forest. And this both as breeder or migrant. A nesting box in my garden has been occupied every year since put up, and one or two broods raised. In migration there are sometimes as many as twenty-five of them in my garden alone, which is only 100 by 100 feet, but contains two bird baths. Only at Cumberland, Maryland, have I ever found them so abundant during migration as here.

GEOGRAPHICAL VARIATION IN THE SONG OF THE
RUBY-CROWNED KINGLET.

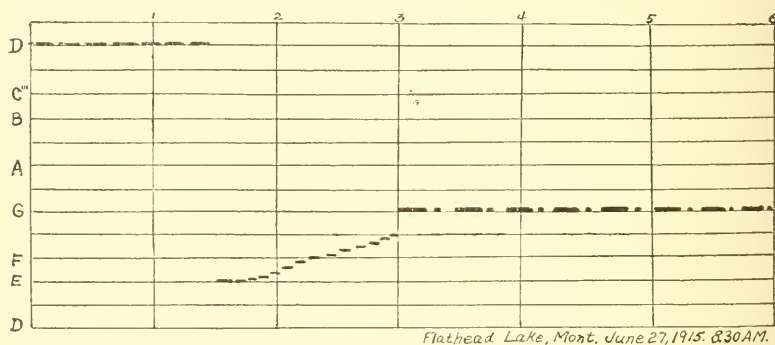
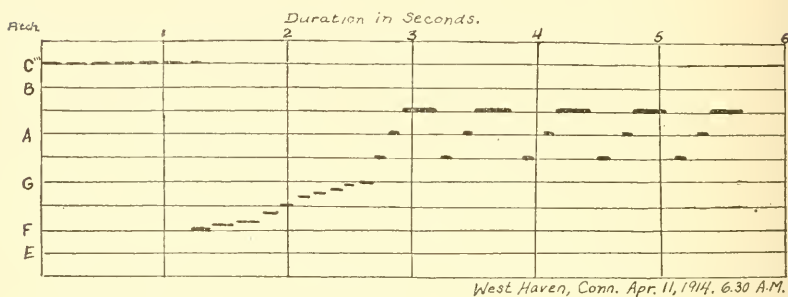
BY ARETAS A. SAUNDERS.

VARIATION in bird song may be individual, local, seasonal, or geographical. Individual variation is by far the commonest form, and is well illustrated in the Song Sparrow (*Melospiza melodia*), a bird whose song seems to hold the same general characteristics everywhere throughout its range, and yet is so variable that no two individuals ever sing exactly alike. Local variation may be found in many species. I have heard greater differences in the songs of Field Sparrows (*Spizella pusilla*) in two Connecticut localities, not more than twenty miles apart, than there is between the average Connecticut bird, and those of Pennsylvania or Alabama. Seasonal variation is well illustrated in the Blue-winged Warbler (*Vermivora pinus*), the differences between the early and late songs of this species being well known. True geographical variation, however, seems to be much rarer than the other forms. Pycraft states that such variation "has often been denied, but nevertheless . . . would seem to be true."¹ In my own experience there has come but a single certain case, that of the Ruby-crowned Kinglet (*Regulus calendula*).

I have already published some facts concerning this variation (Auk, XXVIII, p. 48, and Condor, XIV, p. 31), but wider studies since then have led me to believe the fact worthy of description in a more extended article. In general, there is a distinct, certain, and constant difference between the songs of the Kinglets migrating through eastern United States, and undoubtedly breeding in eastern Canada, and those breeding in the northern Rocky Mountains. The complete geographical limits of each form of song I am unable at present to work out. I have observed the eastern song in Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, and Alabama, and on the part of a few

¹ A History of Birds, p. 166.

migrant individuals, in Montana. The western song I have observed entirely in Montana, but since it ranges over the whole western half of the state there, extending from the Yellowstone Park to the Glacier Park, and including both sides of the continental divide, it probably covers a much greater range than this, perhaps the entire Rocky Mountain range of this species. Which



TWO SONGS OF THE RUBY-CROWNED KINGLET SHOWING
GEOGRAPHICAL VARIATION.

form the song of the Pacific coast subspecies resembles, if either, I have no means of knowing.

I have illustrated the differences in the two forms of songs by samples I have collected, recorded by the graphic method (See Auk, XXXII, p. 173) with the hope that these illustrations will make

this difference clearer than mere verbal description could. In general, the song of the Ruby-crowned Kinglet consists of three parts. The first part is a series of faint, high-pitched notes, rather squeaky in quality. The second part is much lower in pitch, sometimes more than an octave, and consists of a series of short, chatter-like notes. The pitch of these notes usually rises slightly. The third and final part of the song is the loudest and most conspicuous, as shown by the heavy lines in the record. It is in this part that the variation occurs. Eastern birds sing it as a series of triplets, the notes of each triplet rising in pitch, and the last note accented, that is, both loudest and longest in duration. Western birds sing a series of double notes, all on the same pitch, the first note of each double being the accented one. Both eastern and western birds sometimes omit the first two parts of the song, and sing the third part only. When the western bird does this the song strongly suggests a common call of the Tufted Titmouse.

Glancing at the illustrations of these two songs, the main differences in them are at once apparent to the eye, as they are to the ear, of one who listens to the singers. A more detailed examination will show other differences in these two songs, but these are differences that are merely individual. As they are not at once apparent to the eye in the illustration, so they are not noted by the ear in the field, unless one makes a careful detailed study of the song.

While there is much variation among individual Kinglets in the rendering of their songs, I have never heard a song in eastern United States that resembled that of the western bird. In the same way I have never heard a bird on the breeding grounds in the west sing in a manner resembling the song of the eastern bird. In the spring of 1910 I did hear the eastern song from a number of birds that were migrating in Silver Bow County, Montana. These birds were all in clumps of willow bushes in the Transition zone, a place where this species may be found in numbers during the migrations. But in the fir forests of the Canadian zone, where this species breeds, the birds without exception sang the song of the western bird. This same statement will apply after seven summers of experience on the breeding grounds of this species in the mountains of Montana.

To name a new subspecies on the basis of a difference in song

would be a rather novel proceeding. The difference would be fully as great and as important as the differences on which many subspecies are named today, but they would be less tangible to the collector, who in most cases would have to depend on the locality to label his subspecies. I am rather of the opinion that the Rocky Mountain birds differ slightly from the eastern ones in plumage as well as in song. The naming of a new subspecies, however, if grounds for such, based on plumage or measurements, exist, I would prefer to leave to someone who has greater opportunities to study series of skins and to work out such problems.

THE EVOLUTION OF BIRD-SONG.¹

BY FRANCIS H. ALLEN.

THE evidence and arguments brought forward by Mr. Chauncey J. Hawkins in his paper on 'Sexual Selection and Bird Song' in 'The Auk' for October, 1918, make it seem very probable that bird-song had its origin — its first cause — in the "maleness" of the males. Mr. Hawkins fails to show, however, how the multiplicity of songs of the various species of birds, the extremely elaborate songs of some, could have acquired their present forms except by some continuous selective process.

Mr. Hawkins concludes his paper by saying (following Brooks) that "any variations in voice which might arise would be preserved in the male germ which assures the variation in the species, while the germ of the female guarantees the constancy of the species." I suppose this to mean that *all* variations that have arisen in the course of the evolution of a species are present potentially in the male germ, but that some of them are inhibited by the conservative action of the female germ. This seems to be going a little beyond the evidence, and it can, I think, only be regarded as a

¹ Read, in somewhat different form, before the Nuttall Ornithological Club, May 5, 1919.

theory. As a theory it seems to be open to the fatal objection that it fails to explain the relative uniformity of bird-song within the species. If every variation has a chance of being perpetuated, what is it, precisely, that decides for or against it and reaches the same or a similar decision in all individuals of the species? Can conservatism alone do this and thus permit progress in a definite direction?

It seems to me that something more positive in the way of an evolutionary process is needed to account for the multifarious distinctive songs of birds than the unregulated inhibition of variations. Granted that the song-impulse is rooted in the superabundant vitality of the male, there must still be some process that selects the variations to be preserved — whether it be sexual selection, natural selection, or some other agency, or a combination of two or more such agencies.

As Mr. Aretas A. Saunders has pointed out ('Auk,' January, 1919, p. 149), Mr. Hawkins has failed to make careful distinction between call-notes and song. Song probably originated in the rapid repetition or special adaptation of call-notes, as Mr. Charles A. Witchell has shown in his interesting book on 'The Evolution of Bird-Song' (London, 1896), but it has assumed an entirely different function in the bird's life, and, as Mr. Witchell and others have shown, it is as a rule transmitted from generation to generation in an entirely different way. Dr. Chapman, in his comprehensive discussion of 'The Voice of Birds' in the Introduction to his 'Handbook of Birds of Eastern North America,' indorses "the theory of the mimetic origin of bird-song," and says, "Birds inherit at least the calls they utter when in the nest, just as a child cries instinctively, but they apparently do not inherit their songs any more than the child inherits the language of its parents."

Call-notes are means of identification between individuals of a species and, being necessary in order to bring the sexes together and to prevent the separation of families, they have been evolved, whether through natural selection or otherwise, to meet the needs of the several species. No one thinks of attributing them to a surplus of sexuality. The songs are similarly differentiated for purposes of identification. Doubtless some, and perhaps many, songs were evolved either through the ordinary processes of evolu-

tion, whatever they may be, or through the special process of sexual selection. The evidence, however, seems to favor the belief that most songs are transmitted from generation to generation by imitation, each individual imitating, consciously or unconsciously, the songs of other individuals, whether the songs of his parents heard while he was in the nest or those of other birds. The songs would naturally be modified and improved by enterprising and gifted singers, but would, of course, always be subject to the conservative action of the herd instinct, which would repress and suppress any too great departure from the normal. (This last observation I offer as a substitute for Mr. Hawkins's theory of the opposing influences of the male and female germs.) In this way the characteristic songs of the species are preserved, just as primitive human language passes from individual to individual within the tribe, and as the folk-songs of the various races of men have been handed down from generation to generation.

This growth and development by invention and imitation must, it seems to me, account in great measure for the *forms and general characters* of bird-songs as we know them, but surely some other process was necessary to produce the *beauties* of tone and melody and rhythm that characterize so large a percentage of the songs. Superabundant vitality produces noise in human beings and doubtless also in birds, but it cannot account for beauty, any more than it can account for the more or less intricate patterns of the vocal utterances that we call songs. Weismann remarks that "it is not easy to see why a more active metabolism should be necessary for the production of strikingly bright colours than for that of a dark or protective colour,"¹ and it would be fully as difficult, I think, to show how it could produce music out of noise. Equally impotent in this direction must be such an agency as natural selection, for obviously birds can pick up a living, escape their enemies, and propagate their kind without the help of music; many species do so. Imitation could not of itself *produce* musical qualities, and in the absence of any standards of taste it would be as likely to perpetuate harsh and unpleasing notes as beautiful ones.

All these agencies failing, unless we postulate some supernatural

¹ The Evolution Theory, English translation by J. Arthur Thomson and Margaret R. Thomson 1904, (original published in 1902), vol. i, p. 212.

force at work in the universe to produce beauty,—and that, of course, would be getting outside the realm of science,—how can we escape imputing the origin and development of this beauty in bird-song to an æsthetic sense in the birds themselves? And how can we imagine an upward evolution in the beauty of the song and the proficiency of the singer without postulating some form of selection as the active principle? Finally, is any theory more reasonable than that of sexual selection to account for the beauty of bird-song? Is there, indeed, any other workable theory left to us?

Mr. Hawkins has pretty thoroughly recapitulated the evidence in favor of the hormone theory of the origin of bird-song,¹ and I fail to find in his paper any argument that would apply against this view of the action of sexual selection in producing and developing beauty in song, except the evidence he cites that display and ardent singing serve the purpose of overcoming the coyness of the female, and that in many cases there is no indisputable evidence that the female exercises any choice between suitors (or possible suitors). This is a strong argument but not an insuperable one. For one thing, even though but one male may be seen with the female at a given time, she may nevertheless have had opportunities to choose,—just as in the human species it frequently happens that but one suitor is heard at a time! More observation is needed on this point. But many evolutionary questions must be decided by a nice balancing of evidence and arguments, and the difficulties of accounting for bird-song without admitting sexual selection as an important factor seem to be far greater than those of reconciling the latter with the theory of superabundant sexuality.

If we agree that sexual selection has thus played its part, we have, then, in addition to natural selection or whatever other evolutionary process may be the chief agency in the origin of species, these three coördinate factors in the production of bird-song: the hormones generated by the male sex glands originating the song-impulse; invention and imitation producing the variety and fixing

¹ He fails to mention a comparatively recent opinion on the other side of the question in the case of Weismann, who says in his 'The Evolution Theory,' "From [the] simple love-call the modern song of many species must have developed by means of sexual selection."

the form and character of the song; and sexual selection evolving, through both structural and psychological changes, beauty of tone and proficiency in execution.

The letter of Mr. Saunders in the January 'Auk' has suggested a further examination into the mode of development of the songs of birds. Mr. Saunders raises an interesting question in regard to the relation between the ordinary songs of certain species and the ecstatic flight-songs. He makes a radical distinction between the "ordinary song" and the "mating-song," and states that "the ordinary song is evidently not sung from sexual impulses, but is simply an outburst of vocal sounds expressing great vigor and joy of living," while "the mating-song, on the other hand, seems to be caused directly by sexual impulses," and he goes on to say, "If we would know the primary cause of bird-song in general, then the question to be solved is which of these forms of song is the more ancient." He decides this question in favor of the "mating-song," and cites as his only evidence a certain flight-song of the Eastern Meadowlark, which he says is almost identical with that of the Western species, while the ordinary songs of the two species are very different, indicating the ancestral character of this flight-song.

He describes this song as "a long-continued jumble of short, quick notes," and says that it "quite closely resembles the flight-song of the Bobolink (*Dolichonyx oryzivorus*)." This song is also mentioned by Dr. Chapman in his "Handbook of Birds of Eastern North America" (Revised Edition, p. 64). I have never been fortunate enough to hear this song, which Dr. Chapman intimates is not very frequently uttered by our Eastern bird, and which I think, from my own experience and from inquiries I have made of other ornithologists, must be very uncommon in Massachusetts, where the "ordinary" song is certainly a mating-song, if not *the* mating-song. I should like, however, to cite a few other examples which seem to point to an opposite conclusion to that reached by Mr. Saunders as to the priority of mating-songs in general.

One of the most conspicuous examples of ecstatic flight-songs among our Eastern birds is that of the Ovenbird (*Sciurus aurocapillus*), and this song always (in my experience) contains a fragment of the ordinary song of the species interpolated among its rich, melodious warbles. Does it not appear more likely that this flight-

song has been evolved from the ordinary song, from which it has never quite succeeded in freeing itself, than that the warbling song should first have developed the *teacher teacher teacher* strain, and that then this new and comparatively uninteresting strain should have been selected to be lengthened and strengthened into the ordinary song of the species?

Another common Warbler, the Black and White (*Mniotilta varia*), possesses a song which is confined, I think, to the nesting-season, and this is so like the ordinary song of the species that the two must certainly have had a common origin. The song we first hear from newly arrived birds in the spring is a plain *wce-see wce-see wce-see wce-see*; then later we hear what is obviously the same song elaborated by lengthening the performance and lowering the pitch of two of the dissyllabic notes near the end, thus: *wce-see wce-see wce-see wce-see woo-see woo-see wce-see wce-see*. This latter song is uttered from a perch and is not an ecstatic performance like the Ovenbird's, but it is clearly a mating-song as distinguished from the ordinary song, and it is equally clearly an elaboration of that song. Of course, it may be argued that the more elaborate song is the regular one, and the other, which is heard first, is only a shortened, abortive form of it, used before the song-impulse has gained its full force; as, in the autumn, when the song-impulse is waning, we hear often only the introductory notes of the White-throated Sparrow's song; but is it not probable that in both these cases the shortened form is merely a reversion to an ancestral song, the song as it was before it was evolved into its present complete form? The ordinary course of evolution is, of course, from the simple to the complex rather than from the complex to the simple.

Again, the long-continued, richly intricate song that we hear from the Rose-breasted Grosbeak (*Zamelodia ludoviciana*) in the height of courtship excitement is obviously only an elaboration of its ordinary song.

Is it not reasonable to assume that courtship excitement should lead to a more and more elaborate form of song-expression as the development of the species goes on, and that the song of the more excited moments should always be somewhat in advance of the ordinary song in point of fervor and elaboration? This view of

the development of bird-song might be stated as follows: Let *S* represent the song first developed out of the call-notes of a certain species. *S* becomes elaborated as *SS* under stress of unusual emotion, and *SS* becoming fixed in the psychology of the species, the bird has two songs, *S* and *SS*, the latter a special mating-song uttered only at times of great sexual excitement; then *SS* tends to become the ordinary song, and a further elaboration, *SSS*, is evolved to express the unusual emotion for which *SS* is no longer adequate.

This process may go on indefinitely but so slowly that only in rare instances can we see any evidence of it. Do we not get a glimpse of it, however, in the case of the Baltimore Oriole (*Icterus galbula*)? Besides the harsh, chattering call which is suggestive of family relationships, this bird utters clear, pleasing whistles which are evidently in the nature of song-notes without amounting to actual songs. Out of these separate song-notes (*S*) has developed apparently the characteristic "ordinary song" of the Oriole (*SS*);¹ and out of this in turn has come the longer and more beautiful mating-song (*SSS*) which is so often uttered on the wing. (This is, of course, only an outline sketch of the possible development of these songs, and I do not mean to imply that there were no intermediate stages.) Here we seem to have three stages in song-development still in existence. It is conceivable that a fourth may be added in future ages and that the first or the second may eventually be dropped from the Oriole's repertoire.

Having elaborated this theory at some length, I have to confess that it remains only a theory, and I ought, perhaps, to apologize for presenting it in its present "half-baked" condition. If my presentation of it, however, leads to the presentation of further evidence or argument in favor of Mr. Saunders's view, or if some one can show that "ordinary" songs and "mating" songs originated quite independently of each other, I shall be satisfied. One objection that may be raised to the theory of progressive improvement from *S* to *SS*, etc., is, of course, the marked differences

¹ I think I am justified in speaking of the Baltimore Oriole's "ordinary song," for though the song is subject to so much individual variation that hardly any two birds sing the same tune, yet its quality is highly characteristic; it is never to be mistaken for the song of any other species with which the Oriole is commonly found, and in that sense it is a very definite entity.

between the ordinary and the mating songs, the absence of connecting links. The Baltimore Oriole's ordinary song is not merely a slight advance over the single song-notes; it is a much more elaborate performance. If the former originated in the latter, there must have been intermediate stages. What has become of these? Why have they been lost in the process of song-evolution while the single song-notes persist? Perhaps because they would represent simply an inferior form of song and would have no place in the Oriole's life, while the separate notes can be uttered easily while the bird is feeding and can be used in a sort of conversational way when he is not moved to utter a set song. There may be similar reasons for the persistence in other cases of songs which retain a place in a bird's repertoire, while other, more advanced songs have given place to still others, still more advanced.

There is another consideration. Some of the special "mating-songs" are not merely more elaborate performances than the "ordinary songs" and thus clearly an advance upon them; they are ecstatic and confused, less orderly than the every-day songs, and are interspersed with call-notes and chattering. This is the case, sometimes at least, with the Baltimore Oriole. Such a song in its present condition could hardly be expected ever to become the regular song of the species. It would need to be modified and regulated — standardized, so to speak. I see no reason why this should not happen, but neither have I any proof that it does happen. This whole question of the relation of these two types of song to each other is a complicated one, and while I do not believe that Mr. Saunders has settled it, neither do I claim to have settled it myself. It may, indeed, prove that in this, as in some other matters, no one formula will apply universally, but that the nature and origins of the mating-songs are radically different in some species from what they are in others.

I have quoted Mr. Saunders as saying that "the ordinary song [of birds possessing also a special mating-song] is evidently not sung from sexual impulses, but is simply an outburst of vocal sounds expressing great vigor and joy of living." It would be more exact to say that the ordinary song is not sung from *conscious* sexual impulses — using the word "conscious" in no strict sense, of course. Those who believe with Mr. Saunders that "sexual selection is the

primary cause of the evolution of bird-song" must agree with Mr. Hawkins that the bird's "joy of living" itself arises out of the sexual impulse, and those of us who consider the evolution of song more complex must still trace its origins back to sexuality. Even without accepting the Freudian theories in their entirety, we must recognize the power of the primary instincts, and there can be little doubt that it is the reproductive instinct that accounts for bird-song, however various were the processes through which it was evolved.

REVISION OF THE GENUS BUTHRAUPIS CABANIS.

BY THOMAS E. PENARD.

THE generic name *Buthraupis* was proposed, without designation of type, by Cabanis (Mus. Hein., i, 1850, p. 29) for *Tanagra montana* d'Orbigny and *Tanagra eximia* Boissonneau, with *Tanagra cucullata* Jardine listed as synonym of *B. eximia*. Subsequent writers have used either *T. montana* or *T. cucullata* as type of the genus. The first mention of a type, however, seems to have been by G. R. Gray (Cat. Gen. and Subgen. Birds, 1855, p. 73), who selected "*Tanagra montana* Lafr." [= *Tanagra montana* d'Orbigny, = *Aglaia montana* d'Orbigny and Lafresnaye], the first species listed by Cabanis under the new genus.

As at present understood, *Buthraupis* is a composite group. Ridgway (U. S. N. M., Bull. 50, pt. ii, 1902, p. 32) has called attention to the widely differing structural characters in its members, stating, however, that on the basis of the shape of the bill alone the genus could not be subdivided without making four groups, the first to include *B. cucullata* and *B. montana*, the second *B. arcaei* and *B. caeruleigularis*, the third *B. chloronota*, and the fourth *B. eximia*. He also called attention to the very much shorter tails in the group containing *B. arcaei* and *B. caeruleigularis*, but preferred to leave the genus with the usually assigned limits.

Through the kindness of Mr. Outram Bangs, and at his suggestion, I have examined the members of this group in the Museum of Comparative Zoölogy, and Mr. W. deWitt Miller of the American Museum of Natural History, acting in Dr. Chapman's absence, has kindly lent me specimens of *B. arcæi*, *B. melanochlamys*, *B. rothschildi*, *B. edwardsi*, and *B. aurcocincta*, so that altogether I have been able to see all the known forms usually included in the genus *Buthraupis*, with the exception of *B. cyanonota*, which is considered a subspecies of *B. cucullata*.

The series shows much variation, but it is easy to distinguish two sections, one containing the larger, long-tailed members, represented by *B. montana*, *B. cucullata*, *B. gigas*, *B. saturata*, *B. cyanonota* (?), *B. eximia*, and *B. chloronota*, and the other containing the smaller, short-tailed members, represented by *B. arcæi*, *B. cæruleigularis*, *B. melanochlamys*, *B. rothschildi*, *B. edwardsi*, and *B. aurcocincta*. The first section may be further subdivided into two groups, on the basis of decided differences in shape of bill and form of wing, the first group containing the longer-billed members with more pointed wings, the second group containing the shorter-billed members with less pointed wings. The second section containing the smaller forms, although fairly uniform in structural proportions, shows some differences in details which may eventually prove to be of more than specific importance.

Below are given the generic characters of the three groups which I think should be recognized:

Buthraupis Cabanis.

Type.—*Tanagra montana* d'Orbigny [= *Aglaia montana* d'Orbigny and Lafresnaye] by subsequent designation — G. R. Gray, 1855.

Characters.— Bill short and heavy; length of maxilla from nostril less than one half the length of the tarsus, and a little more than one half the distance from angle of mouth to tip; depth equal to width at base or slightly greater, and equal to length of maxilla from nostril; culmen convex, sometimes more strongly curved towards the tip, the terminal portion produced into a distinctly uncinatè point, behind which there is a distinct tomial notch; gonys about equal to length of maxilla from nostril, not decidedly shorter, gently convex, ascending, contracted and ridged terminally; commissure slightly sinuated; nostril exposed, nearly circular. Wing long,

from four to four and one half times the length of the tarsus; rather pointed, second (from outside) to sixth primaries longer than the first, which is decidedly short but longer than the seventh; third (or fourth) primary longest; primaries exceeding secondaries by more than or about two thirds the length of the tarsus. Tail from two thirds to three fourths the length of the wing; slightly rounded, the rectrices broad with rounded tips. Tarsus longer than the middle toe with claw; lateral claws reaching to or slightly beyond base of middle claw.

The genus, as now restricted, includes the following species and subspecies:

Buthraupis montana (d'Orbigny and Lafresnaye).

Buthraupis cucullata cucullata (Jardine).

Buthraupis cucullata gigas (Bonaparte).

Buthraupis cucullata saturata Berlepsch and Stolzmann.

Buthraupis cucullata cyanonota Berlepsch and Stolzmann.

Cnemathraupis gen. nov.

Type.—*Tanagra eximia* Boissonneau.

Characters.—Bill similar to that of *Buthraupis*, but shorter; width at base less than depth and about equal to length of maxilla from nostril; length of maxilla from nostril about equal to or less than one half the distance from angle of mouth to tip; gonys strongly ascending and ridged terminally; nostril less exposed than in *Buthraupis*. Wing not so long as in *Buthraupis*, very little more than three and one half times the length of the tarsus; not so pointed, second (from outside) to seventh primaries longest, the first longer than the eighth (or ninth). Tail comparatively longer than in *Buthraupis*, from three fourths to four fifths the length of the wing.

The following forms are included in this genus:

Cnemathraupis eximia eximia (Boissonneau).

Cnemathraupis eximia chloronota (Sclater).

Remarks.—Ridgway (*l. e.*) has suggested that the ridged condition of the gonys might be of generic importance. This character, however, is found to be rather variable, being more pronounced in some specimens of *C. e. chloronota* than in others. A specimen of *C. e. chloronota* in the Museum of Comparative Zoölogy (M. C. Z.

124900) certainly has this ridge fully as much developed as in a specimen of *C. e. eximia* (Bangs coll. 1448), although in general the ridge is more distinct in *C. e. eximia*. Some specimens of *B. c. cucullata* also exhibit this character strongly. The two forms, *C. e. eximia* and *C. e. chloronota*, very probably intergrade, and are considered geographical races by Chapman (Bull. Am. Mus. Nat. Hist., xxxvi, 1917, p. 603).

Bangsia gen. nov.

Type.—*Buthraupis arcæi cæruleigularis* Cherrie.

Characters.—In general resembling *Buthraupis*, but differing considerably in shape of bill and form of wing. Bill rather long and comparatively slender; depth at base about equal to width and to gonys (in this respect resembling *Buthraupis*), but decidedly less than length of maxilla from nostril. Wing long, about four times the length of the tarsus; more pointed than in *Buthraupis*, third primary (from outside) longest, the first very little shorter than the third and longer than the fifth (or sixth?); primaries exceeding secondaries by about the length of the tarsus. Tail comparatively much shorter than in *Buthraupis*, about one half or a little more than one half the length of the wing; slightly rounded or nearly square (slightly forked in *B. a. cæruleigularis*), not so decidedly rounded as in *Buthraupis*.

The following species and subspecies should be referred to this genus:

Bangsia arcæi arcæi (Sclater and Salvin).

Bangsia arcæi cæruleigularis (Cherrie).

Bangsia melanochlamys (Hellmayr).

Bangsia rothschildi (Berlepsch).

Bangsia edwardsi (Elliot).

Bangsia aureocincta (Hellmayr).

Remarks.—It gives me great pleasure to dedicate this well-marked genus to Mr. Outram Bangs.

I have seen only one specimen each of *B. melanochlamys*, *B. rothschildi*, and *B. edwardsi*, and two of *B. aureocincta*. In all these the bill seems to be a little heavier than in *B. a. arcæi* and *B. a. cæruleigularis*, especially the latter, and the fifth primary is longer

than the first. The distance from the secondaries to the tip of the longest primary also appears to be comparatively much shorter than the length of the tarsus, but the condition of some of the specimens was such that reliable conclusions could not be drawn, and more material would have to be examined to determine the exact interrelationship of these forms.

In selecting as type *B. a. caruleigularis* rather than the earlier form, *B. a. arcæi*, I have been influenced by the condition of the material at hand. The only specimen of an otherwise fine specimen of *B. arcæi* before me has a slightly imperfect tail, which, however, appears to be rounded instead of forked.

DESCRIPTIONS OF THREE NEW SOUTH AMERICAN BIRDS.

BY CHARLES B. CORY.

Automolus leucophthalmus bangsi subsp. nov.

Type from São Amaro, a few miles from the city of Bahia, eastern Bahia, Brazil. Adult female, No. 50573, Field Museum of Natural History. Collected by R. H. Becker, October 9, 1913.

Description.— Similar to the type of *Automolus leucophthalmus leucophthalmus* (Wied) (type examined) from the interior of southern Bahia, but differs in having the upper parts more brownish rufous, rump and tail decidedly darker (more rusty chestnut and less rufous), and sides of body and flanks more tinged with olivaceous.

Measurements.— Wing, 89; tail, 85; bill, 20 mm.

Remarks.— Six specimens examined from the coast region of Bahia.

Xiphocolaptes bahiæ sp. nov.

Type from Macaco Secco, near Andarahy, central Bahia, Brazil. Adult male, No. 50698, Field Museum of Natural History. Collected by R. H. Becker, October 20, 1913.

Description.—Adult male, ground color of crown dark brown, the feathers with shaft stripes of pale tawny rufous; back olive brownish, the feathers with fine shaft streaks of buffy white; wing coverts and exposed portion of primaries and secondaries (outer edges only with closed wing) olive brownish like the back; throat plain buffy white; lores, suborbital region; and ear coverts buffy; breast olive brownish, the feathers with broad, longitudinal buffy white stripes which are not bordered with dusky; abdomen and under tail coverts pale olive brown, the middle abdomen spotted as in *promeropirhynchus*, but dark spots paler and confined to the middle abdomen; bill entirely black.

Measurements.—Wing, 132; tail, 110; tarsus, 27; bill, 45 mm.

Remarks.—Allied to *X. p. promeropirhynchus* (Lesson), but coloration of crown, back, and under parts quite different.

***Dendrocolaptes picumnus cearensis* subsp. nov.**

Type from Jua, near Iguatu, Ceara, Brazil. Adult male, No. 50727, Field Museum of Natural History. Collected by R. H. Becker, August 25, 1913.

Description.—Similar to *D. p. intermedius* Berlepsch from Bahia and central Brazil, but differs in having the general plumage more tinged with tawny, and the upper parts and under parts more tawny olive; upper tail coverts brighter rufous; stripes on crown and breast more tawny (less whitish).

Measurements.—Wing, 125; tail, 120; bill, 35 mm.

THE RELATIONSHIP OF THE GULLS KNOWN AS *LARUS FUSCUS* AND *LARUS AFFINIS*.

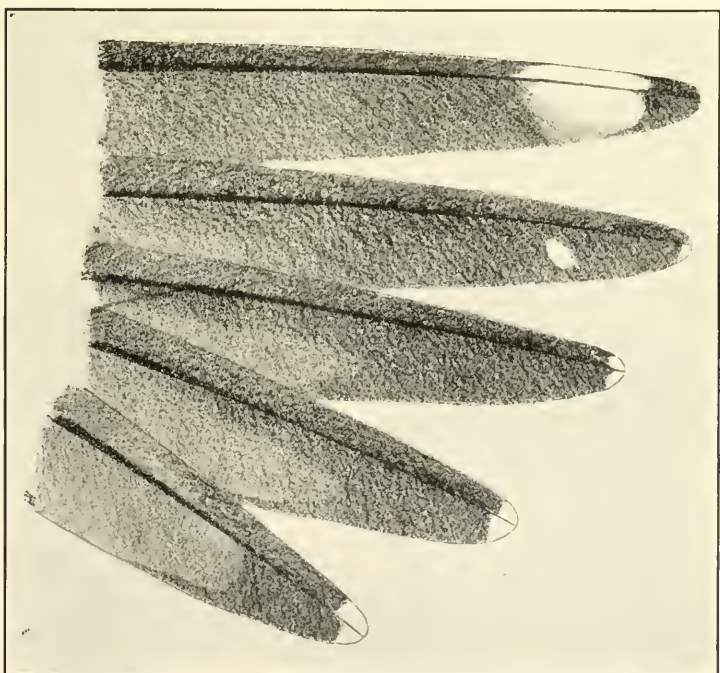
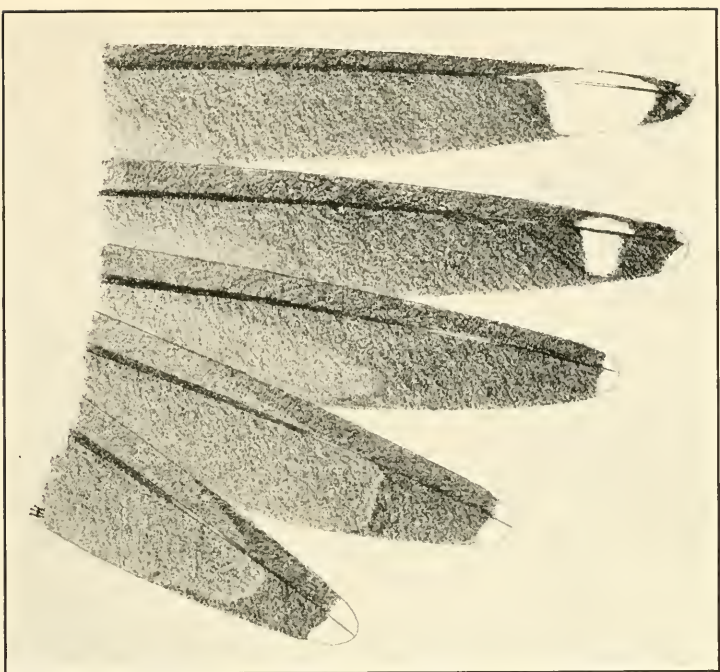
BY JONATHAN DWIGHT, M. D.

Plates XX and XXI.

IN approaching many of the problems in modern systemic ornithology, one is confronted with the necessity of steering a middle course between the Scylla of imperfect knowledge on the one hand and the Charybdis of nomenclature on the other. Either may bring us to shipwreck; but mindful of those who have preceded me in writing about the Lesser Black-backed Gull (*Larus fuscus*), and the Siberian Gull (*Larus affinis*), I venture with some hesitancy to take up the tangled question of the relationship of these birds and make another endeavor to fix the proper names upon them.

Larus fuscus, an abundant European species, was described in 1758 by Linnaeus, and has never been taken on the American side of the Atlantic. *L. affinis*, however, has stood as a North American species in the A. O. U. 'Check-Lists' on the strength of a single specimen, the type taken in southern Greenland and described by Reinhardt in 1853 (Videnskab-Meddel., p. 78).

Until 1912 these two gulls were recognized as two full species, and then Lowe (Brit. Birds, VI, no. 1, June 1, 1912, pp. 2-7, pl. 1) started the ball rolling by restricting the name *fuscus* to Scandinavian birds and describing the paler bird of the British Isles subspecifically as *britannicus*. A few months later Iredale (Brit. Birds, VI, no. 12, May 1, 1913, pp. 360-364, with pl.), borrowing the type of *affinis* from the Copenhagen Museum, where it had rested for half a century, and comparing it with British specimens, found it to be identical with them; but not content with synonymizing *britannicus* with *affinis*, he reached the conclusion that the Siberian bird was larger and therefore required a new name — *antelius*. In 1915 Buturlin (Mess. Orn. VI, no. 12, 1915, p. 149) scored Iredale for not providing either type or type locality for *antelius*, and went on to say that he himself had given the name *Larus*



LARUS FUSCUS AFFINIS.

affinis taimyrensis in 1911 (Mess. Orn., 2d year, no. 2, 1911, p. 149) to the Eastern race, and therefore the Western race must be known as *Larus affinis antelius*. Buturlin says, (translated from the Russian) "As the name '*affinis*' now is proved to belong to another species (no intergradation is known or is likely to exist between the Lesser Black-backed and Siberian Herring Gulls), the Eastern race of the Siberian Herring Gull must bear the name *Larus taimyrensis taimyrensis*, Buturl., 1911, and the Western race *Larus taimyrensis antelius*, Iredale, 1913."

It is at this point I purpose taking up the question which resolves itself into two parts, one, ornithological, concerning the relationship of the gulls under discussion, the other, nomenclatural, concerning the names to be used. At least I may contribute information that I have acquired from the examination of considerable material available in this country. Briefly then I may state that the specimens I have brought together confirm Mr. Lowe's claim that there are two intergrading forms of the Lesser Black-backed Gull, one with a brownish black back or mantle that breeds in Scandinavia and probably southward and another with a paler, slaty mantle that breeds in northern England, Scotland, the adjacent islands, and on the northern coast of Russia. But as for names, there is an extensive literature bearing upon this Gull and it is perhaps worth while to outline the history of some of the names that have been used.

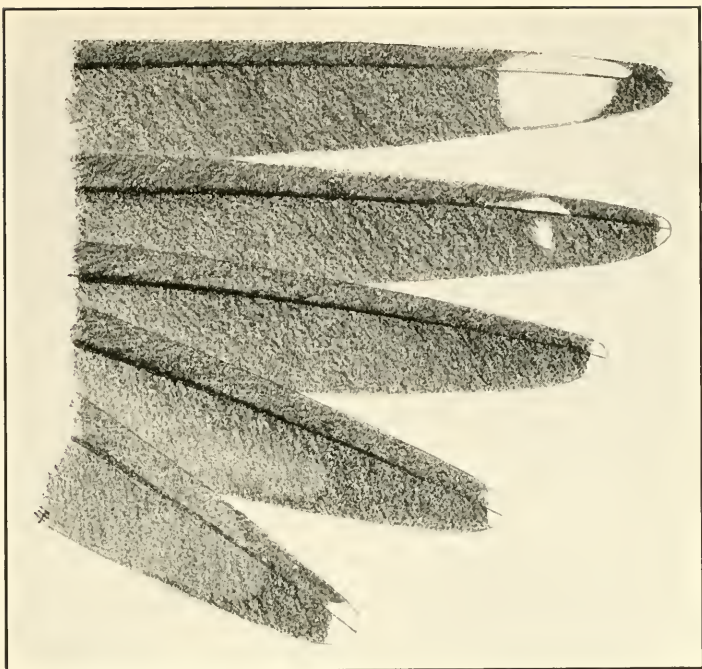
Linnæus (Syst. Nat. ed. 10, 1758, I, p. 136) first described *Larus fuscus* as "L. albus dorso fusco" (*i. e.*, white gull with swarthy back), and in his ed. 12, 1766, p. 225, added "Rostrum Pedesque flavi" (*i. e.*, bill and feet yellow). This name prevailed until Meyer and Wolf (Naturg. Vög. Deutschl., II, 1805, p. 32, col'd pl.) substituted *Larus flavipes*, but their description, "back and upper side of wings brownish black," is evidently that of *fuscus*, and their plate is that of a bird with the back almost black. Meyer and Wolf (Taschenb. Deutsch. Vögelkunde, II, 1810, pp. 469-471, col'd frontisp.) again made use of *Larus flavipes*, repeating virtually the old description, and the plate, now smaller, is clearly that of a black-backed bird. Curiously enough, at p. 471 they say in conclusion, "The name which Linnæus applies to this Gull (if it is other than his *Larus fuscus*) does not fit very well, for the back

and wing coverts are not *fuscus* (aschengraubraun) [*i. e.*, ashy gray brown] but brownish black (braunlichschwarz)." The question may well be asked what did Linnæus mean by *fuscus* and what value should be attached to the remark of Meyer and Wolf? While Linnæus, perhaps, has used *fuscus* rather loosely in his descriptions, he surely would not have applied it to the light slaty backed form; and Meyer and Wolf evidently did not have the courage of their convictions, for they described and figured *fuscus*. Meisner and Schinz (Vög. Schweiz, 1815, p. 276) make use of *Larus flavipes* and so does Meyer (Kurze Beschs. Vög. Liv. u Esthl. 1815, p. 231), Vieillot (Encyc. Méthod. I, 1823, p. 346; Faune franç. Ois., 1828?, p. 394), Lesson (Traité, 1831, p. 617), and Temminck (Man. Orn. 2d ed., 4th pte., 1840, p. 471), but all of these writers seem to refer without question to *fuscus*. As for *Larus cinereus* (Leach, Syst. Cat. Mam., etc., 1816, p. 40), it would be a difficult matter to allocate this name. As early as 1822 Brehm and Schilling (Beitr. zur Vögelkunde, III, pp. 735 +) gave elaborate descriptions of the plumages of the Gulls, but apparently confused the black-backed species under "*maximus*" and "*marinus*." Later Brehm (Isis, XXIII, 1830, p. 993, and Handl. Naturg. Vögel. Deutschl., pp. 746-750) recognized three species of the "Laroidæ harengorum (*Larus fuscus*)," viz., *melanotos*, *harengorum*, and *fuscus*, saying that they all have a very dark mantle, and using the term slate-back ("schieferschwarz") to describe it, so here again it is evident that these names are pure synonyms of *fuscus*.

Next in point of time is Macgillivray (Man. Brit. Orn., 1842, pt. II, p. 245), who, in describing "*Larus flavipes*, Yellow-footed Gull," says in part, "the back and wings blackish-gray tinged with purple or dark slate coloured." This description of the British bird applies to the form that Lowe called *britannicus*, which has proved to be Reinhardt's *affinis*, and it would be most appropriate to use "Yellow-footed Gull" for the popular name.

Summing up, then, the first available scientific name for the grayer-backed bird is *affinis* of Reinhardt, and as there is complete intergradation of every character between *affinis* and *fuscus* there can be no question of two species.

The skins I have examined show a little difference in the size of birds of the two races, although the difference in color of the mantles



LARUS FUSCUS FUSCUS.

is usually diagnostic. I would also call attention to another neglected character quite as good as any only less obvious, and that is the wing pattern.

In the adults of *fuscus*, three or four of the distal primaries are black, the fifth usually being the first to show a pattern which is in the nature of a gray wedge (Plate XXI), while in *affinis* the gray wedges begin on the first or second primary (Plate XX). As a rule the wedges in *fuscus* are rather obscure and in color much like the mantle, while in *affinis* the wedges and the color are both clearly defined; that is to say, the dark bird has a dark pattern, the lighter bird a lighter one. Saunders (Brit. Mus. Cat. XXV, 1896, p. 253) noticed these differences and yet he did not rightly appraise them, and being a binomialist he allowed "*affinis*" to stand as a full species, although he was fully alert to the facts and saw the close relationship. My material from Russia is limited to one specimen, so I do not feel competent to pass judgment on "*taimyrensis*" of Buturlin, which may perhaps be worth recognizing as a large geographical race. One needs to be very sure Gulls are sexed correctly if they are to be separated on size alone, for while females are regularly smaller in dimensions than males, particularly noticeable in the bills, there is always an overlapping of large females and small males. Buturlin's position that *fuscus* is a separate species is not well taken, although it is rather a curious distribution by which the dark mantled form of Scandinavia thrusts itself between the gray mantled form breeding to the west of it and to the east as well. The specimens I have examined measure as follows:

Larus fuscus fuscus Linnaeus.

10 adult males, wing 415-438 (423), tail 152-169 (160) tarsus 58-66 (63.6), toe without claw, 45-52 (49.1), culmen, 49-55 (52), depth of bill at base, 15-18 (16), at angle, 16-19 (16.5).

5 adult females, wing 394-410 (400.8), tail 142-159 (149.8), tarsus 57-60 (58.8), toe without claw, 42-47 (45), culmen, 45-48 (46.2), depth of bill at base, 14-16 (14.9), at angle, 15-17 (15.7).

Larus fuscus affinis Reinhardt.

10 adult males, wing 394-428 (412.3), tail 152-167 (160.3), tarsus 63-69 (65.9), toe without claw, 47-53 (50.3), culmen, 49-56 (52.9), depth of bill at base, 16-19 (17.3), at angle, 16-19 (17.8);

4 adult females, wing 382-407 (392.2), tail 151-158 (155.7), tarsus 57-66 (61), toe without claw, 42-51 (45.5), culmen, 44-50 (47.5), depth of bill at base, 14-15 (14.7), at angle, 15-16 (15.7).

FORSTER'S EDITION OF LEVAILLANT'S "OISEAUX
D'AFRIQUE."

BY CHARLES W. RICHMOND.

PUBLICATION of Levaillant's celebrated 'Histoire Naturelle des Oiseaux d'Afrique' was begun in Paris in 1796, and completed in six volumes in 1808. It was issued in folio, with two sets of plates, black and colored, also in 4°, with colored plates, and in 4°, with plain plates; there was also an edition in 12mo of two volumes.

In 1797 Bechstein began at Nürnberg a translation under the title 'Franz Le Vaillant's Naturgeschichte der Afrikanischen Vögel,' but it was discontinued at the end of the "Erster Band" in 1802. It consisted of 8 parts, each with 6 plates and corresponding text; in all 48 plates, with pages i-xii, 13-210, 4°. It is uncommon, though met with occasionally in the second-hand book catalogues. Additional matter by Bechstein is given in footnotes, but this is of little interest concerning nomenclature, since the translator did not give any new scientific names to the species, except possibly that of *Falco lagopus* Varietas *africana*, described on p. 96 (note).

A very little known translation was begun in Halle in 1798 by a publisher named Dreyssig, who secured the cooperation of J. R.

Forster, already the translator into German of one of Levaillant's voyages to Africa. The Halle edition is very rare, and for nearly a century has remained almost unnoticed by ornithologists, though one or more of the new names given by Forster were cited in one of F. Boie's papers in Oken's *Isis* about 1820-26. It was omitted in Engelmann's *Bibliotheca Hist. Nat.* of 1846, but is mentioned, apparently at second hand, in the continuation by Carus and Engelmann, where the date is given as 1798. Suckow, in 1800, also quotes it as 1798, but his reference to it suggests that the work was autographically unknown to him, since he mentions none of the new names introduced by Forster. Sherborn was unable to find a copy when compiling his 'Index Animalium,' though it is duly listed among his "libri desiderati." Thus the case remained until 1905, when the writer had the good fortune to obtain a copy from a dealer in Leipzig. This copy has an engraved title page, in script style, running as follows: F. le Vaillant's | Naturgeschichte | der | Africanischen Vögel | mit Anmerkungen | von | D. Johann Reinhold Forster. | No. 3 [illustration of the "Undatus"] | Halle | bei Fried. Christoph Dreyssig. | The size is small octavo. There is no printed title page in this copy, and the plates are uncolored. Following the title is a "Nachricht an die Käufer" (pp. iii-vi), signed by Dreyssig, and a "Vorrede" (pp. vii-xiv), with a "Nachschrift" (p. xv), the latter signed by Forster. On the back of page xv is an "Inhalt," giving a list of the 18 plates, with a reference to the pages on which the subjects are treated. The plates are listed in three groups: Nos. 1-8 are "Raubvögel," the species of which are introduced without generic names; Nos. 9-14 are "Geyer," for which the generic name *Fultur* is used; Nos. 15-18 are "Von den Bussarten," or species of "*Falco*." Pages 1-64 constitute the remainder of the text, with the plates inserted at their proper places. There is no plate 3, as this subject is shown on the engraved title page.

Recently the writer secured a second copy¹ through the kind offices of Dr. T. S. Palmer (who obtained it from a Philadelphia book shop), which, upon comparison with the first, proved to be a colored edition (the illustration on the engraved title being

¹ Both copies are now in the library of the U. S. National Museum.

also colored), having a printed title page in addition to the engraved one. This reads: F. le Vaillant's | *Naturgeschichte* | der | afrikanischen Vögel | mit Anmerkungen | von | D. Johann Reinhold Forster. | — | *Erstes Bändchen mit 18 Kupfern* | Halle, | bey Friedrich Christoph Dreyssig. | On the back of the printed title is given a list of 35 book dealers, in as many places, chiefly, though not all, in Germany, from whom the book could be obtained, ending with the statement that it could be procured from any book dealer in Germany. The publisher intended to issue a part every few months, but the death of Forster, on December 9, 1798, probably caused the project to be abandoned, since no further installments were published. In addition to the two styles described above, the publisher referred to a third, more fully colored edition, that could be supplied at a somewhat higher price.

A list of the species figured and described, with the names given by Forster and Levaillant, and the pages on which they occur, is added, together with the equivalent names of Daudin and earlier writers.

"Raubvögel."

Pl. 1. <i>Harpacter</i> . Griffard.	p. 1. <i>Falco bellicosus</i> Daudin, 1800.
2. <i>Eulophos</i> . Huppard.	7. <i>F. occipitalis</i> Daudin, 1800.
3. <i>Undatus</i> . Blanchard.	10. <i>F. coronatus</i> Linnæus, 1766.
4. <i>Vociferator</i> . Vocifer.	14. <i>F. vocifer</i> Daudin, 1800.
5. <i>Ichthyotheres</i> . Blagre.	18. <i>F. leucogaster</i> Gmelin, 1788.
6. <i>Cafir</i> . Caffre.	23. <i>F. vulturinus</i> Daudin, 1800.
7, 8. <i>Platages</i> . Bateleur.	25. <i>F. ecaudatus</i> Daudin, 1800.

"Geyer."

Pl. 9. <i>Vultur Tracheliotos</i> . Oricou.	p. 29. <i>Vultur tracheliotus</i> Forster, 1791. ²
10. <i>V. Coprotheres</i> . Chassefiente.	35. <i>V. kolbii</i> Daudin, 1800.
11. <i>Vultur indus</i> . ¹ Chaugoun.	40. <i>V. bengalensis</i> Gmelin, 1788.
12. <i>Vultur sinensis</i> . Chincou.	42. <i>V. monachus</i> Linnæus, 1766.
13. <i>Vultur Papa</i> L. Roi des Vautours.	48. <i>V. papa</i> Linnæus, 1758.
14. <i>Vultur Hierax</i> . Ourigourap.	50. <i>V. perenopterus</i> Linnæus, 1758.

¹ *Vultur indus* Forster, 1795 (*Faunula Indica*, p. 5), is an emendation of *Vultur indicus* Scopoli, 1786, and refers to another species.

² Also *Vultur auriculatus* Daudin, 1800.

"Von den Bussarten."

- Pl. 15. *Falco Bassus*. Bacha. p. 55. *Falco bacha* Daudin, 1800.
 16. *F. Rufofuscus*. Rounoir. 59. *Buteo jakal* Daudin, 1800.
 17. *F. Rufocanus*. Rougre. 62. *Falco desertorum* Daudin,
 1800. *
 18. *Falco ocreatus*. Buse gantée. 63. *F. lagopus* Gmelin, 1788.

The specific names given to nos. 10, 15, 16, and 17 appear to be the earliest for their respective species, and should be adopted.

NOTES ON THE RACES OF *QUISCALUS QUISCALUS* (LINNÆUS).

BY HARRY C. OBERHOLSER.

ACCORDING to the views of current authors there are three subspecies of our common Grackle, *Quiscalus quiscula* (Linnæus). Since, as Mr. A. T. Wayne has recently shown,¹ the *Gracula quiscula* of Linnæus² is properly applicable to the Florida Grackle (*Quiscalus quiscula aglæus*), and the Purple Grackle needs another name, it may be worth while to present a few notes on all the forms of the species, with a revised statement of the geographic distribution of each.

Quiscalus quiscula quiscula (Linnæus).

[*Gracula*] *quiscula* LINNÆUS, Syst. Nat., ed. 10, I, 1758, p. 109 (based on *Monedula purpurea* Catesby, Nat. Hist. Carolina, Florida, and Bahama Islands, I, 1731, p. 12, pl. XII; and *Merops niger, viridi-argentea* Brown, Nat. Hist. Jamaica, 1756, p. 476) ("Habitat in America septentrionali").

[*Oriolus*] *ludovicianus* GMELIN, Syst. Nat., I, i, 1788, p. 387 (based on *Cassique de la Louisiane*, Buffon, Hist. Nat. des Ois. [original edition], III, p. 242; Planch. Enlum., No. 646) (partial albino) (Louisiana).

¹ The Auk, XXXV, No. 4, October, 1918, p. 440.

² Syst. Nat., ed. 10, I, 1758, p. 109.

Sturnus quiscula DAUDIN, *Traité Élém. et Compl. d'Ornith.*, II, 1800, p. 316 (= *Gracula quiscula* Linnæus).

Gracula quiscula WILSON, *Amer. Ornith.*, III, 1811, p. 44, pl. XXI, fig. 4 (= *Gracula quiscula* Linnæus).

Quiscalus versicolor VIEILLOT, *Nouv. Dict. d'Hist. Nat.*, XXVIII, 1819, p. 488 (Greater Antilles to Hudson Bay) (nom. nov. pro *Gracula quiscula* Latham. *Ind. Ornith.*, I, 1790, p. 191, quæ *Gracula quiscula* Linnæus).

Qu[iscalus], *nitens* LICHTENSTEIN, *Verz. Doubl.*, 1823, p. 18 (nom. nov. pro *Gracula quiscula* Linnæus et *Sturnus quiscula* Daudin).

Qu[iscalus], *purpureus* STEPHENS, in Shaw, *Gen. Zool.*, XIV, pt. 1, 1826, p. 48 (based on *Gracula "quiscula"* [= *quiscula*] Shaw, *Gen. Zool.*, VII, 1809, p. 458 [= *Gracula quiscula* Linnæus]; and on Wilson, *Amer. Ornith.*, III, p. 44, pl. XXI, fig. 4) ("South" [= North] America).

Quiscalus purpuratus SWAINSON, *Anim. in Menag.*, 1838, p. 298 (North America).

Quiscalus aglaus BAIRD, *Amer. Journ. Sci. and Arts*, ser. 2, XLI, 1866, p. 84 (based on *Quiscalus baritus* Baird, *Rep. Explor. and Surv. R. R. Pac.*, IX, 1858, p. 556; Cape Florida, Florida).

Qu[iscalus], *versicolor typicus* RIDGWAY, *Bull. U. S. Nat. Mus.*, No. 50, pt. II, 1902, p. 217 (Selater MS.) (in synonymy).

CHARS. SUBSP.—Size small; back, scapulars, and lower parts nearly uniform dull olive or bottle green.¹

TYPE LOCALITY.—Coast of South Carolina.²

GEOGRAPHIC DISTRIBUTION.—Resident in the southern part of the southeastern United States. Breeds north to the coast of South Carolina, southern Georgia, southern Alabama, and southern Mississippi; west to eastern Louisiana; south to the coast of the Gulf of Mexico, from eastern Louisiana to southern Florida; and east to the Atlantic coast of Florida, Georgia, and South Carolina.

REMARKS.—The individual variation in this race is not nearly so great as in the form of the species breeding in the Middle Atlantic States. Its usual coloration is much like the dark green-backed phase of the latter. It has, however, what might be considered two phases of plumage, in one of which the head is bluish, especially anteriorly, in the other purplish; the head is apparently very rarely, if ever, green. In some specimens the median posterior lower parts show some blue or purplish; and the upper parts are occasionally more or less obscurely barred with the same, particularly on the posterior portion. These variations are, of course,

¹ For measurements of this race, cf. Ridgway, *Bull. U. S. Nat. Mus.*, No. 50, pt. II, 1902, pp. 217-218.

² Designated by Wayne, *The Auk*, XXXV, No. 4, October, 1918, p. 440.

in the direction of the common Purple Grackle, but are never so pronounced as in that form.

From the data given by Mr. Wayne,¹ there seems to be no doubt of the correctness of his conclusions regarding the proper application of the name *Gracula quiscala* Linnæus to the bird commonly called *Quiscalus quiscala aglæus* Baird. As Mr. Wayne has shown, the *Gracula quiscala* of Linnæus² was based chiefly on Catesby's *Monedula purpurea*, "the Purple Jack Daw."³ In determining to which of the subspecies this description of Catesby's applies, we can get no assistance whatever from Catesby's figure, and we are obliged, therefore, to determine its application by the text. This, again, is not very satisfactory, but in view of the fact, brought out by Mr. Wayne, that the Purple Grackle is almost unknown in the coast region of South Carolina where Catesby's work was done, and where, as his text indicates, he observed the birds from which his figure was drawn, it would seem improper to fix the name on any other than the breeding bird of this region. This involves, of course, the relegation of *Quiscalus aglæus* Baird to synonymy, since the latter name thus applies to the same bird as *Gracula quiscala* Linnæus. The *Merops niger, viridi-argentea* of Brown,⁴ which Linnæus cites in his synonymy, and which is, of course, *Holoquiscalus jamaicensis* (Daudin), may properly be ignored in this connection, since it clearly does not figure in either Linnæus' diagnosis or his comments.

The *Gracula quiscala* of Wilson⁵ is merely a misspelling of *Gracula quiscala* Linnæus, as is shown by the synonymy quoted; and the same applies to *Sturnus quiscala* Daudin.⁶ The *Quiscalus versicolor* of Vieillot⁷ is merely a new name for *Gracula quiscala* Latham (= *Gracula quiscala* Linnæus), as the synonymy and range (Greater Antilles to Hudson Bay) clearly indicate. Lichtenstein's *Quiscala nitens*⁸ is merely a new name for *Gracula quiscala* Linnæus and *Sturnus quiscala* Daudin, and is, of course, of identical

¹ *Loc. cit.*

² *Syst. Nat.*, ed. 10, I, 1758, p. 109.

³ *Nat. Hist. Carolina, Florida, and Bahama Islands*, I, 1731, p. 12, pl. xii.

⁴ *Nat. Hist. Jamaica*, 1756, p. 476.

⁵ *Amer. Ornith.*, III, 1811, p. 44, pl. XXI, fig. 4.

⁶ *Traité Élém. et Compl. d'Ornith.*, II, 1800, p. 316.

⁷ *Nouv. Dict. d'Hist. Nat.*, XXVIII, 1819, p. 488.

⁸ *Verz. Doubl.*, 1823, p. 18.

application. The *Quiscalus purpureus* of Stephens¹ is based on the *Gracula quiscula* of Shaw,² and on Wilson's *Gracula quiscula*,³ both of which are, of course, the same as *Gracula quiscula* Linnæus. Also, *Quiscalus purpuratus* Swainson,⁴ if, indeed, applicable to this species, must be considered a synonym of *Gracula quiscula* Linnæus. The case of *Quiscalus versicolor typicus* is, however, somewhat more complicated. This name was first used by Dr. Selater,⁵ not as a subspecific name, but to indicate the typical form of *Quiscalus versicolor* [*i. e.*, *Quiscalus quiscula*], as was the common practice at that time, instead of repeating the specific name as we do now, and, therefore, cannot be considered to have nomenclatural status as a subspecific designation. Moreover, Selater includes in the range of his *Quiscalus versicolor typicus* part of the range of the southern bird, and further indicates by his text that he did not intend the subspecific term "*typicus*" as a new name, but merely to indicate the typical form of the species as distinguished from the two other subspecies.⁶

Mr. Ridgway,⁷ however, has cited it in his synonymy of *Quiscalus quiscula quiscula* as though it had regular standing, so the name, consequently, must date from his introduction, and become a synonym of *Gracula quiscula* Linnæus.

From the above discussion it is seen that all the names applied to birds from the southeastern United States are clearly referable to the Florida race heretofore called *Quiscalus quiscula aglæus*, but which now must stand as *Quiscalus quiscula quiscula*, and that the bird heretofore known as *Quiscalus quiscula quiscula* must have a new name.

Quiscalus quiscula ridgwayi, nom. nov.⁸

Quiscalus quiscula quiscula Auct., nec Linnæus.

CHARS. SUBSP.—Similar to *Quiscalus quiscula quiscula*, but larger,

¹ In Shaw, Gen. Zool., XIV, pt. 1, 1826, p. 48.

² Gen. Zool., VII, 1809, p. 458.

³ Amer. Ornith., III, 1811, p. 44, pl. XXI, fig. 4.

⁴ Anim. in Menag., 1838, p. 298.

⁵ Cat. Birds Brit. Mus., XI, 1886, p. 394.

⁶ Cat. Birds Brit. Mus., XI, 1886, pp. 394-395.

⁷ Bull. U. S. Nat. Mus., No. 50, pt. II, 1902, p. 217.

⁸ I take pleasure, as a slight token of affection and esteem, in dedicating this familiar bird to Mr. Robert Ridgway, whose contributions to the study of this group are well known.

excepting the bill and feet; upper and lower parts usually much more purplish, and barred or mottled with metallic green or blue.

DESCRIPTION.—Type, adult male, Washington, D. C., March 30, 1912; H. H. T. Jackson. Forehead between metallic fluorite violet and blackish violet, shading to blackish purple, with bronzy reflections on cervix, sides of head and of neck; lores velvet black with a greenish or bluish sheen; back, scapulars, and sides of breast, metallic greenish bronze mixed with metallic purplish bronze, marine blue, and blackish purple; rump purplish bronze; upper tail-coverts deep blackish purple with deep blue and bronze reflections; tail varying from metallic blackish dusky violet to deep metallic indigo blue, the margins of the inner webs of the feathers brownish black; wings brownish black with a faint bluish green or purplish sheen, but the exposed surfaces of tertials, greater, median, lesser, and the inner primary coverts, together with the outer edges of the secondaries, of the same color as the cervix, the basal portion of the outer margin of the primaries with a pronounced metallic greenish blue gloss, this becoming more purplish on the inner primaries; outer edge of alula deep dusky dull bluish green; chin and throat like the cervix, but the extreme anterior part of the chin decidedly deep metallic bluish; jugulum and sides of throat, purplish bronze; rest of lower parts metallic deep dusky dull violet, but the sides and flanks decidedly bronzy, and the middle of the abdomen dull black with little metallic sheen; lining of wing black with greenish, bluish, and purplish reflections. Wing, 144 mm.; tail, 136 mm.; exposed culmen, 30.5 mm.; tarsus, 33.5 mm.; middle toe without claw, 25 mm.¹

TYPE LOCALITY.—Washington, D. C.

GEOGRAPHIC DISTRIBUTION.—Middle eastern United States. Breeds north to southern Rhode Island, southern Connecticut, southeastern New York, and northeastern Pennsylvania; west to central Pennsylvania, extreme western Maryland, eastern West Virginia, southeastern Kentucky, central Tennessee, and northern Mississippi; south to central Mississippi, central Alabama, and northern South Carolina; and east to central North Carolina and the Atlantic coast from Virginia to Rhode Island. Winters south to southern Louisiana, southern Alabama, southern South Carolina, and probably to Florida.

REMARKS.—In color this race is exceedingly variable. Dr. F. M. Chapman has so fully treated² its color variations that no detailed description of these is here necessary. He distinguished three color phases: (1) the bottle green, (2) the bronze purple, (3) the brassy bluish green; but we should rather consider that there are four such color phases, as follows: (1) bottle green, (2) bronze

¹ For further measurements of this subspecies, cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, pt. II, 1902, pp. 215-216.

² Bull. Amer. Mus. Nat. Hist., IV, Feb. 25, 1892, pp. 1-20.

purple, (3) purplish blue or bluish purple, (4) shining metallic green, the last of which seems to be of rather rare occurrence. The head, rump, and lower parts each have four similar color phases. In many cases, in the same individual, these do not all correspond with the color phases of the back. Consequently the intermediates between these phases and the various combinations of colors on the different parts of the bird, together with the absence or presence of bars on the upper and lower parts, make a bewildering variety of coloration. In fact, no two specimens appear to be exactly alike.

The geographic distribution of this race is confined in general to the region east of the Allegheny Mountains, but in the south it is extended considerably farther west. Birds from Garret County on the Alleghenian plateau in extreme western Maryland are intermediates between *Quiscalus quiscula ridgwayi* and *Quiscalus quiscula æneus*, and represent there the extreme western limit of the former.

Quiscalus quiscula æneus Ridgway.

Quiscalus æneus RIDGWAY, Proc. Acad. Nat. Sci. Philadelphia, XXI, June (= July), 1869, p. 134.

CHARS. SUBSP.— Similar to *Quiscalus quiscula ridgwayi*, but somewhat smaller, and with posterior upper and lower parts uniform brownish bronze, without differently colored bars.¹

TYPE LOCALITY.— Mount Carmel, Wabash County, southeastern Illinois.

GEOGRAPHIC DISTRIBUTION.— Central and eastern North America. Breeds north to central Labrador, James Bay in northern Ontario, Fort Churchill in northern Manitoba, and to southern Mackenzie; west to southwestern Mackenzie, western Alberta, western Montana, western Wyoming, central Colorado, northwestern and west central Texas; south to central southern Texas, northern Louisiana, western Tennessee, central Kentucky, central West Virginia, southwestern Pennsylvania, southwestern and central New York, northern Connecticut, and northern Rhode Island; east to eastern Massachusetts, eastern Maine, Nova Scotia, and eastern Newfoundland. Winters south to southern Louisiana, southern Alabama, southern South Carolina, and probably to Florida.

¹ For measurements of this race, cf. Ridgway, Bull. U. S. Nat. Mus., No. 50, II, 1902, p. 219.

REMARKS.—This subspecies differs from both the other forms of the species in its brownish bronze upper parts. Except for the color of the head, it is very uniform, but this part might be considered to have three color phases: (1) purple, (2) blue, (3) green, all of which are connected by intermediates.

So far as the actual amount of difference in typical specimens is concerned, it might well be called a species, but it so completely intergrades at different points with *Quiscalus quiscula ridgwayi*, that it seems best treated as a subspecies. At some other point or points it abuts on either *Quiscalus quiscula ridgwayi* or *Quiscalus quiscula quiscula*, and the lack of actual intergradation in such places does not necessarily indicate that it is a distinct species, because this condition is well known to exist in many races of other species, between which, however, intergradation does occur at other points. Nor can the fact that more or less typical specimens of each of two intergrading forms occur in the same breeding locality be considered as evidence of hybridism, since many subspecies are known to intergrade in this way. In fact, a perfectly gradual intergradation over a geographic area is rather the exception, since the individual variation in two forms often produces considerable irregularity. This is frequently the case even when the ranges do not actually meet, and such individual variation must, in itself, of course, be considered intergradation.

NOTES ON NORTH AMERICAN BIRDS.

IX.

BY HARRY C. OBERHOLSER.

FOLLOWING are notes¹ on four species of North American birds belonging to the families *Phaethontidae*, *Ardeidae*, and *Charadriidae*.

***Leptophæthon lepturus catesbyi* (Brandt).**

Mr. G. M. Mathews has already indicated² that the name *Phaethon catesbyi* Brandt should replace that of *Phaethon americanus* Grant. The latter was originally based³ on the bird from the Bermuda Islands, and is, of course, the American representative of *Leptophæthon lepturus*. It differs from *Leptophæthon lepturus* in its somewhat smaller size and less extensive white tips on the five outer primaries, the black areas on these feathers being therefore larger. Mr. Mathews, like Mr. Grant, treats this form as a distinct species, and for this course gives the following rather unconvincing reason⁴: "This bird is only separable by its slightly larger [sic] size and the variation in the black markings of the primaries. In most genera such trifling differences would only be regarded as of subspecific value, but when dealing with Ancient Forms, such as the present, this must be given higher value." Examination of a series of specimens shows, moreover, that the characters separating *Leptophæthon catesbyi* from *Leptophæthon lepturus* are not entirely constant, and that the form must, therefore, be regarded as a subspecies of the latter. With this view of its relationship, its name will become *Leptophæthon lepturus catesbyi*.

¹ For previous papers in this series, cf. 'The Auk,' XXXIV, April, 1917, pp. 191-196; XXXIV, July, 1917, pp. 321-329; XXXIV, October, 1917, pp. 465-470; XXXV, January, 1918, pp. 62-65; XXXV, April, 1918, pp. 185-187; XXXV, October, 1918, pp. 463-467; XXXVI, January, 1919, pp. 81-85; XXXVI, July, 1919, pp. 406-408.

² The Auk, XXXII, No. 2, April, 1915, pp. 195-197.

³ *Phaeton americanus* Grant, Bull. Brit. Ornith. Club, VII, No. XLX, December 26, 1897, p. xxiv.

⁴ Birds of Australia, IV, pt. 3, June 23, 1915, pp. 310-311.

Scæophæthon rubricaudus rotschildi (Mathews).

The Red-tailed Tropic Bird is included in our North American list on the basis of a single specimen obtained by Mr. A. W. Anthony near Guadalupe Island, Lower California, on April 23, 1897.¹ We have recently examined this specimen, which is now No. 21822 in the collection of the Carnegie Museum of Pittsburgh, Pa., and find it to belong to the subspecies *Scæophæthon rubricaudus rotschildi*, recently described² from Laysan Island in the Hawaiian group. This race differs from *Scæophæthon rubricaudus rubricaudus*, from the region about the Island of Mauritius, in its shorter bill and wing; and from *Scæophæthon rubricaudus noræhollandiæ* (Brandt), from Australia, in its smaller size and paler, less rosy coloration. By this change of identification the place of *Scæophæthon rubricaudus rubricaudus* in the North American list should be taken by *Scæophæthon rubricaudus rotschildi*.

Casmerodius albus egretta (Gmelin).

The forms of the genus *Casmerodius* (= *Herodias*³) are commonly considered distinct species. Mr. G. M. Mathews has, however, recently treated⁴ the Australian bird as a subspecies. So far as our material indicates, there are, as Dr. R. B. Sharpe concludes,⁵ three forms of the genus, but all are without doubt only subspecies. The principal characters separating these consist in size, particularly of the tarsus, and in the length of the dorsal plumes or train. The colors of the bill, tarsus, and the bare portion of the tibia, which have been sometimes used as specific distinctions, are more or less unsatisfactory for this purpose, because

¹ The Auk, XV, No. 1, January, 1898, p. 39.

² *Phæthon rubricaudus rotschildi* Mathews, *Birds of Australia*, IV, pt. 3, June 23, 1915, p. 303 (Laysan Island).

³ Attention has already been called by other writers to the fact that the generic name *Herodias* Boie is a synonym of *Egretta* Forster, since its type is really *Ardea garzella* Linnæus, as designated by Gray (*List Genera Birds*, 1841, p. 86). The next available name is *Casmerodius* Gloger, as above given.

⁴ *Birds of Australia*, III, pt. 5, March 26, 1914, pp. 431-435.

⁵ *Cat. Birds Brit. Mus.*, XXVI, 1898, pp. 88-100.

of very great seasonal changes; and until more is known regarding the actual process and sequence of these changes, it is not safe to use the colors of these parts in diagnoses.

The European form of the species, *Casmerodius albus albus* (Linnæus), which ranges also to Africa and central Asia, is a large bird with long tarsi and comparatively short dorsal plumes, the latter usually less than 370 mm. in length, and not reaching much beyond the end of the tail. Examples from India and Burma are somewhat smaller and indicate intergradation with the Australian bird, but are, however, nearer *Casmerodius albus albus*.

The Australian race differs from *Casmerodius albus albus* in smaller size, particularly of the tarsus, and in somewhat shorter dorsal plumes; and Mr. Mathews¹ has separated it as a fourth race under the name *Herodias alba sylvatophora* (Gould). There is, however, apparently no difference between birds from Australia and those from the island of Timor, which is the type locality of *Ardea timoriensis* Lesson, either in the length of the tarsus or the dorsal plumes. Birds from other localities in the Malay Archipelago seem to be the same; while birds from Japan and China, although somewhat verging toward *Casmerodius albus albus*, are so near the Australian form that they are apparently not satisfactorily separable. Thus the birds inhabiting the region from Japan and China to the Malay Peninsula and Australia should again be united under the name *Casmerodius albus timoriensis* (Lesson).

The American bird, which ranges from the United States to Chile and Patagonia, is similar to *Casmerodius albus timoriensis*, but is rather larger and has a much longer train; and it differs from *Casmerodius albus albus* in decidedly smaller size and in its longer dorsal plumes, which latter usually measure from 420 to 500 mm., and reach 100 millimeters or so beyond the end of the tail. Since none of these differences is, however, entirely constant in relation to either *Casmerodius albus albus* or *Casmerodius albus timoriensis*, as a study of specimens shows, the American race should stand as *Casmerodius albus egretta* (Wilson).

¹ *Birds of Australia*, III, pt. 5, March 26, 1914, pp. 431-435.

Charadrius dubius curonicus Gmelin.

The Little Ringed Plover, *Charadrius dubius* Scopoli, is included in the North American list by reason of its supposed accidental occurrence in Alaska and California. The record from California is based on a specimen taken at San Francisco by Mr. E. F. Lorquin, and was made the basis of Mr. Ridgway's *Ægialitis microrhynchus*.¹ This name Mr. Ridgway himself later made² a synonym of *Ægialitis curonicus* (Gmelin). This specimen is still in the United States National Museum collection, where it is numbered 39523; and an examination proves that it is an ultratypical example of *Charadrius dubius curonicus*, as indicated by its very small bill.³

The record which at present forms the basis for the statement that *Charadrius dubius* occurs in Alaska is that of Mr. J. E. Harting,⁴ who, in recording the specimens obtained by Captain Collins of the "Enterprise," mentioned one of this species, but without giving a more definite locality than "doubtless obtained in high northern latitudes." It thus can be readily seen that the assumption of this specimen's Alaskan origin is quite unwarranted. There is, however, a perfectly valid Alaska record, based on a specimen taken on Kodiak Island and recorded as *Charadrius alexandrinus* Pallas.⁵ Without much doubt this record should be put under *Charadrius dubius curonicus*, and, therefore, *Charadrius dubius dubius* should be eliminated from our North American list and replaced by *Charadrius dubius curonicus*.

The present species we have recently referred to the genus *Elscya* Mathews,⁶ but a more careful examination of its characters proves that it does not belong in that group, but is congeneric with *Charadrius hiaticula* Linnæus, the type of *Charadrius*.

¹ American Naturalist, VIII, No. 2, Feb., 1874, p. 109.

² Baird, Brewer, and Ridgway, Water Birds of North America, I, 1884, p. 160.

³ Cf. Hartert and Jackson, Ibis, 1915, pp. 531-533.

⁴ Proc. Zool. Soc. Lond., 1871, p. 117.

⁵ Schalow, Journ. für Ornith., 1891, p. 259.

⁶ Cf. The Auk, XXXV, No. 2, April, 1918, p. 206.

GENERAL NOTES.

European Widgeon on Long Island in Winter.—On January 11, 1919, Mr. Wm. de Forest Haynes of New York City shot a fine drake of this rare duck, *Mareca penelope*, on the main pond of the Southside Club near Oakdale, Long Island. The specimen was mounted, and is now in the club collection in the clubhouse. This is the third winter record, and I am indebted to Mr. Samuel Bettle for bringing it to my attention.—LUDLOW GRISCOM, *New York City*.

Breeding of the Black Duck in Lake Co., Ohio.—Dawson in his 'Birds of Ohio,' states, "If Black Ducks formerly bred in the northern part of this state, as Wheaton supposes, they were probably of this form" (*Anas rubryses tristis*). Jones, 'Catalogue of Ohio Birds' (1903), states, "Dr. Wheaton regarded the Black Duck as a casual summer resident in the northern part of the state, but I find no corroborative evidence to that effect." In the same writer's article, 'Nineteen Years of Bird Migration at Oberlin, O.' (Wilson Bulletin, December, 1914), the Black Duck is listed as a migrant only for Lorain County. Henninger in 'Notes on Some Ohio Birds' (Auk, January, 1910) gives a list of breeding ducks for the state, but the Black Duck is not included, nor have I found any isolated record of the Black Duck nesting in Ohio. Thus it seems the state is without an authentic record, the only evidence being Wheaton's supposition.

Therefore I am pleased to report that the Black Duck has nested regularly the past five years at the Mentor Marsh, and doubtless much longer than this. Adults have been seen in June, and both young and adults through July and August. Probably not over two pair have bred in any one year, as a late August flock of twenty-five was the most seen at any one time. Two specific dates upon which I observed young ducks under unusually favorable conditions are as follows: August 16, 1917, four young birds had fed out of the lily pads into open water that touched the base of the wooded bank skirting the marsh, and I worked slowly down to within twenty feet of them, seated myself and watched them for half an hour with my glass without them appearing disturbed in any way, although fully grown and able to fly. Under such favorable circumstances, I was even able to see the narrow edge of white, back of the violet-purple speculum, each time one chanced to turn on its side and spread a wing.

July 13, 1919, I flushed two young, about two-thirds grown, from under my very feet at the edge of the marsh. These also gave me the best possible view of the wing marks.

Another pleasing experience happened the last week in August, 1918, about dusk. Immature Black Ducks were coming from the direction of the Mentor Marsh to drop into the more open water of the Richmond swamp to feed. A pair of wary old adults, however, would not alight for

some time, but finally did so some distance away; and as I knew I could "sneak upon them" for observation at that particular place, I did so. As I cautiously looked around a corner of button-bushes, there they sat in the floating duck-weed, heads up and ready to jump on the instant, while surrounding them, unconcernedly feeding, were seven young Wood Duck, another species which breeds regularly in the wooded swamp between the two localities mentioned. The young Blacks are very tame up to the time of the hunting season, and I have thrown green apples at one in open water without being able to make it fly, although the water all but splashed the bird. This seems strange considering the extreme wariness of the adult bird.—E. A. DOOLITTLE, *Painesville, Ohio.*

Ruddy Shelldrake on the Atlantic Coast.—*Casarca ferruginea* has been taken in Greenland but not in the United States, so far as I know, until recently. A specimen was captured at Barnegat Bay in 1916 by Mr. W. H. Eddy, of Darby, Pa., and was identified by the editor of 'The Auk,' who, on general principles, was disposed to regard it as an escaped bird. Whether this was true or not we cannot know. It appears that the bird is not very uncommon in captivity, for Mr. Lee S. Crandall, Curator of Birds at the N. Y. Zoological Park, tells me that they have specimens there, and that the species has been bred on at least two occasions by Mr. William Bronwin, of Rye, N. Y.

On the other hand, a reported capture of this species on Currituck Sound in North Carolina has been current there for many years. This occurrence was related to me by Mr. W. L. McAtee, of the Biological Survey, but as the specimens were not preserved it did not seem best to note the incident until a specimen actually killed in the United States could be recorded. Mr. Eddy has furnished this specimen.

The reported North Carolina capture took place at a shooting resort kept by Jasper White near what is now known as Water Lily Post Office, Currituck County, N. C. Jasper B. White, the son of the man who kept the resort, was then a young man. A Mr. Fred Simonds, of Reading, England, in company with his uncle, had come to Currituck Sound for the shooting and was staying with J. B. White's father. The two young men were shooting together one day when a flock of five ducks came to them, of which three were shot. These birds were new to J. B. White, but Fred Simonds recognized them and told White that they were Ruddy Shelldrakes. Later, after he had returned to England, Mr. Simonds sent White a copy of 'British Game Birds and Water Fowl,' with colored plates, by Beverly R. Morris, and a letter received at the same time told White that the birds they had shot were figured in the book, and the plate of the Ruddy Shelldrake was at once recognized.

Mr. Jasper B. White writes me that the birds taken in Mr. Simonds' company were killed in 1886. He adds that he has seen birds of this species several times since then, and that they always appear in very cold weather. For some time he has been endeavoring to collect specimens for

Mr. McAtee, and recently winged one of a flock of five, which he followed and almost overtook. He was within a few feet of it before it got under the ice and escaped, and is confident of the identification.

The Barnegat specimen of the Ruddy Sheldrake secured by Mr. Eddy was killed November 14, 1916, while he was gunning on the east point of Sloop Sedge in Barnegat Bay. It was mounted and is still in his possession. It was recently again examined by Dr. Stone, who detected in the specimen no evidences of past captivity. It seems in all respects normal.

A "Yellow" Duck, quite unlike any bird known to old gunners who saw it, was killed last winter near Poplar Branch, Currituck Co., N. C., but the specimen was not preserved.

These reports suggest that at any time we may learn of other examples of *Casarca ferruginea* taken on the Atlantic Coast.—GEO. BIRD GRINNELL, *New York City*.

***Exanthemops* Elliot an Excellent Genus.**—The name *Exanthemops* Elliot (New and Unfig. Birds North Amer., II, pt. IX, 1868, pl. XLIV and text; type, by original designation, *Anser rossii* Cassin) is now used in subgeneric sense under the genus *Chen*, for *Anser rossii* Cassin. It was, however, originally proposed as a generic term; and the group somewhat recently has been rediagnosed and revived by its original describer (Elliot, Wild Fowl U. S. and Brit. Poss., 1898, pp. 268, 269). That this, moreover, is well justified is evidenced from an examination of the three species, *Chen hyperborea* (Pallas), *Chen carulescens* (Linnæus), and *Chen rossii* (Cassin). The first and second of these are strictly congeneric and constitute the genus *Chen* Boie; but the last differs so much and so fundamentally, that it ought not to remain in the same genus. The group that it represents, to which of course the name *Exanthemops* Elliot is applicable, may be diagnosed as follows: Similar to *Chen*, but bill relatively as well as actually shorter and not as long as the head; commissure not widely gaping; base of maxilla much wrinkled and warty in adult; anterior outline of the feathering on the sides of the base of the maxilla nearly straight, instead of triangular or strongly convex; tarsus $1\frac{3}{4}$ (instead of $1\frac{1}{2}$) times the exposed culmen; wing about $8\frac{3}{4}$ (instead of 7) times the exposed culmen. One of the characters given by Elliot (Wild Fowl U. S. and Brit. Poss., 1898, p. 268) — "depth [of bill] at base less than half the length of the culmen," appears not to hold, since there is no difference in this respect between *Exanthemops* and the species of *Chen*. The genus *Exanthemops* as here recognized is monotypic, and its only species will now stand as *Exanthemops rossii* (Cassin).—HARRY C. OBERHOLSER, *Washington, D. C.*

Notes on the Structure of *Anseranas semipalmata*.—The remarkable Australian Pied or Semipalmated Goose has been variously regarded as a member of the Anserinæ (Newton, Dictionary of Birds), as an independent subfamily, Anseranatinæ (Salvadori, Catalogue of Birds), and as of family rank, Anseranatidæ (Stejneger, Standard Natural History).

In spite of its pronounced characters, it bears a general resemblance to the African Spur-winged Goose (*Plectropterus*), and as in two or three structural features the latter evinces a slight approach to *Anseranas*, the resemblance is possibly more than a superficial one.

The most evident peculiarities of the Pied Goose are the semipalmate feet, long, incumbent hind-toe, and long, sharp claws. The bill is peculiar, the face bare, and the top of the skull is elevated into a large, feathered protuberance. Internally a remarkable feature is the very long, coiled trachea. Pycraft states that the convolutions of the intestines are comparatively primitive in style.

In addition to these characters, I wish to call attention to several others some of which at least have probably not been recorded.

Gadow states that in the *Anseres* the oil-gland has but a single pair of orifices. I have examined several genera, including *Plectropterus*, *Cygnus*, *Branta*, *Dendrocygna*, and *Nettion*, and have found no exceptions to this statement except in *Anseranas*. Of the two individuals of this goose seen, one had eight, the other sixteen orifices in the large, heavily tufted oil-gland.

In the *Anseres* the standard number of middle primary coverts on the under side of the wing is six. I have determined this character in twenty-three genera belonging to nine of the eleven subfamilies recognized in the British Museum Catalogue, including *Cereopsis*. With the exception only of *Anseranas*, and *Plectropterus*, I have found invariably six of these coverts. The single specimen of *Plectropterus* examined had five; the two individuals of *Anseranas* had but two and three respectively.

Every one of the numerous genera of the order inspected, including *Cereopsis* and *Plectropterus*, has had the pollex furnished with a sharp claw, with the sole exception of *Anseranas*, both specimens of which agreed in the entire absence of a claw.

I have investigated the arrangement of the deep plantar tendons in *Nettion*, *Cygnopsis*, *Plectropterus* and *Anseranas*. In all but the last the two tendons are thoroughly fused for a variable distance above the base of the toes. In *Anseranas* there is no such fusion, the two tendons being loosely connected by two thin bands of tendinous tissue.

Of skeletal peculiarities, it may be noted that the furcula is V-shaped rather than U-shaped, as is usual in the *Anseres*, and with the symphysis enlarged; also that the palatines are very narrow, the rear edge of the metasternum only slightly notched and the pelvis of peculiar shape.

In the 'Cambridge Natural History' the misleading statement is made that "*Anseranas* and *Cereopsis* alone" have "the foot semipalmated." The former alone is truly semipalmate; in *Cereopsis* the webs are rather deeply incised, but this is also the case in the genus *Nesothen*.

A more serious error originated with Yarrell in 1827 (Trans. Linn. Soc., XV, 383). This has been quoted by various authors, the latest being Mathews in his 'Birds of Australia' (1914), and so far as I know has never been corrected. Yarrell described and figured the coracoids in two indi-

viduals of this Goose. The right coracoid was unlike the left, and the two birds differed greatly from each other in the form of these bones. I have recently had the opportunity of examining the skeletons of two adult males received from the New York Zoological Park. In both, the coracoids are symmetrical, alike, and of normal Anserine form. There can be little doubt that in Yarrell's specimens the coracoids were diseased and abnormal. Furthermore, Yarrell designated the coracoids as "clavicles," and the quotations of his description have given no hint of his erroneous use of this term.

Several other Anatine genera or groups of genera are strongly marked, such as the Mergansers (*Mergina*), the Torrent Ducks (*Merganettina*), the Cape Barren Goose (*Cereopsisina*), and the Swans (*Cygnina*). The last two are probably the most distinct. The Swans are distinguished by their bare lores, large number of neck vertebrae, very long necks, great size, and wholly white or black and white plumage.

Anseranas is in my opinion by far the most aberrant member of the Anseres. None of the other groups mentioned approach it in the number of unique distinctive characters, and there can be little doubt that it is entitled to family rank. It is surely better characterized than certain commonly recognized families of Gallinæ, Limicolæ, and Psittaci.—W. DEW. MILLER, *American Museum of Natural History, New York City.*

***Sarkidiornis sylvicola* in British Guiana.**—I was very much interested in Mr. Crandall's note (*The Auk*, XXXVI, No. 3, July, 1919, p. 419) relative to the occurrence of *Sarkidiornis sylvicola* Ihering near Barcelona, Venezuela, in November, 1918, because I had previously learned of the presence of this species in British Guiana in the same year.

On July 12, 1918, Mr. James Rodway, Curator of the Georgetown Museum, wrote me that he had just received for the Museum "a pair of Ducks, *Sarcidiornis carunculata*, shot on the East Coast, but hitherto not recorded for the Colony." Upon my inquiry for further details, Mr. Rodway, under date of September 13, 1918, wrote: "In regard to the *Sarcidiornis* we have a pair shot on the East Coast, Dem. at Pln. Hope, by Mr. W. Mearns, who saw flocks of 25 or more and killed several for the table. He says they are excellent eating." In the meantime a note had been published in 'Timehri' (Vol. V, Third series, Aug., 1918, p. 168) stating that, through the kindness of Mr. W. Mearns of "Hope," the Museum had received a head of a male *Sarcidiornis carunculata*.

It is apparent from the dates of the records that the ducks were on the north coast of South America for at least five months, from July to November. So far as I know they have not been observed in Surinam. Von Berlepsch (Nov. Zool., XV, 1908, p. 313), however, lists the species in his 'Birds of Cayenne' (ex Eyton).—THOMAS E. PENARD, *Arlington, Mass.*

An Overlooked Record of the Trumpeter Swan.—In 'The Auk,' Vol. XXXII, January, 1915, Mr. Henry K. Coale had a very interesting

article on the present status of the Trumpeter Swan in North America. In this he enumerates all the records of that bird that he could find, either from personal correspondence or from the literature at hand. Let me point out one notable omission. In the 'Wilson Bulletin,' September, 1902, p. 80, there is a record for the Trumpeter Swan (*Olor buccinator*) in April, 1900, from Jackson County, Ohio (Henninger, Birds of Middle Southern Ohio). The history of this specimen is as follows: The bird was shot on either April 18 or 19, 1900, near Wellston, Jackson Co., Ohio, and sent in the flesh to Mr. Oliver Davie, the well-known author and taxidermist of Columbus, Ohio. Mr. Davie and I were good friends and talked about this specimen several times. Mr. Davie's identification was certainly correct. He mounted the bird and returned it to the owner, whose name I have forgotten, nor do I know what has become of the bird by this time.—W. F. HENNINGER, *New Bremen, Ohio*.

Little Blue Heron on Long Island, N. Y.—On April 5, 1919, I was shown a Little Blue Heron (*Florida cærulea*), which had been found dead, a day or two before, on the banks of the Nissequogue River, at Smithtown, Long Island, N. Y. The body was sent to me by express and received on April 11, 1919. I took it up to the American Museum of Natural History and found my identification was correct. It was too far gone to be mounted, but dissection proved it to be a male. The stomach was practically empty. It was in the blue plumage, and on April 5, when I first saw it, was in first-class condition. I foolishly did not take it with me, as I did not realize its rarity, and only wrote for it afterwards.

Eaton only gives four spring records for New York, viz.: "Lawrence (N. T.), April 3, 1885, Far Rockaway, L. I.;" (Byram) Dutcher's Notes, April 7, 24, 1891, Shelter Island, L. I.; Dutcher's Notes, Montauk, L. I., April 20, 1898," and Binghamton, May 8-12, 1900. Miss Lillian Hyde.—ROBT. B. LAWRENCE, *New York City*.

Wood Ibis in Massachusetts.—Through the thoughtfulness of Mr. E. H. Forbush and the Massachusetts Commission on Fisheries and Game, the Boston Society of Natural History has been presented with a young Wood Ibis (*Mycteria americana* Linné) taken at Chilmark, Martha's Vineyard, Massachusetts, on November 26, 1918, by James A. Vincent.

This is the second record of the species for Massachusetts, and the fifth for New England; Maine, Vermont, and Rhode Island each having one instance of its presence.—W. SPRAGUE BROOKS, *Boston Society of Natural History*.

Roseate Spoonbill in Utah.—On July 2, 1919, a Roseate Spoonbill (*Ajaia ajaja* Linn.) was brought to me for identification. It had been killed at Wendover, Utah, by Joseph Condley and was one of five that appeared on his ranch. The specimen was a male and the skin is now in my collection.

This is the first record I have of the occurrence of this species in Utah. Wendover is close to the Nevada line in the midst of an arid region.—
CLAUDE T. BARNES, *Salt Lake City, Utah.*

Roseate Spoonbill in North Carolina.— On April 17, 1919, Edward Fleisher wrote of having seen a Roseate Spoonbill on Smith's Island, located at the mouth of Cape Fear River, North Carolina. He wrote: "I had a perfect study of it with my field glass in my hand and my heart in my mouth."

Mr. Fleisher's home is in Brooklyn, New York, and his ornithological studies are well known to many.— T. GILBERT PEARSON, *New York City.*

Growth of a Young Killdeer (*Oxyechus v. vociferus*).— Last summer, as usual, a pair of Killdeers nested in the old familiar pasture near my home. Efforts at finding the nest were fruitless, but on July 21 a young one was finally discovered, which became subsequently an object of much interest. During the next few weeks, through a series of harmless captures which were as surprising to me as to the captive, because with each liberation I never expected to see it again, I came into possession of the interesting figures which indicate the growth of the little one during the period of a month.

On August 4 the primary wing feathers were sprouted, but still in the sheath. On the last date which I examined it — August 18 — these were well developed and the young able to fly short distances. The tail down was also largely replaced by fine feathers, as was also that of the remainder of the body.

Growth measurements of a young Killdeer taken in millimetres:

	July 21	July 28	Aug. 4	Aug. 18
Total Length	88	104	150	215
Height to Shoulder	68	80	85	110
Tarsus	27	30	33	40
Bill (Premaxilla)	11	13	15	19
Tail	25	40	45	70
Wing (Primaries)				110

— J. DEWEY SOPER, *Preston, Ontario.*

Mating "Song" of the Piping Plover.— April 1, 1917, was a fine warm and sunny spring-like morning on Plymouth Beach. There were quite a number of Piping Plovers (*Aegialitis meloda*). They were pattering around up and down the beach, and many seemed to be laboring under some excitement. They were not a flock, as such, but seemed to be birds drawn together by a common mating instinct. Some were apparently paired and others were as apparently pairing. I noticed a group of three, two of which chased each other around just like two male Robins fighting over a female. Some flew around rather low over the beach (some of them rather close to me), in apparent sexual excitement, and uttered notes while

on the wing. These were different from the usual mellow, rather low notes which the birds were uttering more or less all the time while on the sand. Their notes on the wing were higher in tone and rather long drawn out, and mixed in with them were some little chuckles. The whole might be described as some sort of a mating song.— JOHN A. FARLEY, *Melrose, Mass.*

Upland Plover in New York.— Since 1917 there has been a steady and most satisfactory increase of the Upland Plover (*Bartramia longicauda*) in the town of Coxsackie, Green Co., New York. The average date of their arrival is April 24 and they leave about September 12.

On May 8 this year, while walking five miles along a road bisecting the Flats that lie west of the village, I counted the songs of over fifty individuals and saw nearly as many.

They often alight on top of the telephone poles bordering the road, where one can approach them within twenty feet; give their bubbling call and fly off only to circle around to another pole further on. They begin nesting May 6-8 and then become very shy, and their song is rarely heard.

By July 15 the young birds are well grown. On that date, 1918, one came from the field down to a stream, bobbing its little round head, bathed and dried its feathers, all within fifteen feet from where I was sitting on the opposite bank.

Their occurrence in the Hudson Valley seems to be unusual, as I can find no record of that fact.— CHARLOTTE BOGARDUS, *Coxsackie, N. Y.*

Turkey Vulture at Plymouth, Mass.— A Turkey Vulture (*Cathartes aura septentrionalis*) was shot at Manomet, Plymouth, Mass., July 25, 1910, by Mr. Wallace Miles. I saw the dead bird at Mr. Miles' farm.— JOHN A. FARLEY, *Melrose, Mass.*

Harris's Hawk in Kansas.— As I was reading the 'General Notes' in 'The Auk' for April, 1919, I noticed that C. D. Bunker of Lawrence, Kansas, stated that a female Harris's Hawk (*Parabuteo unicinctus harrisi*) had been killed near Lawrence, Kansas, on December 25, 1918.

I wish to state that on the 14th day of December of 1918 I found a male Harris's Hawk which had been shot, in Wichita on the Little Arkansas River. This hawk is mounted and is in my collection.— LEROY SNYDER, *Wichita, Kansas.*

***Tachytriorchis*, the Generic Name for the White-tailed Hawk.**— The name *Tachytriorchis* Kaup (Class. Säug. und Vögel, 1844, p. 123; type by monotypy, *Falco pterocles* Temminck [= *Buteo albicaudatus* Vieillot]) now stands in our Check-List of North American Birds as a sub-generic heading under the genus *Buteo*. Examination of its type species (*Buteo albicaudatus* Vieillot), however, shows that it represents undoubtedly a generic group, its short tail, long tarsus, and long wing-tip trenchantly separating it from *Buteo*. In detail, *Tachytriorchis* differs from *Buteo* in

having the tail less than $\frac{1}{2}$ the length of the wing, whereas in *Buteo* it is more than $\frac{1}{2}$ of the latter; the tarsus about $\frac{1}{2}$ the length of the tail (instead of much less), also $2\frac{2}{3}$, or more, times the exposed culmen with cere (instead of $2\frac{1}{3}$ times or less); wing about $4\frac{1}{2}$ times the length of the tarsus (instead of $5\frac{1}{2}$ times or more); and the primaries exceeding secondaries by nearly the length of the tail (instead of, as in *Buteo*, by not over $\frac{2}{3}$ of its length).

Mr. Charles Chubb (Birds Brit. Guiana, I, 1916, p. 231) has recognized this genus, but into it puts also *Buteo abbreviatus* Cabanis. The latter action, however, is doubtless an inadvertence, since this species is absolutely congeneric with the type and other species of the genus *Buteo*. The forms of this genus, *Tachytriorchis*, are as follows:

Tachytriorchis albicaudatus albicaudatus (Vieillot).

Tachytriorchis albicaudatus exiguus Chapman.

Tachytriorchis albicaudatus colonus (Berlepsch).

Tachytriorchis albicaudatus sennetti (Allen).

— HARRY C. OBERHOLSER, *Washington, D. C.*

A Flight of Broad-winged Hawks and Roughlegs in Lake Co., Ohio.— While seated by a country roadside, overlooking some low meadows on April 27 of this year, four medium-sized hawks came low and directly over my head. Hastily turning my glass upon them, I secured enough field marks to pronounce them Broadwings (*Buteo platypterus*). As I followed them with the glass their number suddenly increased to eight, and then, as I swept the sky, it seemed to be alive with them and I counted twenty-five after some had vanished in the distance. Realizing I was at last witnessing a hawk flight I kept a good watch and within a short period of time saw nearly a hundred. Soon after the first bunch of Broadwings had passed came some larger birds, singly, or at most by twos, flying high and far apart. When one was directly overhead another would be seen coming in the distance. Their identity puzzled me at first, until finally one came comparatively low, and the black belly band of a Roughleg (*Archibuteo lagopus sancti-johannis*) was plainly discernible. Among these large hawks was a single Osprey. All the Roughlegs were sailing with the wind and flying a straight northeasterly course, while the Broadwings kept in bunches and circled about to some extent while still progressing steadily in the same direction. The day was clear, with a fresh wind blowing steadily. The most interesting fact to me was the late date the Roughlegs were leaving the country and the number of them — some twenty all told — and I have reason to believe I missed a good many by not being farther along the road, where I could also have seen across the wide valley of the river back of my position. As to all of the large hawks being Roughlegs, I think there is no question, since all were of the same size and silhouette, and the one which came low was easily identified. And I know the Eagle, Redtail and Red-shouldered, too well to have confounded them. A number of Roughlegs were resident here through the winter.— E. A. DOOLITTLE, *Painesville, Ohio.*

Buteonidæ versus Accipitridæ.—The name of the family of Falconiformes, now called Buteonidæ, has been recently changed to Aquilidæ by Dr. Ernst Hartert (Vögel Paläarkt. Fauna, Heft VIII [Vol. 2, Heft II], August, 1913, p. 1087). If this alteration was made because the generic name *Aquila* Brisson (Ornith., I, 1760, p. 419) was supposed to be the genus in this family first described, the fact that *Accipiter* Brisson appeared on an earlier page of the same volume (Ornith., I, 1760, p. 310) was apparently overlooked. Hence, if the earliest described generic name be considered the necessary basis for the family name, the family of birds now known as Buteonidæ must be called Accipitridæ instead of Aquilidæ. If, on the other hand, we consider that the type genus of this group is the one on which the family name was first based, the designation of this family will still become Accipitridæ; since Vigors (Zool. Journ., I, 1824, p. 316), who was the first to subdivide the original family Falconidæ, created five groups, which he called "Stirps," as follows: *Accipitrina*, *Falconina*, *Buteonina*, *Milvina*, and *Aquilina*; and in seeking a name for the remainder of the family after the separation of the true Falcons, we must take the first mentioned group in Vigors' list, which is, of course, *Accipitrina*, based on *Accipiter*, as the type genus. Thus, if we determine the proper family name of the Buteonidæ by either of these two rules, its designation will become Accipitridæ.—HARRY C. OBERHOLSER, *Washington, D. C.*

Snowy Owl in Detroit, Mich.—A fine male specimen of the Snowy Owl (*Nyctea nyctea*), in perfect winter plumage, was captured on Belle Isle, Detroit, April 14, by Mr. Robert Flowerday, superintendent of the park, and is now in a cage at the Zoo. The bird was shot twice, and so badly wounded that it was believed at the time that it would not survive, but it was cared for successfully, although at first refusing to eat. So far as is known, this is the first time that a Snowy Owl has come to this vicinity and remained so late, although there is a previous record (Taverner) of one having been seen at the Flats, April 5, 1906. The late wandering of this bird is all the more remarkable from the fact that the winter was one of exceptional mildness during all the months.—ETTA S. WILSON, *Detroit, Mich.*

The Name of the Black Cuckoo.—Hartert (Nov. Zool., X, 1903, p. 232), in his review of the genus *Eudynamys*, considered it logical to treat the forms of the Black Cuckoo as subspecies of *orientalis*, based on *Cuculus orientalis* Linné (Syst. Nat., I, 1766, p. 168), which he regarded as the oldest name, and which in the twelfth edition of Linné has page precedence over *C. honoratus*, *C. scolopaceus*, and *C. niger*. At present the name *orientalis* is restricted to the bird from Southern Moluccas, while *honoratus* is applied to the Indian bird, with *scolopaceus* and *niger*, both from Bengal, as synonyms. As a matter of fact, however, the names *C. scolopaceus* and *C. niger* had previously been used by Linné in the tenth edition (Syst. Nat., I, 1758, p. 111), based respectively on "The Brown and Spotted Indian Cuckoo"

and "The Black Indian Cuckow" of Edwards (Nat. Hist. Birds, II, 1747, pl. 59 and pl. 58), which represent quite unmistakably the species in question. The name *scolopaceus*, which stands first on the page, should be used for the species, and the fourteen races currently recognized must be known as:—

- Eudynamys scolopacca scolopacea* (Linné).
- Eudynamys scolopacea malayana* Cabanis and Heine.
- Eudynamys scolopacea harterti* Ingram.
- Eudynamys scolopacea mindanensis* (Linné).
- Eudynamys scolopacea facialis* Wallace.
- Eudynamys scolopacca melanorhyncha* S. Müller.
- Eudynamys scolopacea orientalis* (Linné).
- Eudynamys scolopacea everetti* Hartert.
- Eudynamys scolopacea rufiventer* (Lesson).
- Eudynamys scolopacca alberti* Rothschild and Hartert.
- Eudynamys scolopacca salvadorii* Hartert.
- Eudynamys scolopacea cyanocephala* (Latham).
- Eudynamys scolopacca subcyanocephala* Mathews.
- Eudynamys scolopacca flindersii* Vigors and Horsfield.

THOMAS E. PENARD, *Arlington, Mass.*

Aerial Evolutions of a Flicker.—While out with the class in bird study on May 25, 1919, my attention was attracted to a large bird going through some very peculiar maneuvers. He was just across a ravine and about four hundred yards away from where we stood. When first noticed, he was about fifty feet from the ground and ascending in peculiar, bumpy, and jerky spirals. This was maintained until a height of about 350–400 feet was reached, when, after a short pause, a reverse of practically the same performance was gone through. The Flicker (*Colaptes auratus luteus*), for as such he was identified by this time, then alighted in a cherry tree, just above a female that we had previously failed to notice, and completed the performance by going through his more familiar courting antics. I wonder if others have seen the Flicker do this.—C. W. LEISTER, *McGraw Hall, Ithaca, N. Y.*

Two Recent Records of the Horned Lark in Western New York.—Owing, perhaps, to the paucity of published records, local ornithologists have for some time regarded the Horned Lark (*Otocoris alpestris alpestris*) as rare, or at least uncommon, in this general locality. In treating of the subspecies in his 'Birds of New York' (1914), Eaton remarks that for fifteen years he has failed to secure any specimens on the shores of Lakes Erie and Ontario. He adds, however, that the bird unquestionably does occur there in the winter or during the migration time in the late fall. These facts have led me to place on record two recent dates of its occurrence near the village of Hamburg, about fifteen miles south of the city of Buffalo.

On December 17, 1916, I located a flock of about thirty larks feeding on weed seeds in the fields east of Hamburg. Although there might have been some Prairie Horned Larks (*O. a. praticola*) present, all the individuals examined by me were undoubtedly Horned Larks. At very close range, I noted the deep sulphur-yellow throat and also the yellow line over the eye. I might add that I am very familiar with the resident subspecies, which is one of the characteristic birds of our open country.

On March 22, 1919, while walking across a large plowed field south of Hamburg, I had the good fortune to flush a flock of at least sixty larks. The individuals of this band were much wilder than Prairie Horned Larks, and would take wing without apparent cause, much resembling Pipits (*Anthus rubescens*) in this respect. I was somewhat disappointed on account of this fact, for I had not as yet been able to make the identification with my glass. However, it soon developed that the birds habitually wheeled about in the air and returned to near the spot from which they were originally flushed. When opportunity finally presented itself for work with the glass, I was both surprised and pleased to note that many members of the flock had so very much yellow on the head and throat that identification as *O. a. praticola* was out of the question. A fairly large percentage of the birds, however, were evidently duller, probably females.

Inasmuch as I do not recall finding comparisons of the notes of the two subspecies in the literature, it might be of interest to append here a few remarks on the calls and songs. It seemed to me that the ordinary notes uttered as *Otocoris alpestris alpestris* takes wing are decidedly sharper than similar ones of *O. a. praticola*. Several of the males were singing on March 22 — not the flight song, of course, but the ebullient gurgling which is usually uttered from the ground in the case of the resident subspecies. Although it might easily have been that only young males were singing, the song of *Otocoris alpestris alpestris*, as I heard it, was decidedly not as finished a performance as that of *O. a. praticola*. The initiated would immediately recognize it as belonging to some form of *Otocoris alpestris*, but it certainly lacked the smoothness of *O. a. praticola*, and the notes themselves were decidedly wilder.—THOMAS L. BOURNE, Hamburg, N. Y.

Abnormal Beak of a Horned Lark (*Otocoris alpestris praticola*).—

While collecting on May 8, 1911, I secured a very interesting and curious example of natural abnormality — an adult Horned Lark with a peculiar enlargement of the lower mandible. This member, of a dull bone tint (abnormal even in color), projected at least nine thirty-seconds of an inch beyond the upper mandible, terminating in a very blunt tip slightly darker than elsewhere. The upper mandible was also somewhat exceptional, but reversed, being smaller than is usual with the species, by about two-sixteenths of an inch, the normal length being approximately seven-sixteenths.

The bird was feeding with one other on a newly cultivated field, and when taken a small spherical lump of mud was frozen on the long lower mandible, reminding one of the protected tip of a foil. The night before had been

very cold and the frozen ground, thawing under a warm morning sun, had been adhesive enough first to stick, then with the chill of the air to again congeal upon the projecting member as the bird sought its breakfast.

The Lark was in perfect physical condition when collected, notwithstanding the cumbersome disadvantage under which it lived, a circumstance as interesting to the teratologist and others as it is also surprising, considering the malformation of so highly essential an organ.— J. DEWEY SOPER, *Preston, Ontario.*

The Raven in Connecticut.— On May 25, 1919, we observed a Raven (*Corvus corax principalis*) about on the border line between the towns of Norwalk and Westport, Conn. The bird was circling over a large salt marsh. We observed it through 12-diameter binoculars. The soaring flight, the widespread primary feathers, large size, and coal-black color were clear without a glass. Through the glass we could see the heavy raven beak, and that the head was feathered and black, points that left no doubt in our minds of the identification of the bird. Both of us are familiar with the Raven in other regions where it is of more common occurrence.— CLIFFORD H. PANGBURN AND ARETAS A. SAUNDERS, *Norwalk, Conn.*

A Strange Blue Jay Flight.— May 25 of this year found me hunting warblers along a narrow tree-bordered roadway skirting a swamp, a few hundred yards from the beach of Lake Erie. By chance I looked up and saw five Blue Jays flying about fifty feet above the tree tops, and before my glance had ended others came into view and still others behind them. They were flying northeast and keeping very quiet. I began to count them, and in about fifteen minutes' time had seen ninety-five Jays. And this does not begin to number those that passed, for, on account of the trees, my view to each side was much restricted, and there is no telling how many had gone on before I casually looked up. They were in a long stream, with now and then a bunch of five to fifteen. Can any one suggest a plausible reason for Jays to be flying in such numbers during the nesting season?— E. A. DOOLITTLE, *Painesville, Ohio.*

Evening Grosbeaks about Beverly Farms, Mass.— In early May, when I moved to Beverly Farms from Florida, my neighbors, Mr L. A. Shaw and Mr. Gordon Means, spoke to me of the many Evening Grosbeaks which they had seen during the latter part of the winter. They told me that from 75 to 100 birds appeared about March 10 and were seen daily after that date. They never entered the woodland at all, but spent their entire time about the shrubberies and tree plantations of the lawns and gardens between Pride's Crossing and Beverly Farms. Their number was somewhat diminished when I saw them first about May 14, and on the night of May 19 all of the others disappeared from the neighborhood.— T. BARBOUR, *Museum of Comparative Zoology, Cambridge, Mass.*

Evening Grosbeaks at Boonville, N. Y.—From May¹⁵ to 10 I was in Boonville, N. Y., and during that time I observed daily a flock of twenty Evening Grosbeaks. I was there again on the fifteenth, but could not find any of the birds. This is an unusually late date. I am informed that they were seen continuously through the winter. They were also reported at Constableville, eight miles to the north, during the previous winter. The birds which I saw in Boonville were feeding on the ground and in low shrubs.—F. C. SMITH, *Utica, N. Y.*

The Evening Grosbeak on Long Island, N. Y.—On the afternoon of February 4, 1919, my attention was attracted by a series of finch-like notes uttered by a flock of Evening Grosbeaks (*Hesperiphona vespertina vespertina*) that was flying eastward. An excited, but rather poor imitation of their call notes caused them to swerve from their course and pitch into a clump of wild cherry trees standing in a hedge-row about a quarter of a mile away. Hastening to the spot, I found them on the ground busily feeding on the pits of the wild cherry. With their powerful bills it seemed an easy task for them to split the pits and remove the kernels. Although not shy, they appeared to be very restless, keeping up an almost continuous calling, flying back and forth between the trees and ground. The birds, thirteen in number, were all in the plumage of the female with the exception of three or four that were in the black and yellow dress of the male. A portion of the flock soon flew to a yellow locust tree overgrown with vines of the poison ivy, and began picking among the ivy seeds. On my near approach they took fright and flew away to the eastward. No others were seen until March 26, when a flock of eleven was seen in the same locality.

On the morning of April 4 a flock of fifteen was seen flying north near the railroad station at Miller Place. Their flight was high and very direct. They were very noisy, keeping up a continuous calling, but refused to be diverted from their course by my imitations of their calls.

April 9 a small flock spent most of the day among the maples and black alders in a small swamp. I believe that all of the birds noted were merely transients and did not remain anywhere in the vicinity during the periods between the dates on which they were noted. The winter of 1918-1919, one of the mildest on record, would not lead one to expect a visit from these birds. The two preceding winters were of unusual severity, yet nothing was seen or heard of these birds on Long Island. There was a scarcity of suitable food for these and similar birds during the past two winters, more noticeable, perhaps, during the winter of 1918-1919 than in 1917-1918. A similar condition existed in many sections of the north, and may have been a contributive cause to the Grosbeaks wandering so far from their normal range in search of new feeding grounds.—A. H. HELME, *Miller Place, Long Island, N. Y.*

Evening Grosbeaks again at Lakewood, N. J.—Lakewood, New Jersey, harbored Evening Grosbeaks again on February 20, 1919, and it is

perhaps worth while to record the fact, since but one record¹ of their appearance there seems to have been made. Eight or ten birds formed the flock, which I watched at close range for an hour or so, at the corner of the Lake Drive and Forest Avenue, whilst they were feeding in trees and on the ground. About half of them were males.

The writer was at Lakewood, except for an absence of five weeks, from September 18, 1918, to March 22, 1919, and did not see Grosbeaks on any other occasion.—NATHAN CLIFFORD BROWN, *Portland, Maine.*

Evening Grosbeak (*Hesperiphora v. vespertina*) in Ohio in May.—There were few if any reports of the Evening Grosbeak west of the Alleghenies for the winter of 1918-19, so it somewhat surprised me when on May 18 Mr. Glenn Vesey told me there was a male bird down in the Grackle roost, a thick growth of various haws and wild apples on the flats of Grand River. Knowing that he would not be liable to make a mistake, I looked through the growth late that afternoon but without result. However, upon visiting the place next morning the bird was there and, as reported, was a male in the best of adult plumage. The ground in places was strewn with the fallen haw apples of the fall before, and it was upon these that the bird was feeding. He was still there on the afternoon of May 20, but the next day I failed to find him.—E. A. DOOLITTLE, *Painesville, Ohio.*

Henslow's Sparrow in New York and Virginia.—One of the best recent bird discoveries in the Ithaca region was the location of a breeding colony of Henslow's Sparrow (*Passerherbulus henslowi*) on a sedgy hill side just south of Wilseyville (10 miles south of Ithaca), N. Y. On May 14, 1916, Mr. Ludlow Griscom found three male birds on this rather high hill. The spot has a northern exposure and the birds were fond of sitting on the sedgy stools or in the tops of pine seedlings. They were very rail-like and elusive. On June 1 of the same year Mr. Griscom showed several of us the site, Dr. A. A. Allen being of the party. At that time we found five males, a few females, and a nest with one egg and three young. The nest is very difficult to find. On June 8 the same five males were in evidence. The following year, on July 5, 1917, Messrs. Allen and G. A. Bailey found another nest with four eggs. In 1916 (July 2), after the discovery of it at Ithaca, the author found one Henslow's Sparrow at Emerson, N. Y., at the northern end of Cayuga Lake. In 1918 another colony was found on the game farm of the university. This year (1919), on May 11, Mr. S. E. R. Simpson found it near Varna (three or four miles northeast of Ithaca, N. Y.).

The year following my introduction to this species, on May 30, 1917, Mr. Francis Harper showed me the Alexandria Va. colony and I determined to watch for the species southward. I heard it in two or three localities southward to Elmont, Va., where I made a definite journal record

¹ Auk, XXXIV, p. 477.

(May 31, 1917). On May 30, 1917, from Alexandria to Fredericksburg we did not record it. This species was heard south of Petersburg for a short distance, and from this vicinity (1918, Camp Lee) Mr. Harper wrote me that he and Mr. Holt recorded it as well. The above notes would indicate a much wider range in Virginia than that given by the author of 'The Birds of Virginia, 1913' (p. 224).—A. H. WRIGHT, *Ithaca, N. Y.*

The Dickcissel in Virginia.—On May 31, 1917, in the outskirts of Richmond, Va., Dr. H. H. Knight and I discovered a fine singing male beside the road in what looked to be a real estate development tract. We were following the main auto route from Washington into Richmond. I was attracted to it by first seeing it—my first live Dickcissel; while Dr. Knight recognized the sound as a reminder of his home country (Missouri). This record is published because the author chanced to see a note a few months ago (Wilson Bulletin) by an ornithologist of Virginia to the effect that he had not seen the Dickcissel in Virginia for twenty years.—A. H. WRIGHT, *Ithaca, N. Y.*

***Piranga erythromelas* versus *Piranga olivacea*.**—Since the discovery that *Fringilla rubra* Linnæus (Syst. Nat., ed. 10, I, 1758, p. 181) is the Summer Tanager instead of the Scarlet Tanager, the latter has passed under the name *Piranga erythromelas* (Vieillot). There seems, however, to be an earlier name for the Scarlet Tanager in *Tanagra olivacea* Gmelin (Syst. Nat., I, ii, 1789, p. 889). This is based on "l'Olivet" of Buffon (Hist. Nat. Ois. [original edition], IV, 1778, p. 269); the "Olive Tanager" of Pennant (Arctic Zool., II, 1785, p. 369, No. 238); and the "Olive Tanager" of Latham (Gen. Synop. Birds, II, pt. 1, 1783, p. 218, No. 4); and the habitat given as "Cayenna et Noveboraco." The diagnosis given by Gmelin is as follows: "*T. olivacea, gula et pectore flavis, abdomine albo, remigibus rectricibusque fuscis margine albis.*" This diagnosis is almost a literal translation, though somewhat abridged, of the descriptions given by Pennant and Latham, both of which latter are essentially the same. In fact, Latham refers to Pennant's then unpublished 'Arctic Zoology,' and Pennant in this work cites Latham's account. A comparison of the diagnosis given by Gmelin and the descriptions of Latham and Pennant with a peculiar transition plumage of the Scarlet Tanager, and their descriptions of their female Olive Tanager with the female Scarlet Tanager, leaves no doubt at all of their entire agreement.

This peculiar transition plumage above mentioned seems to be little known, probably because of its brief duration and consequent rarity in collections. It is a stage, alike in both sexes, between the juvenal and the first autumn plumages, in which the juvenal feathering of the entire upper parts is retained, but on the anterior lower surface the streaked condition of the juvenal stage has been replaced by olive yellow; while the abdomen has lost so much of its yellowish tinge that at superficial glance it looks white.

The descriptions given by both Pennant and Latham were based on speci-

mens from New York in Mrs. Blackburn's collection, taken, as practically all her New York specimens were, near Hempstead, Long Island. It is of interest in this connection to note that both Pennant and Latham apparently had some suspicion that their Olive Tanager was the female of the Scarlet Tanager, and their reasons for describing it as a separate species are given in the following footnote by Pennant in Latham's work (Gen. Synop. Birds, II, pt. 1, 1783, p. 218): "From their being found at this last place [New York], and my having such authority for describing both sexes, I must conclude that the species is distinct; otherwise I should have suspected it to have been the female of the last described [Scarlet Tanager]." In the description of the female of the "Olive Tanager," there is the information, omitted by Gmelin in his diagnosis, that the "under sides of the body [are] pale yellow," which is the chief difference between the adult female of *Piranga erythromelas* and the transition plumage described above. It is, therefore, evident that the male of Gmelin's *Tanagra olivacea* is the Scarlet Tanager in this odd-looking transition plumage; and its female the adult female of the Scarlet Tanager.

Gmelin, Latham, and Pennant all cite "l'Olivet Buff." as a synonym, and for this reason include Cayenne in the habitat, but the description given by Buffon, based on a specimen from Cayenne, is possibly not of the female Scarlet Tanager. At least, if it is, the alleged locality is probably wrong, since the species is not known to occur in the Guianas. At any rate, this description of Buffon does not figure at all in the diagnosis given by Gmelin, by Latham, or by Pennant; hence in determining the identity of *Tanagra olivacea* it may be disregarded as a possibly erroneous synonym.

From the above discussion it appears that the technical name of the Scarlet Tanager, now *Piranga erythromelas* (Vieillot), should become *Piranga olivacea* (Gmelin), and its type locality, Hempstead, Long Island, New York.—HARRY C. OBERHOLSER, *Washington, D. C.*

The Tanagrine Genus *Procnopis* Cabanis.—*Tangara* (formerly *Calliste*, *Calospiza*) is by far the largest genus of Tanagers, comprising about sixty distinct species. These exhibit great diversity in coloration and vary considerably in the form of the bill, but in other respects they agree rather closely.

On the one hand they are allied to the slender-billed genera *Chlorochrysa* and *Tanagrella* and on the other hand to the small-billed genus *Procnopis*. Of the latter Selater (Cat. Birds Brit. Museum, XI, p. 93) remarks "This little group of three species comes very close to *Calliste*, but has a shorter and wider bill and rather longer wings in proportion." The difference in the size and form of the bill between *Procnopis* and the majority of species of *Tangara* is very marked. Unfortunately for the standing of *Procnopis*, however, there are certain species of *Tangara* that in the form of the bill agree essentially with the members of the former group. This is particularly the case with *T. nigroviridis*, which in its small but wide, depressed bill, with weak lower mandible and short gonyes, is very similar to *Procnopis*.

In the relative length of the wing it does not differ from the latter genus, while in coloration it bears a strong resemblance to *P. atrocarulea* (the type of the genus).

T. dowi somewhat suggests *T. nigroviridis* in coloration, and while the bill appears to average larger and stouter, yet some individuals agree essentially with the latter. *T. fucosus*, closely allied to *T. dowi*, and *T. cabanisi* (known only from the type specimen), associated with *T. dowi* and *T. nigroviridis* by Selater, I have not seen. *T. cabanisi*, judging by the colored plate in 'The Ibis' (1868, pl. III), has a much larger and thicker bill than its supposed allies. In *T. heinei* (*atricapilla* auct.) and *T. argentea* the bill is depressed and much swollen laterally, the throat feathers are bifurcate and the sexes are unlike in color. *T. cyanoptera*, while agreeing in the last respect and to a considerable extent in coloration, has a thicker bill. *T. fulvicervix* and *T. melanotis* are small-billed species not very dissimilar to the species of *Procnopis* in color, but the bill is narrower and less depressed.

If *Procnopis* is to be recognized as a genus, *Tangara nigroviridis* must be transferred to it. Even with this change, however, it is extremely doubtful whether the distinction can be maintained, so complete is the intergradation between the two groups. I suggest, therefore, unless we are ready to divide *Tangara* into a number of ill-defined genera, an undertaking of doubtful practicability, that *Procnopis* be united with *Tangara*. If this is done, the latter genus will not be appreciably more heterogeneous in any respect than it is at present.

It may be noted that *Tangara argentea* was originally described as a *Procnopis* in the paper in which the latter genus was described by Cabanis. Also that *Procnopis* was not recognized by other authorities until Selater (in the British Museum Catalogue) decided that *P. atrocarulea* was more nearly allied to *Diva* (type *D. vassorii*) than to *Calliste* and united it with *Diva* under the older name *Procnopis*.

Under the arrangement suggested the three species of *Procnopis* will stand as:

Tangara vassorii (Boiss.)

Tangara branickii (Tacz.)

Tangara atrocarulea (Tsch.)

W. DEW. MILLER, *American Museum of Natural History, New York City.*

Early Arrival of the Tree Swallow in Plymouth.— The Tree Swallow is an "early bird" in Plymouth, as elsewhere. But Plymouth seems to be unique, so far as the published records for eastern North America show, as the station of the *earliest* arrival of this "early bird." The average date for six years of first Tree Swallows seen at the Head of the Beach, Plymouth, is March 16. This compares with the usual "first week of April" reports from most places and with the Ipswich (on the other side of Massachusetts Bay) ten-year average of March 28 and with the St. Louis ten-year average of March 24 and with the Washington earliest date seen of

March 28. The inference is, of course, that if the Tree Swallow is watched for by more observers, and if stations as favorable as Plymouth are selected, the Plymouth average will be duplicated or even surpassed.

Following are dates of arrival in Plymouth (Chiltonville — "Head of the Beach"):

1908. Mar. 7. First swallow.
 " 16. A flock. (A mild first week of March.)
1909. " 11. A flock of 20 swallows.
 " 12. Same flock.
 " 17. Snowing. Flock sits on a telephone wire near the beach in p.m. 22°-24° above zero.
 " 18. A cold and blustering morning. No swallows.
 " 19. A few swallows at the beach.
 " 25. A flock of swallows feeding on the bayberries, of which there are a plenty this spring. Very blowy and rough, and from noon a hard rain fell, which increased at night almost to a gale. But not a low temperature.
1910. " 20. A south wind has blown probably for 36 hours. Warm today. Quite a lot of swallows are here. Don't think they were here yesterday.
 " 22. Saw some swallows in the morning at the head of the beach. Also saw two or three swallows in East Middleborough.
1911. " 18. A swallow or two.
 " 22. A number of swallows seen.
 " 23. Quite a lot of Swallows that settled by the hundreds on the bayberries.
 " 24. More swallows today.
 " 26. Swallows lively and plentiful. Two or three days last week were very rough, cold, and wintry, yet the swallows were flying around today. I wonder where and how they pass the cold nights.
1912. " 19. A flock of 50 swallows seen between 11 and 12 o'clock.
1913. " 23. Saw the first swallows — a dozen or more.
1914. Apr. 4. Saw one swallow — also a flock of 8 or 10. Strange that they should be so late this year.
1917. Swallows appeared during the week of March 18, after the snowy conditions resulting from the great storm of March 4 and 5 had disappeared. This storm probably made them late this year. But once arrived in Plymouth, the Tree Swallows seem to come to stay. They hang on in the face of bad conditions and rarely beat a retreat, as they so often do elsewhere. To illustrate: "April 9 was sunny and scarcely coolish. But at 5 a.m. on the 10th a blizzard began, with snow and a hard blow, so that the street cars soon stopped run-

ning on account of the drifts. But I saw three Swallows flying in the morning in the driving snow. It was not, however, a cold storm, although it cleared off cooler and blustering, with a good deal of snow on the ground. Nevertheless, I saw more swallows during the day. Birds in general must be faring hard, although it is not a bitter snap." (I note in my journal of April 12 that there is still a lot of snow on the ground and that the storm must have been of some force because "I hear of great numbers of Shelldrakes in the bay at South Mashpee driven in I suppose by the storm.")

1918. Mar. 18. First swallow.

JOHN A. FARLEY, *Malden, Mass.*

Hybrid Warbler in Missouri.—A hybrid of the Blue and Golden-winged Warblers was collected near Lexington, Mo., May 3, 1919, by my friend, Mr. Clark Salyer. The specimen was collected on one of the heavily wooded bluffs of the Missouri River. With the exception of one particular, the specimen is a Lawrence's Warbler. It has the coloring of the Blue-winged Warbler as a basis, and has the black throat patch of the Lawrence's Warbler, but the black on the cheeks is like the black on the Blue-winged Warbler, not like that of the Golden-winged. In other words, the black does not form an ear patch, but is merely in front of the eye and through it. The specimen is six and one-fourth inches in length,—over an inch longer than either species from which it is derived. It is a male, in excellent condition, and, as a cabinet skin, now forms part of the collection of Mr. Salyer.—E. GORDON ALEXANDER, *Lexington, Mo.*

The Orange-crowned Warbler on Long Island in April.—On April 13, 1919, at Miller Place, Long Island, N. Y., I watched an Orange-crowned Warbler (*Vermivora celata celata*) for some time as it hunted among the buds of some apple trees. It was very active and apparently in full vigor. It was seen under the most favorable conditions, often within ten or twelve feet leaving no doubt in my mind as to its identity. I have occasionally met with this species on Long Island in the fall, but this rather unseasonable occurrence is the first vernal record I have.—A. H. HELME, *Miller Place, Long Island, N. Y.*

Peculiar Brooding of the Black-throated Blue Warbler.—A female *Dendroica caerulescens*, whose nest I found June 19, 1918, in Rowe, Mass., made a unique display of herself as a close-sitting bird. The nest, a beautiful and elaborate structure, was three feet from the ground in a hemlock sapling which was one of a thick clump of the same sort that bordered a wood road. The eyes of the young were open. The female was off the nest when I found it, but when I returned, a quarter of an hour later,

she was on. I got within two feet of her, but she would not fly. To get nearer seemed like "adding insult to injury," so I did not try to stroke her back, as I have done before with a brooding bird. But it was not her bravery that made this close-sitting bird unique; it was the unusual way in which she protected her young from my gaze. She had spread the white feathers of her lower parts out so completely over the young that there was not a vestige now visible of the four young birds that I had found a short time previously filling the nest so full. She "fluffed" herself out so as to hide all traces of the young. For a moment I even thought that during my absence of a few minutes she had brought a great deal of some soft white stuff as additional lining for the nest, as breeding birds sometimes do.

To quote from my journal: "She made a beautiful picture. The whole effect was wonderful. The bird seemed to be sitting in a billowy mass of eider down, or cotton, that swelled, or rather bulged up all around her, a regular 'bed of down.'" This *carulescens* was a remarkably fearless bird. Two days later I went to the nest again. The young had flown, but were close by. It was nearly dusk in the woods. The female "chipping," and with "shivering" wings, came very close, almost as close as she could get without touching me.—JOHN A. FARLEY, *Malden, Mass.*

The Yellow-throated Warbler in Central New York.—In view of the fact that *Dendroica dominica* comes into recent "sight record correspondence" (Auk, July 1917, p. 373), it might be unwise to record this species on such evidence, but for the fact that none of the three or four records come from northern, central, or western New York. All previous records are from Long Island. It has hitherto been recorded as follows: The first record is from Crow Hill, Kings County (see Dutcher, 'Auk,' 10, 277; and Lawrence, Ann. Lyc. Nat. Hist. of New York, 6, 8). The second record is also from Long Island, Oyster Bay, July 4-8, 1907, a bird of this species discovered by Mrs. E. H. Swan, Jr., identified by Theodore Roosevelt, and recorded in 'Scribner's Magazine,' volume 42, page 387" (Eaton, E. H., Birds of New York, Part 2, p. 424). The third record was made at Brooklyn, N. Y., April 28, 1917, by Edward Fleisher (Bird-Lore, May-June, 1917, No. 3, p. 150). The fourth was made at the same place, a day following, April 29, 1917 ('Auk,' XXXIV, July, 1917, pp. 341-342).

The bird Mr. S. E. R. Simpson and I saw was in high spruce trees one half mile west of Spring Lake, Conquest, Cayuga Co., N. Y. When we first heard it my companion was looking for Myrtle, Black and White, and Black-throated Blue Warblers to complete a list of 95, and I said instinctively, "I guess there is your Myrtle Warbler." "No," he replied, "we had better look at it. It is Yellow-throated Warbler." I felt the determination absurd considering its range, but the bird proved a fine male *Dendroica dominica*, and was clearly seen with glasses (x4) and with naked eye at 25-50 feet. I know the true Yellow-throated Warbler and could see no striking yellow before the eye in this bird. Inasmuch as we had not the

bird in hand, some may consider it venturesome to hold it to be the Sycamore Warbler, yet that is the natural assumption of the student of bird ranges, and my determination, although I employ the caption of "Yellow-throated Warbler." The Sycamore Warbler has never been recorded in the state, and the above position will have to be adopted until a specimen is taken. This Sycamore Warbler with the Golden-winged and Hooded Warblers and other forms of the northern end of Cayuga Lake might tend to substantiate the suspicion that some of the breeding forms and others at the north end of this lake (but absent or rare at the southern end) enter in their migration from Ohio and the west and not directly from the south. The Sycamore Warbler occurs in Indiana, Illinois, Michigan, and in Ohio to Lake Erie, and might stray eastward into the Upper Austral arm along the south shore of Lake Ontario.

The song of this individual hardly impressed us as like the Water-Thrush, of which we had previously heard numerous breeding examples the same day and for two days previous, nor of the Louisiana Water-Thrush, so common here at Ithaca, nor of the form or quality of the Indigobird. It sounded like a louder, fuller, and more ringing song of a Myrtle Warbler. This comparison and our first identification of the song as that of the Myrtle Warbler was made in entire ignorance of Mr. Andrew Allison's characterization of the Myrtle's song as "not unlike that of the Sycamore Warbler," and might be contributory evidence to prove our bird the Sycamore Warbler.—A. H. WRIGHT, *Ithaca, N. Y.*

Nesting of the Myrtle Warbler in Southern Massachusetts.—The breeding of the Myrtle Warbler (*Dendroica coronata*) at Webster, Mass., was an interesting event of the present season. On May 17 I noticed the female carrying nesting material into a group of white pines that stood on the edge of a pine grove of two or three acres. This grove adjoined an open pasture. After considerable search I located the nest 40 feet up in a white pine two feet in diameter. It was near the top of the tree.

On May 29 my friend, E. H. Forbush, and myself climbed the tree and found two eggs in the nest.

The fact that the set was still incomplete after ten days (for on May 18 the female had her nest well along toward completion) is to be accounted for probably by the excessive precipitation and cool, damp, backward weather of the week of May 18. There were very heavy rains on two days, while the general temperature was low throughout the week.

The female sat on her eggs while the tree was climbed and only flew when the nest-limb was jarred.

The nest was 10 feet out on the limb and was snugly set in a crotch. It was well built of rootlets, straws, and the like, and was heavily lined with hens' feathers. A Bluebird's feather was worked into the outside of the nest. The structure was deeply cupped and was very "snug," for its edge all around was built to slightly overhang the interior. The eggs were

speckled at the greater end chiefly, where there was more or less of a ring on a background of grayish white.

This nesting of *D. coronata* at Webster, Mass., in southern Worcester County, on the Connecticut State line, in transition country with fauna almost purely Alleghenian, is of interest. It may be remarked *en passant* that within one-quarter of a mile of this white pine grove, where the Myrtle Warbler had its nest, was a wooded laurel swamp with scattered black spruce, where a Hooded Warbler was in full song (May 23) and a pair of its cousins, *Sylvania canadensis*, were building a nest.

While *D. coronata* has long been known as a summer resident of many of the elevated parts of Massachusetts, although less numerous than either *D. maculosa* or *D. carulescens*, this Webster breeding of the bird appears to be the first recorded case of a nest of the species in Massachusetts.—JOHN A. FARLEY, *Malden, Mass.*

The Cerulean Warbler (*Dendroica cerulea*) in the Catskills.—Santa Cruz Park is a little community of cottages in the Catskill Mountain woods, a little southwest of the center of Greene County, having an altitude of about 2000 feet. The cottages harmonize well with their surroundings and are not sufficiently obtrusive to seriously affect the natural environment of the mountains. While deciduous trees have rather the upper hand, there is a very formidable rivalry of spruce, balsam, and hemlock.

Arriving here late in May for a month of bird study, almost the first bird which demanded our serious attention was the Cerulean Warbler, hitherto unknown to us.

Between May 29 and June 28, hardly a day passed without giving this evasive bird more or less of our attention, sometimes amounting to several hours in the course of the day.

A bird more difficult to observe I have rarely if ever met with. His life seemed to be confined almost entirely to the tops of the tallest deciduous trees, where he would generally feed, with apparent design, on the side most remote from the would-be observer, exhibiting a wariness not expected on the part of a warbler, and finally leaving the tree, the first intimation of his departure being a more distant song. He never remained in the same tree-top more than eight or ten minutes at a time and yet rarely ventured out of hearing distance from the center of his range. Fortunately, he would sometimes take a perch on a bare twig and sing for several minutes, but the perch was always high and generally with the sky as a poor background for observation. Had it not been for the almost incessant singing, being heard almost constantly from daybreak until nearly dark, the task of identification would have seemed hopeless.

The musical exercises of the bird consisted of an alternation of two distinctly different songs, so different indeed that until the bird was caught in the act we never for a moment suspected a single authorship. One song suggested slightly that of the Magnolia Warbler but rather softer, four syllables, though not quite so well defined as in the Magnolia. The other,

for want of something better, might be compared with the song of the Parula Warbler, a short buzzing trill rising in the scale, much louder and less lispy than the song of the Parula. The songs were each of about one second duration, rendered approximately eight or ten times per minute. Altogether the performance was quite musical, in sweetness far above the average warbler song. These two songs were generally alternated with clock-like regularity, though occasionally the bird preferred to dwell upon one or other of his selections for the greater part of the day. Like the Blackpoll Warbler and some others, the beak was opened very wide while singing, a great help in connecting bird and song.

The fact that the bird was so closely confined to a very restricted area gave us great hope of finding a nest, which hope, however, was not realized. Neither did we succeed in identifying a female, but on the 27th of June, the day before we were obliged to leave, our bird was seen carrying food in his beak, which was rather good circumstantial evidence that the Cerulean Warbler was breeding in the Catskills.—S. HARMSTED CHUBB, *New York City*.

Carolina Wren (*Thryothorus l. ludovicianus*) Nesting in Rhode Island.

—On August 1 I arrived for a few weeks stay in Bristol, R. I., and at once was attracted by the notes of a Carolina Wren from a swampy thicket behind the house on Metacom Avenue where I was living. On August 2 I secured a glimpse of both parents and one of the young. This is, I believe, the second record for this species in Bristol, and the fifth for the State, though I have not followed the avifauna of the State for twenty years, and other records may have been made.—R. HEBER HOWE, JR., *Thoreau Museum of Natural History, Concord, Mass.*

A Short-billed Marsh Wren Colony in Central New Hampshire.—

On July 17, 1919, I found a small colony of *Cistothorus stellaris*, probably not numbering over six pairs, in a small and not very wet meadow in Sandwich, N. H. The wrens were in full song. I saw two birds with food in their bills, but was unable to learn whether the young were in or out of the nest, for, although I found five nests, none was occupied, and one was built in 1918. The other four were all fresh made, and green as grass could make them, but were all "fake nests."

Their nests, as a rule, were set nearer the ground than the many nests of the species that I have found in Massachusetts; nor were they in hummocks, which may be explained by the fact that in this meadow there were no hummocks. Two or three of the nests were supported in part by narrow-leaved cat-tails, together with the usual fine grass, instead of by fine grass exclusively, as is so often the case, particularly when a hummock is chosen for a site.

Scarcely more than two miles away, in a sphagnum swamp of mixed growth, where considerable spruce and less balsam grew, a Tennessee Warbler sang incessantly in the dead top of a maple.

This appears to be the most northern reported colony of *C. stellaris* in New Hampshire, while the Tennessee Warbler on the same date seems to be the most southern summer record of this species in the State.—JOHN A. FARLEY, *Malden, Mass.*

Red-bellied Nuthatch (*Sitta canadensis*) in Alabama.—In 1891 Dr. William C. Avery recorded the capture, on October 4, 1888, of an adult male Red-breasted Nuthatch at Greensboro, Alabama (*Am. Field*, Vol. XXV, p. 55, January 17, 1891). As far as known to me, this is the only published record of the occurrence of the species within the State.

On January 30, 1919, I assisted Mr. Lewis S. Golsan in the capture of a male Red-breast about two miles east of Prattville, Alabama, in the wood-pasture of Mr. J. B. Golsan, and at the same time heard another individual calling in the pines near by.

Concerning this species Mr. Golsan writes that he collected a female at the same place on December 22, 1918, and that he saw and heard individuals there from that date until April 23, 1919. Mr. Golsan's actual sight records are as follows: December 22, 1918, one; January 30, 1919, one; February 13, one; March 16, four; March 23, two; April 6, three; April 14, two; April 17, two; April 21, one; April 23, one. The birds were heard almost daily in the pines near the barn lot by Mr. Golsan as he went about his work. A large part of their time was spent searching the cones of *Pinus palustris*, *P. echinata*, and *P. taeda*. Mr. Golsan estimates the number seen and taken at ten individuals.

It seems remarkable that this boreal bird should appear so far south during the mildest winter the entire country has experienced in years. Seldom severe, the late winter and early spring in central Alabama were exceptionally mild. Rather one would have expected Red-breasted Nuthatches here the previous winter, which was as rigorous as the one just past was element.

In this connection it seems worthy of note that though I observed numbers of White-breasted Nuthatches in the vicinity of Camp Upton, Long Island, during the past winter, and watched especially for Red-breasts, none were seen.—ERNEST G. HOLT, *Barachias, Alabama.*

The Blue-gray Gnatcatcher on Cape Cod.—On November 9, 1915, in Dennis, Cape Cod, Massachusetts, I saw a Blue-gray Gnatcatcher (*Poliopitila c. carulea*). The locality was about two miles from Cape Cod Bay. It was an Indian summer day with blue haze and a warm sun. The Gnatcatcher remained for a short time in a tangle of vines and blackberry bushes by a wall. As usual the little *Poliopitila* was the embodiment of nervousness, a pent-up bit of feathered energy. It continually cocked its head and flirted its tail. Now and then it uttered its short, insect-like, unbird-like note. It was not shy.—JOHN A. FARLEY, *Malden, Mass.*

Strange Conduct of a Robin.—It may not be fair to the bird to report its conduct to the world ornithological, but an apparently perfectly good

male Robin conducted himself in a most unseemly manner for the greater part of April at the auto station on Belle Isle, the city park of Detroit.

During some very severe weather he came into the station one morning when a door had been left open and was taken care of until the storm abated, when he was permitted to depart. Immediately upon reaching the great outdoors he returned to one of the windows and beat upon it. The matron in charge, under the impression that he wished to come back into the warm room, opened the door, but he flew away. He returned shortly and renewed his attacks upon the window, but when attempts were made to invite him in he left. This action on the part of the bird continued for hours, day after day. He would take a position on the railing surrounding that particular window and dash up on the glass repeatedly, as though engaged in mortal combat, until driven away by some one. No matter how often he would be frightened away he would return so quickly and keep at his one-sided fight so long, it was a wonder that he found time to procure necessary food. An idea of his stay on the railing may be gained from the fact that the droppings underneath accumulated until the platform resembled a hen house.

Finally, by my advice, the window was smeared all over the outside with a chalky substance and the Robin fought it no more, but transferred his attacks to another window near the other end of the station, where he again found his enemy. When this window was allowed to remain open the bird would go away, but he finally discovered that any window in the station furnished an adversary worthy of his prowess, so he continued to fight his shadow. And as three sides of the station are of glass he was kept pretty busy without being able to administer a knockout blow. After each attack the hated enemy would spring up as peppery as before. During the time when the bird was fighting the glass the conduct of the female was most peculiar. She would remain on the lower limb of a nearby tree, occasionally making remarks which might easily be translated as being, "Go after him, old man, he insulted me."

I have often seen or heard of a Robin engaging in fisticuffs with his shadow on a window pane, but I never knew a bird to keep so persistently at it for so long a time.—ETTA S. WILSON, *Detroit, Mich.*

A Three-legged Robin (*Planesticus m. migratorius*).—Early in June of the present year Mr. H. K. Coale of Chicago presented me with the skinned trunk of a young Robin that he had collected, which was found to possess three perfect legs. Two of these limbs were upon the left side, the lower one of the two being functional in all respects, while the other one, articulated above it, was probably of no service to the bird in any way whatever, although it was perfect, even to include all the toes. This specimen I carefully cleaned, and found the following conditions present in the pelvic part of it, all the remaining bones and articulations being perfect and normal:

The sacrum is curved uniformly throughout its length, the external

marginal line of the left side being convex outwards, and presenting some osseous enlargements at the terminations of the transverse processes, especially posteriorly. There is no abnormality of the right hand moiety of this pelvis, and the bones of the limb on that side are in every way normal.

On the left side the skeleton of the limb is normal in every particular, as are all the lower portions of the pelvis, including the acetabulum, which latter affords a perfect articulation for the femur. Surmounting this perfect part, however, there is to be observed the larger portion of the left moiety of a second pelvis which presents various distortions and abnormalities, and these involve the upper parts of the pelvis below it. In the supernumerary bone the ilium is replaced by a tumorous osseous mass, in a direct line above the cotyloid cavity of the inferior pelvis. Backward and downward from this is the second acetabulum on this side, and in this cavity a perfect femur articulates. This is the femur of the *third leg*, and it has been, near its trochanter, completely fractured across, probably during the operation of skinning the specimen. Posterior to these parts in this duplicated structure we find the somewhat aborted hinder portion of the ilium; the large ischiadic foramen, which is complete, and the ischium, likewise complete. The pubic style, however, somewhat broadened, has fused throughout its entire length with the ischium of the pelvis below it, the anterior half of the line of fusion being distinctly indicated by a little ridge. Further than this the specimen offers nothing; but as it stands it is of considerable interest teratologically, while, as in nearly all of these cases, the most important parts have been thrown away. For instance, a careful description of the origin and insertion of the muscles in such a case as this would be a valuable contribution to our at present meager information on such points. This is likewise true of an even more important matter — the distribution of the added nerves, arteries, and veins in these structures, and the general physiology of the limb. On such points as these our literature and information is almost a blank record.

When a taxidermist gets such material, he considers it a wonderful departure from the ordinary, and that the chief thing to be preserved is the skinned specimen showing the supernumerary limb; on the other hand, a one-sided ornithomist rarely sees anything beyond the necessity of saving the skeleton of the specimen. The science of teratology demands more than this, and we should in the future see well to it that these demands are met.— R. W. SHUFELDT, *Washington, D. C.*

Notes from St. Marks, Fla. *Pelidna a. sakhalina*. RED-BACKED SANDPIPER.— On May 19, 1919, about twenty of these birds were seen on the sand-flats back of our light-house. The summer plumage seemed complete, a broad, intensely black belly-patch standing out in contrast to the enclosing white as a piece of heavy plush. On May 26, a week later, another bunch of about the same number were seen on some flats, none of which showed more than streaks of black. No solid patch.

***Squatarola squatarola*. BLACK-BELLIED PLOVER** — May 19, 1919,

two birds were seen near the lighthouse in brilliant summer attire. The back checkered black and white and a full black "chest protector." May 26 three birds were seen flying at the same locality, but exact condition of moult could not be determined.

Ereunetes mauri. WESTERN SANDPIPER.—About twenty small "peeps" were noted about the lighthouse June 11, 1919; of three collected two were *E. pusillus*, the other *E. mauri* in summer plumage. On June 24, 1913, two specimens of *E. mauri* were taken eight miles west of the lighthouse.

Himantopus mexicanus. BLACK-NECKED STILT.—Five of these birds were along the beach and on the flats near the lighthouse June 12, 1919.

Phaethon americanus. YELLOW-BILLED TROPIC-BIRD.—On May 25, 1919, one of the fishermen reported "The queerest looking bird I ever saw" — about the size and color of a common small Gull (meaning the Common Tern), with a pointed tail about eighteen inches long. While the record is open to question, the occurrence, with such a description from a reliable person, seems worthy of recording.—JOHN WILLIAMS, *St. Marks, Fla.*

Further Notes from Leon Co., Florida.—The four papers of Mr. R. W. Williams (see 'Auk,' 1904, p. 449; 1906, p. 153; 1907, p. 158; 1914, p. 494), separates of which he has most courteously forwarded me, are the standard on the birds of Leon County. In these papers 192 species are recorded, the subsequent capture of the Florida Bob-white ('Auk,' 1916, p. 329) making the total 193.

It was my good fortune to visit Leon County again last spring from March 23–27, and April 1–5. As usual I was for the most part on the shores of Lake Iamonia in the extreme northeastern corner of the county. It is this section that has been worked the least, and as might be expected further observations of interest were made, which are given below. The migration was late, no real flight taking place until April 3. As a matter of record dates are given wherever they are not mentioned by Williams, as a basis for future migration work.

Gavia immer. LOON.—Two birds seen on a small open lake about four miles east of Tallahassee on April 5. "Seen several times on the larger lakes." (Williams.)

194. **Phalacrocorax auritus floridanus.** FLORIDA CORMORANT.—Two birds seen March 26 on Lake Iamonia. The natives know this bird well, which they call the Nigger Goose, and distinguish it from the Water-turkey, which they say is very scarce. They claim that the Cormorant breeds on some islands at the southern end of the lake, arriving the end of March and leaving about the middle of November.

Lophodytes cucullatus. HOODED MERGANSER.—March 24 is the latest recorded date.

Marila collaris. RING-NECKED DUCK.—March 24 given as a record for the latest date.

Butorides v. virescens. GREEN HERON.— Arrived April 2.

Meleagris gallopavo silvestris. WILD TURKEY.— This noble bird still persists in the "gum" swamps along Lake Iamonia. A roost of about fifteen birds on an island in the lake was one of our proudest possessions. Last autumn some strangers visited the island and were reported to have "cleaned out" the roost. A single hen was, however, detected on April 3 in the old locality.

Phlœotomus p. pileatus. PILEATED WOODPECKER.— A pair of these fine birds was located on an island in the lake. The first I have ever found.

195. **Corvus ossifragus.** FISH CROW.— Quite by chance I noticed recently for the first time that Mr. Williams does not list the Fish Crow. It is an abundant resident of the shores and islands of Lake Iamonia, though I have never seen it a quarter of a mile from the lake, nor around any of the other lakes in the county.

Molothrus a. ater. COWBIRD.— Williams states that this bird has mysteriously disappeared from the county since 1893. I certainly had never been able to find it in recent years, so was correspondingly gratified to see a flock of five birds in an old pasture on the southern outskirts of Tallahassee on March 27.

196. **Melospiza l. lincolni.** LINCOLN'S SPARROW.— The morning of March 26 was cloudy, with a strong east wind. Few birds were found in the early morning, so about 10 A.M. I started to wander aimlessly inland through the fields and pine woods. While ascending a hillside covered with broom grass, a sparrow was flushed from the ground, and flew with a quick, jerky flight to a bare little oak tree, where it perched absolutely motionless about fifteen feet away, and three feet from the ground. It was pure habit that made me glance at it through my prism glasses, and I was surely astounded to get the finest view of a Lincoln's Sparrow I ever had. None that I had previously seen acted in so accommodating a manner, suggesting a thrush or a Connecticut Warbler. Perhaps the balmy air of Florida had served to relax its almost preternatural shyness. For fully five minutes we faced each other motionless, but at the first cautious forward step of mine, away it darted, nor was I particularly surprised not to be able to find it again. Unfortunately the early morning had been so poor that I had left my collecting pistol behind. Let the incident point a moral and adorn a tale. There is no published record of the occurrence of this sparrow in Florida, that I can find. In answer to an inquiry of mine, Mr. Oberholser has most kindly written that the Biological Survey has no record either, but has a MS. record of one bird seen.

Vireosylva olivacea. RED-EYED VIREO.— Two birds seen April 3.

Protonotaria citrea. PROTHONOTARY WARBLER.— A single bird April 3.

Vermivora c. celata. ORANGE-CROWNED WARBLER.— This species is a regular winter resident in small numbers. One seen March 26, and another April 3. It should, of course, be found much beyond this date.

Dendroica d. dominica. YELLOW-THROATED WARBLER.— Arrived April 2.

Dendroica discolor. PRAIRIE WARBLER.—Williams says he has no record except for August. As far as type of country and locality are concerned, I can think of no reason why this species should not be a common migrant in the county. One of the first bird notes that fell on my ears as I woke up at daylight on April 3 was the thin, wiry strain of the Prairie Warbler. Careful search revealed three birds around the house. There was another flight of warblers on April 5, when at least six were seen, five in a live oak tree at the same time.—LUDLOW GRISCOM, *American Museum of Natural History, New York.*

Two Interesting Additions to the Collection of the Boston Society of Natural History. **Gavia pacifica.** PACIFIC LOON.—An adult but unsexed specimen in full spring plumage of this very rare wanderer to New England was taken at Hampton Beach, New Hampshire, during May, 1910, by Mr. S. Albert Shaw. Through the generosity of the collector this bird is now in the Society's collection.

Squatarola squatarola. BLACK-BELLIED PLOVER.—Mr. John B. Paine of Weston, Massachusetts, has very kindly presented to the Society an unsexed immature Black-bellied Plover showing no external trace of the hind toe on either foot. It was taken at Chatham, Massachusetts, August 27, 1913.

It is an exceptionally large specimen, having the following measurements: wing, 104; culmen, 15.5; tarsus, 25 mm.—W. SPRAGUE BROOKS, *Boston Society of Natural History.*

Bird Notes from Collins, Erie Co., N. Y.—For several years I have had a small group of Cardinal Grosbeaks, not over four seen at one time, in exactly the same haunts yearly. They seem rather shy and elusive and I have not found the nest, but have seen one female and three males at a time. Others have seen at least three in different places two or three miles away.

They are not proved as nesting in Erie County, but there is no doubt of it in my mind. The Nashville Warbler nests here only casually while of the Canadian, Black-throated Blue, and Junco, I have seen nests or newly fledged young, and in 1915 found a Solitary Vireo building.

I note that the Cardinals eat the fruit of *Celastrus scandens* and *Carpinus carolinensis* in the fall. The Yellow Warblers use the very same bush or tree in which to build, and this year a pair took the old nest and relined it and used it. I never knew them to do this before.

The Parula Warbler nests here, also the Magnolia, Hooded, Blackburnian, Chestnut-sided, Black-throated Green, Louisiana Water-Thrush, and a few Rough-winged Swallows. I do not see it mentioned in food habits of the Chickadee and Downy Woodpecker that the larvæ of the bulbous galls of golden-rod are evidently quite an important part of their food. They drill persistently until they reach the larva, and in early spring I have seen a small flock working on these galls.—ANNE E. PERKINS, *Collins, N. Y.*

Additions to the 'Birds of Liberty County, Ga.'—Owing to an unfortunate misunderstanding several species were omitted at the end of Mr. W. J. Erichson's list in the July 'Auk.' These are given below and follow in regular order at the end of the published list (p. 393).—(EDITOR).

38. **Sitta pusilla.** BROWN-HEADED NUTHATCH.—This confiding little bird inhabits open pine barrens where there is an abundance of dead trees and stubs. They generally select for a nesting site a pine stub from which the bark has not fallen, although, when handy, fence posts are not infrequently used. Four nests of this bird were located, one containing two eggs which were subsequently destroyed, the other three containing five eggs each. The heights varied from twelve inches to seven feet. These nests were almost wholly composed of pine seed-wings, with the exception of a small amount of the silky fiber from the exterior of cocoons and some inner bark of different species of trees, particularly of the cypress. A large amount of the seed-wings is deposited in the nesting hole, and an enormous amount of energy is expended by the birds in the construction of their nests, as, from repeated observations, I have noted that these seed-wings are carried to the hole one at a time. The Brown-headed Nuthatch breeds early, although but a single brood is raised. They are close sitters, and it is necessary at times to remove the sitting bird with the hand. Nesting dates for the county are March 19, March 27 (two nests), and April 3.

39. **Penthestes carolinensis carolinensis.** CAROLINA CHICKADEE.—Simultaneous with the appearance of the down on the stalk of the cinnamon and royal ferns, which occurs during the middle of March, the Chickadee begins nest-building, for this material is used largely by the birds in lining their nests. As far as my observations go, the birds, in gathering the down, always begin at the top of the stalk and work downward. The green moss that collects on the trunks of certain species of hardwoods is also used to a considerable extent, being always placed in the nesting hole first, and upon it the down is deposited. Fur of the rabbit is frequently interwoven with the down, making a snug and warm home. In all of the nests examined there was a noticeable difference in the height of the wall on one side, the difference being in some instances an inch and a half. On leaving the nest the birds cover the eggs with this flap by bending it down. I have yet to find a nest of this species containing eggs which was not covered during the owner's absence.

The Carolina Chickadee's choice of nesting sites is a small, rotten hardwood stump in low, swampy land, although fence posts near dwellings are not infrequently selected. According to my observations this species does not always excavate a hole for itself, deserted holes of the Downy and other woodpeckers and natural cavities in trees being often used.

Nesting dates for the county are: April 3, five eggs; April 5, six eggs; April 12, four eggs; April 17, five eggs. Heights varied from four to twenty-two feet, the nest noted April 17 being at the latter height. All of

these nests were typical, and were located in low land in the immediate vicinity of Allenhurst.

40. *Polioptila cærulea cærulea*. BLUE-GRAY GNATCATCHER.— The nest of the Blue-Gray Gnatcatcher is among the handsomest specimens of bird architecture. No other species of bird nesting in the south, not even excepting the Hummingbird, constructs a home of such exquisite proportions and beautiful workmanship. This species is locally distributed in the county, being confined principally to heavily timbered swamps, and as a rule nests at considerable heights. On May 3, after long search, I located a nest in a large gum growing in water and in the center of a dense swamp near Allenhurst. It was placed at a height of thirty-two feet, and contained five fresh eggs. Another nest, noted June 22, twenty-three feet high in an ash tree on the edge of the same swamp, contained four apparently heavily incubated eggs. Both nests were saddled on horizontal limbs, and were composed of fine, hair-like rootlets and dried grasses interwoven with plant down, lined with small feathers. They were deeply cupped, shaped like a high cone, and had the entire exterior ornamented with lichens.

41. *Sialia sialis sialis*. BLUEBIRD.— The Bluebird is decidedly a woodland species throughout the county, and is only occasionally seen about populated places, at least during the breeding season. The many burnt-out districts and cut-over lands, in which are numerous stumps and dead trees, afford the bird ideal nesting sites. As a result of these favorable conditions, Bluebirds are abundant in the county. The birds begin nesting early, as I have noted full sets of eggs on April 2. Other dates are April 17, four fresh eggs; April 25, four well-feathered young; May 1, four fresh eggs, and May 18, five eggs. Four eggs comprise the usual clutch, although sets of five are not rare. I have found the nest of this species placed in a slight depression on top of a low stump, although it is rare that deviations from the birds' habit of nesting in holes in stumps excavated by woodpeckers are noted. The nests examined by me were constructed entirely of grasses and rootlets, lined with a few feathers, the material evidently having been hurriedly placed in the hole selected. These nests were in deserted woodpecker holes at heights varying from three to ten feet.— W. J. ERICHSON, *Savannah, Ga.*

Data on the Age of Birds. November 8, 1919, will mark the twentieth anniversary of the formal opening of the New York Zoological Park. In an article in the 'Zoological Society Bulletin' for May, 1919, on 'Our Oldest Specimens,' Raymond L. Ditmars states (p. 61), "No specimen of the bird collection has survived the Park's opening day, although there is a Griffon Vulture living in the collection that has been on exhibition nearly seventeen years, and several of our pelicans have been with us for a period slightly over sixteen years." In this connection it is interesting to recall an article 'On the Comparative Ages to which Birds Live,' by J. H. Gurney,

which appeared in 'The Ibis' for January, 1899, and was reprinted in 'The Osprey' for June of the same year. This article contained data on the longevity of 75 species, more than two-thirds of which exceeded 20 years, and ten of which reached the age of 50 years or more. The oldest birds mentioned in the list (omitting doubtful records) were a Sulphur-crested Cockatoo and a Domestic Goose, each of which attained the age of 80 years. Only five North American species were included in Gurney's list, and apparently data on the ages of our native birds are still very meager.—T. S. PALMER, *Washington, D. C.*

RECENT LITERATURE.

Bent's 'Life Histories of North American Diving Birds.'¹—For almost ten years Mr Bent has been engaged in gathering materials for a work on the life histories of North American birds, under the auspices of the Smithsonian Institution. It was the general impression, and the author's intention at the outset, that the splendid work that the late Major Bendire left unfinished would be carried on to completion. It comes therefore as a distinct surprise to those who were looking forward to another of the portly quartos, on the lines of the two that Bendire published, to find in its stead a modest octavo volume.

Even a cursory examination of the work, however, demonstrates that the change of plan was advisable. The smaller volume is much more easily handled and therefore more practical and generally useful, while the half-tone illustrations with which it abounds are better adapted to the smaller size. Indeed, the only point in which the quarto volume had any advantage was in portraying the eggs, which have, of course, to be of natural size, and appear somewhat crowded on the smaller plates. Furthermore, as we compare the works of Bent and Bendire we realize at once that the interval of twenty-five years that has passed since the last volume of the latter appeared has made it desirable that the life histories there presented be rewritten, in the light of present-day information, so that an entirely new work on a new plan is inevitable.

As we read Mr. Bent's pages we fail to see how his plan could have been improved upon. He divides his subject matter into two main sections, 'Habits' and 'Distribution,' the former with the subheadings: courtship, nesting, eggs, young, plumage, food, behavior, winter, and an introductory paragraph that might well be termed habitat; while under the second heading come: breeding range, winter range, spring migration, fall migration, casual records, and egg dates. Mr. Bent has had the cooperation of about 150 ornithologists in gathering the material upon which his life histories are based, and he has not hesitated also to draw upon the most reliable published accounts when first-hand information was not obtainable. With the card index of the U. S. Biological Survey at his disposal he was able to consult practically every work on North American birds, and due credit is given for every quotation, but we should much prefer foot notes to the method so common among university biologists, and which Mr. Bent has adopted, of citing the year of publication after the author's name and leaving the reader to find the rest in the bibliography at the end of the

¹ Life Histories of North American Diving Birds. Order Pygipodes. By Arthur Cleveland Bent of Taunton, Massachusetts. Washington, Government Printing Office. 1919. Smithsonian Institution. United States National Museum. Bulletin 107. pp. i-ix + 1-245, pll. 1-55.

volume. This, however, is a mere matter of detail and does not affect the value of Mr. Bent's life histories which we regard as the most accurate and well-balanced accounts that have yet appeared of the species treated — concise and easy to consult and at the same time very readable and entertaining.

Considering a few of the details, we find under migration, inclusive dates showing the general time of occurrence in a number of States in various parts of the country. As the author explains, the attempt has been made to show only the general movements of the species, more detail in a work of this sort being manifestly impossible. The breeding and winter ranges are sketched out with much more detail and have the advantage of having been read and revised by Mr. J. H. Fleming. In stating the measurements of eggs a rather novel method has been employed. The average of a large number of specimens is given first, followed by the dimensions of the four eggs which exhibit the extremes of length and breadth. One editorial practise which is adopted throughout the work, but with which we imagine the author had nothing to do, is that of printing the English names of the species entirely in lower case. This may be all right in general literature, where the practise originated, but in a work on birds there is no more reason for decapitalizing the bird names than those of countries or authors. Next thing we know another practise of the literary magazines, that of writing generic names with a small initial letter, will be forced upon us.

The illustrations of Mr. Bent's work deserve special mention. There are 43 half-tone plates from photographs, usually two views to a plate, illustrating the nest, habitat, and often the young or adult birds. Most of the photographs are published for the first time, but there is one view of a colony of Murres which appeared previously in 'The Auk' for 1917. In the latter place it is said to have been taken on Outer Island, Canadian Labrador, while now the locality is given as Cape Whittle, Quebec. Both happen to be correct, and those who think that bird nomenclature is the only kind that is subject to change and deplore the fact, may take heart. There are also 12 excellent plates of eggs in colors, one or more eggs of each species being shown, except the Great Auk, the egg of which forms the frontispiece to the volume. These are photographs of the eggs themselves reproduced by the three color process and are wonderful examples of this kind of illustration. Their appearance could, however, have been much improved by arranging all the figures in the same position, instead of vertical, horizontal, right side up and upside down, as has been done.

As the title of the work shows, this volume covers only the Grebes, Loons, and Auks — thirty-six species and subspecies in all. Anyone familiar with the meager accounts that we have heretofore had of many of these species and the remoteness of their breeding areas will appreciate the magnitude of Mr. Bent's task in preparing such adequate sketches as he has presented and will realize that he and his assistant, Mr. F. Seymour Hersey, have had to go far afield to gather the necessary material, while the

aid of numerous explorers of the far north has had to be sought to secure the series of photographs which has been here reproduced. Messrs. Mac-Millan and Ekblaw, of the American Museum's Crocker Land Expedition, were especially generous in this connection.

We have no doubt that while gathering the material presented in this volume Mr. Bent has also secured the bulk of the information necessary for the treatment of many other groups, and we trust that other 'Life Histories' will follow at frequent intervals.

It is obviously the intention of the U. S. National Museum authorities to issue each set of 'Life Histories' as a separate work, since there is no general title and nothing to indicate that other parts will appear, except an incidental reference by the author to "subsequent parts" in the introduction.

Just as Bendire's work was a decided improvement upon the unfinished work of Brewer (1857), so Bent has made a great advance over Bendire, and his 'Life Histories' will, we feel, be for many years the authoritative work on the subject, forming an admirable parallel series to the technical systematic volumes of Ridgway's 'Birds of North and Middle America.'

Let all ornithologists read carefully the last part of Mr. Bent's introduction, and if they have any information on any of the remaining species of water birds that may be of assistance to him, let them send it on at once. And let the author make all speed with his remaining parts. Two works of the kind have been left unfinished, but on the plan he has adopted and with the cooperation that is offered him, he should easily bring these life histories to a completion and establish another milestone in these progress of American ornithology.—W. S.

Ridgway's 'The Birds of North and Middle America,' Part VIII.¹—This long expected part of Mr. Ridgway's great work has at last appeared, having been long held up by war conditions. It is entirely devoted to a consideration of the Charadriiformes or Plover-like birds, in which group

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 VIII.

Family Jacanidæ — The Jacanas.	Family Phalaropodidæ — The Phalaropes.
Family Edicnemidæ — The Thick-knees.	Family Recurvirostridæ — The Avocets and Stilts.
Family Hematopodidæ — The Oyster-catchers.	Family Rynchopidæ — The Skimmers.
Family Arenariidæ — The Turnstones.	Family Sternidæ — The Terns.
Family Aphrizidæ — The Surf Birds.	Family Laridæ — The Gulls.
Family Charadriidæ — The Plovers.	Family Stercorariidæ — The Skuas.
Family Scolopacidæ — The Snipes.	Family Alcidæ — The Auks.

Washington: Government Printing Office. 1919. pp. i-xvi-1-852, pll. i-xxxiv. (reported as published June, 1919, but not received until September 4).

are included the Gulls, Terns, Skimmers, Skuas, and Auks. The method of treatment follows closely that of the previous volumes and the high standard there set is well maintained. As the birds here considered break up less easily into geographical races, there are fewer new forms proposed than in the preceding volumes, but numerous changes in nomenclature are adopted and a number of new genera are accepted. The numerous new genera and subspecies proposed by Mr. Gregory M. Mathews in his 'Birds of Australia' are considered, but only a few are accepted, which is gratifying to those who, like the reviewer, have felt that Mr. Mathews had gone entirely too far. Mr. Ridgway is not influenced by prejudice in such questions, but gives to each case a fair and unbiased consideration.

The only new forms proposed in the present volume are *Pagolla wilsonia beldingi* (p. 112), Lower California; *P. v. cinnamomina* (p. 113), Sabanilla, Colombia; and *Sterna anatheta nelsoni* (p. 514), Guerrero, Mexico; while one new genus, *Neoglottis* (p. 329), is proposed for the Yellow-legs. Other forms admitted which are additional to those in the A. O. U. 'Check-List' are: *Numenius americanus occidentalis* (Woodhouse), *Sternula antillarum browni* Mearns, *Larus thayeri* Brooks, and *Uria ringvia* Brünn. Owing to the subdivision of the species into several races, *Jacana spinosa* of the 'Check-List' becomes *J. s. gymnostoma* (Wagl.), while *Sterna anatheta* becomes *S. a. recognita* Mathews, *Pisobia aurita* becomes *P. acuminata*, following Mathews' explanation of the error in identification of the plate upon which the name was based, and *Calidris leucophaea* becomes *C. alba* (cf. Auk, 1912 p. 205), while *Pisobia damacensis* becomes *P. subminuta* (Middend.), and *Hamatopus fraseri* is regarded as a subspecies of *H. palliatus*.

Following the fixation of Linnæan types by the International Commission, *Charadrius* is shifted from the Golden Plovers to the "Ring-necks," the former becoming *Pluvialis*, while *Tringa* is now the generic name of the Solitary Sandpiper, the Knot being known as *Canutus*. On account of preoccupation, *Ochthodromus* becomes *Pagolla*, *Macrorhamphus* becomes *Limnodromus*. *Plantus* is found to date from Gunnerus, 1761, by whom it was used for the Little Auk, so that it replaces *Alle*, while the Great Auk becomes *Pinguinus*, showing that even extinct birds are not safe from the operations of the laws of nomenclature.

The following subgenera of the 'Check-List' are elevated to generic rank: *Endomychura*, *Cicronia*, *Alcella*, *Hydroprogne*, *Thalasscus*, and *Sternula*, while *Larus* is broken up into *Larus*, *Chroicocephalus*, *Hydrocoleus*, and *Blasipus*; and *Numenius*, into *Numenius*, *Pheopus*, and *Mesoscolopax*, while *Vctola* is used for the Godwits other than *L. limosa*, and *Coprotheres* for the Pomarine Jaeger.

According to the main text of the work, *Heteroscelus* is regarded as not invalidated by the earlier *Heteroscelis* and takes the place of *Heteractitis*, but on another page *Chlidonia* is allowed to invalidate *Chlidonias* Rafinesque, which hardly seems to be a consistent application of the rules. It is but fair to mention, however, that Mr. Ridgway states in the addenda

that he rejects *Chlidonias* because published in a newspaper, but at the same time names are accepted from foreign journals which differ little if at all in character from that in which Rafinesque published his genus.

Among forms rejected by Mr. Ridgway we notice *Squatarola squatarola cynosura* Thayer and Bangs, while our two species of Yellowlegs which Dr. Oberholser, following Mathews, regards as belonging to two different genera Mr. Ridgway finds to be strictly congeneric. It is very gratifying to have his fair and unbiased opinion on this and a number of other recently proposed changes which will have to be decided some day by the A. O. U. Committee.

We are pleased to learn from the preface that work is already in progress on Part IX, which will include the Cranes, Gallinaceous Birds, and Birds of Prey, leaving the remaining families for Part X. We sincerely hope that Mr. Ridgway will be able to complete these two volumes in the near future and round out what will for a long time rank as the most important systematic work on American birds.—W. S.

Witherby's 'A Practical Handbook of British Birds.'—Two more parts of this excellent work¹ have appeared since our previous notice (Auk, 1919, p. 432), covering the remainder of the Fringillidæ, the Alaudidæ, and most of the Motacillidæ. The standard set in the first part is admirably maintained and a vast amount of accurate information is presented in a concise form. The colored plates, which are most attractively printed, represent the heads of Buntings and Wagtails and a group of Crossbills with nest and young, while the uncolored halftone plates of Redpolls and of young Larks and Pipits are exceedingly well drawn, to show the differences in plumage, while the printing gives a remarkably soft effect. The Redpoll plate may be consulted with profit by American bird students who desire to become better acquainted with the appearance of the several boreal forms which occasionally visit our northern States in winter.

We note that Mr. Witherby rejects Kleinschmidt's name *hostilis* for the British House Sparrow, which is the same race as that which we have in America. The only way in which it was claimed that it differed from the continental race was in its smaller size, but Mr. Witherby finds that the average difference in length of wing is less than 3 mm. and that of 90 individuals only 17 could be certainly distinguished by their size. Dr. Oberholser (Auk, 1917, p. 329) accepted Kleinschmidt's name without presenting any corroborative evidence, but in view of Mr. Witherby's investigations we may safely retain *domesticus* as the name of our "English Sparrow."—W. S.

¹ A Practical Handbook of British Birds, Edited by H. F. Witherby. Part 2 (pp. 68-128), April 30, and Part 3 (pp. 129-208), June 18, 1919. Price 4s. net per part. In 18 parts. Witherby & Co., 326 High Holborn, W. C. I., London.

Roberts on Minnesota Birds.—Dr. Roberts has contributed a valuable paper¹ to the Report of the State Game and Fish Commission, on 'The Water Birds of Minnesota, Past and Present.' It is replete with reminiscences of the water-bird life of earlier years gathered from Dr. Roberts' personal experiences, which date back to 1875, and those of others. The style of treatment of the several families varies somewhat, the Grebes, Ducks, Gulls, etc., being considered in groups, while in the case of the shore-birds each species is discussed separately. The status of the rarer species is carefully considered and much important detailed information is made available to the ornithologist, while the main object of the paper—to present information of interest and value to the general public and the sportsman in particular—is not lost sight of.

Another recent publication² of Dr. Roberts is entitled 'A Review of the Ornithology of Minnesota' and is intended as an aid to students in the University of Minnesota and to others interested in the study of the birds of the State. There is an annotated list of species occurring regularly in Minnesota, another of the rare or accidental species, as well as of the introduced, unsettled, and extirpated species, a discussion on vanishing birds, and a hypothetical list of birds recorded from Minnesota, but of which no local specimens have been preserved. Other chapters treat of bird laws, wild life refuges, and an abridged bibliography of Minnesota ornithology. The pamphlet is full of excellent half-tone illustrations from photographs by the author, whose ability as a bird photographer is well known.

A faunal map of the State is also included, in which we find it divided into Canadian, Alleghanian, "Pseudo-Campestrian," and "Pseudo-Carolinian." While we realize the difficulty of drawing satisfactory faunal boundaries where several zones converge, we fail to see the advantage of coining new names. It would seem better to adhere to the nomenclature of the Biological Survey or other recognized authority and to explain in annotations that the zones as they occur in the region under discussion are dilute, not typical, etc. Dr. Roberts is, however, by no means alone in the practise that he has adopted.—W. S.

Second Ten Year Index to the Condor.³—The Cooper Ornithological Club has published as Pacific Coast Avifauna, No. 13, a second ten-year index to 'The Condor,' covering the years 1909-1918, by J. R. Pemberton.

¹ Water Birds of Minnesota, Past and Present. By Thomas S. Roberts, M. D., Curator Zoological Museum, University of Minnesota. Extracted from the Biennial Report of the State Game and Fish Commission of Minnesota, for the Biennial Period Ending July 31, 1918. pp. 56-91.

² A Review of the Ornithology of Minnesota. By Thomas Sadler Roberts, M. D. Professor of Ornithology and Curator of the Zoological Museum in the University of Minnesota. Research Publications of the University of Minnesota. Vol. VIII, No. 2. May, 1919. pp. 1-100. Addendum and Introduction. Price 25 cents.

³ Second Ten Year Index to the Condor. Volumes XI-XX, 1909-1918. By J. R. Pemberton. Pacific Coast Avifauna, Number 13. Hollywood, California. August 15, 1919. pp. 1-92. Cooper Ornithological Club.

It follows essentially the plan of the 'Auk' index, except that the subheadings under which the references are arranged are not italicized, while the volumes are indicated by number instead of year and are not printed in heavy-faced type. The use of italic would, we think, have made it easier for the eye to catch the desired reference, but that is a minor point. The compiler has done his work well and is to be congratulated upon the completion of a thankless task, but one that will save time and trouble for hundreds of others who may have occasion in the future to consult these volumes of 'The Condor.' The value of such an index as Mr. Pemberton has prepared is emphasized in a summary of such publications, which appears in 'Notes and News' of the present issue of 'The Auk.'

Besides the Index proper there is a list of persons mentioned in the 'First Ten-Year Index,' but whose names were not there given in full. The missing data have now been supplied largely by Dr. T. S. Palmer and the names now appear in complete form. Such corrected lists almost invariably contain new errors, and we notice in this instance that Dr. W. L. Ralph's name appears as 'Rolph,' while that of Mr. R. P. Sharples has an additional 's.' Both of these were correctly spelled in the first index. It goes without saying that everyone who possesses a file of 'The Condor' must have this volume.—W. S.

Riley on New Birds from Celebes and Java.¹—A further study of the collection of Celebes birds made recently by Mr. H. C. Raven (cf. Auk, 1919, p. 302) has revealed five apparently unnamed forms from that island and one from Java. These are described by Mr. Riley as follows: from Java, *Excalfactoria chinensis palmeri* (p. 93); from Celebes, *Anas superciliosa perna* (p. 93), *Megalurus celebensis* (p. 94), *Dicruropsis montana* (p. 94), *Pachycephala pluviosa* (p. 95), and *Zosterops atrifrons* (p. 95).—W. S.

Chubb on South American Birds.—The second instalment of Mr. Chubb's notes on South American collections in the British Museum² covers all the families from the Grebes to the Raptores of Sharpe's 'Hand List.' It consists mainly of citation of specimens of interest either from locality or condition of plumage, but one form is described as new *Oreophilus ruficollis simonsi* (p. 262) from Challapata, Bolivia.—W. S.

Lonnberg on Hybrid Gulls.—In a recent paper³ Dr. Lonnberg describes some Hybrid Gulls which were bred in the Zoological Garden at Skanses, Sweden, from the crossing of a male *Larus fuscus* and a female

¹ Six New Birds from Celebes and Java. By J. H. Riley. Proc. Biol. Soc. Washington, Vol. 32, pp. 93-96, May 20, 1919.

² Notes on Collections of Birds in the British Museum, from Ecuador, Peru, Bolivia, and Argentina. Part II. Podicipediformes—Accipitriformes. By Charles Chubb. The Ibis, April, 1919, pp. 256-290.

³ Hybrid Gulls. By Einar Lonnberg. With three plates and six figures in the text. Archiv. for Zoologik. Svenska Vetenskapskad. Band 12, No. 7. pp. 1-22. 1919.

L. leucopterus and also some hybrids between *L. marinus* and *L. glaucus* (= *hyperboreus*) reared at the Zoological Garden at Copenhagen.

Three plates in color of the former hybrids are given, showing them in several stages of plumage, from juvenal to adult, while there are also diagrams of the coloration of the wing tips. In connection with the second hybrid, Mr. H. Winge is quoted as suspecting a hybrid origin for the rare *Larus nelsoni*, and there is a description of a supposed wild hybrid *L. marinus* x *L. glaucus* taken at Upernavik, Greenland.

This paper should be consulted by students of the Laridæ, as it may throw light upon some of the still unsettled problems regarding the relationship of certain species of gulls.—W. S.

Recent Papers by Oberholser.—Six papers by Dr. Oberholser have recently appeared in the 'Proceedings of the U. S. National Museum.' One of these¹ is a review of the species of the genus *Nannus*, comprising our Winter Wren and the common Wren of Europe and their allies. Dr. Oberholser recognizes no less than thirty-six forms of these birds, all of which he regards as subspecies of *N. troglodytes*. The five American species and subspecies of the A. O. U. 'Check-List' will therefore appear as *Nannus troglodytes hiemalis*, etc., if his views are to be followed. Furthermore, his studies of the Alaskan birds leads him to recognize three new forms: *N. t. kiskensis* (p. 228) from Kiska Island, *N. t. tanagensis* (p. 230), Tanaga Island, and *N. t. petrophilus* (p. 232), Unalaska Island.

The birds of the Tambelan Islands, China Sea² form the subject of another paper based upon collections of Dr. W. L. Abbott. Twenty-two species are listed, of which *Orthorhamphus magnirostris scommophorus* (p. 133) is described as new.

Dr. Abbott's collections from Pulo Taya, south eastern Sumatra, are also described by Dr. Oberholser³ ten species being listed, of which *Lamprocorax panayensis richmondi* (p. 272) and *Cinnyris ornata microleuca* (p. 273) are new.

In a revision of the races of the White-collared Kingfisher, *Sauropatis chloris*,⁴ Dr. Oberholser recognizes twenty-four subspecies, the new ones being: *S. c. palmeri* (p. 369), Mt. Salak, Java; *S. c. azcla* (p. 377), Engano Island, W. Sumatra; *S. c. chloroptera* (p. 379), Simalur Island; *S. c. amphiryta* (p. 382), Nias Island; and *S. c. hyperpontia* (p. 386), Vate Island, New Hebrides.

¹ Notes on the Wrens of the Genus *Nannus* Billberg. By Harry C. Oberholser. Proc. U. S. National Museum, Vol. 55, pp. 223-236. 1919.

² The Birds of the Tambelan Islands, South China Sea. By Harry C. Oberholser. Ibid., pp. 129-143.

³ Notes on Birds Collected by Dr. W. L. Abbott on Pulo Taya, Berhala Strait, South-eastern Sumatra. By Harry C. Oberholser. Ibid., pp. 267-274.

⁴ A Revision of the Subspecies of the White-collared Kingfisher, *Sauropatis chloris* (Boddaë). By Harry C. Oberholser. Ibid., pp. 351-395.

A study of a series of the Nicobar Megapode induces Dr Oberholser¹ to recognize two races, *Megapodius nicobariensis abbotti* (p. 400) from Little Nicobar being described as new. It occurs also on Great Nicobar, while the typical form is restricted to the middle and northern islands of the group.

Dr. Abbott's second collection from Simalur Island, Sumatra, consists of 38 species, which are listed by Dr. Oberholser,² *Hypotaenidia striata reliqua* (p. 476) being the only novelty.

None of the recent papers from the National Museum 'Proceedings' are dated except with the year, which is likely to cause much trouble in the future. If it was impracticable during war times to print the date on the separates, it surely could have been added with a rubber stamp before they were mailed. So much time is wasted today in ascertaining the actual dates of publication of old works that it is disheartening to find one of our leading scientific institutions reverting to this careless practice.—W. S.

Captain S. A. White's Explorations in Australia.³— Captain White, who has contributed so many valuable articles to 'The Emu' and other Australian scientific journals, has also published two little booklets, reprinted from 'The Register' and illustrated by many half-tones from photographs, which have just come to our attention.

One is entitled 'The Gawler Range. An Ornithological Expedition' and the other 'Ooldea on the East-West Railway, On the Flooded Murray River and Other Sketches.'⁴ They are most interesting accounts of travel in the wilds of the Australian continent and are replete with observations on bird life.—W. S.

Bangs and Penard's 'Critical Bird Notes.'⁵— In the process of their studies of the Lafresnaye Collection of birds recently presented by the Boston Society of Natural History to the Museum of Comparative Zoology, Messrs. Bangs and Penard have discovered the necessity for various changes in names, recognition of new races, etc., which are presented in the present paper in advance of their general report on the Lafresnaye collection. The new forms described are: *Herpetotheres cachinnans queribundus* (p. 23), Pernambuco, Brazil; *Eupsittula astec vicinialis* (p. 24), Tamaulipas, Mexico; *Synallaxis brachyurus chapmani* (p. 25), Jimenez; Colombia; *Dendrocincla lafresnaye christiani* (p. 25), Pavas, Colombia,

¹ The Races of the Nicobar Megapode, *Megapodius nicobariensis* Blyth. By Harry C. Oberholser. *Ibid.*, pp. 399-402.

² Notes on Dr. W. L. Abbott's Second Collection of Birds from Simalur Island, Western Sumatra. By Harry C. Oberholser. *Ibid.*, pp. 473-498.

³ The Gawler Ranges. An Ornithological Expedition. By Capt. S. A. White. Adelaide. 1913. pp. 1-58.

⁴ Ooldea, on the East-West Railway, On the Flooded Murray River and Other Sketches. By Capt. S. A. White. Reprinted from *The Register*. pp. 1-58.

⁵ Some Critical Notes on Birds. By Outram Bangs and Thomas E. Penard. *Bull. Museum Comp. Zool.*, Vol. LXIII, No. 2. June, 1919. pp. 21-40.

Picolaptes affinis lignicida (p. 26), Tamaulipas, Mexico; *Saltator striatipictus furax* (p. 32), W. Costa Rica, and *S. s. speratus* (p. 33), Pearl Islands, Panama, and *Cissilopha sanblasiana nelsoni* (p. 40), Colima, Mexico. *Tanagra lauta* (p. 35) is proposed for the well-known "*Euphonia hirundinacea*" auct., which proved not to be Lesson's bird, and *T. l. proba* (p. 35) is proposed for *T. gnatho* auct. nec Licht., while the new generic name *Cnemoscopus* (p. 38) is established for *Arremon rubrirostris* Lafr.

Mr. Bangs¹ has also recently separated the Philippine Striated Grass Warbler as a new form, *Megalurus palustris forbesi* (p. 61).—W. S.

Cassinia for 1918.²—This publication of the Delaware Valley Ornithological Club contains an article on the birthplace of John Cassin by F. H. Shelton, with a half-tone illustration of the Cassin homestead, while some additional notes regarding the life of the ornithologist are presented, showing that his interest in natural history, especially botany, had been well developed even during his school days.

Extracts from an old manuscript journal of a Swedish missionary, Andreas Hesselius, compiled some years ago by Charles J. Pennock, form the other leading article and give observations on bird life, etc., in the vicinity of Wilmington, Del., in 1711. This manuscript is one of the very earliest contributions to the ornithology of the Delaware Valley.

The usual migration report is presented as well as the Abstract of Proceedings and Bibliography. The Club had twenty-five of its members in the national service and was forced by war conditions to cancel some of its meetings, but it managed to keep up its regular activities, and is now in a more prosperous condition than before.—W. S.

Gladstone's 'Birds and the War.'³—Mr. Gladstone's aim in this little book is to present such information as he was able to gather during the four years of the European War regarding its effect upon and relation to bird life. The subject is far more complicated than one would at first imagine, as can be seen from a glance at the chapter headings of the work. These are grouped under four titles: (1) Utility of Birds, as messengers, crop protectors and food; (2) Suffering of Birds in the War, captive birds, sea birds and effect of air craft and air raids; (3) Behaviour of Birds in the War Zone; (4) Effect of the War on Birds, migration and change of habits.

As we glance through the pages of this interesting little volume we learn that during some engagements as many as a thousand homing pigeons were used by the British to carry messages and that the birds frequently flew

¹ A New Striated Grass Warbler from the Philippines. By Outram Bangs. Proc. New England Zool. Club. Vol. VII, pp. 5-6. June 6, 1919.

² Cassinia. A Bird Annual. Proceedings of the Delaware Valley Ornithological Club. 1918 [April, 1919], pp. 1-51. Price 50 cents.

³ Birds and the War. By Hugh S. Gladstone, M. A., F. R. S. E., F. Z. S., etc. Skeffington & Son, Ltd., 34 Southampton Street, Strand, W. C. 2. London, 1919. 12 mo. pp. i-xviii+1-169. 17 half-tone plates. Price 5s. net.

through gas clouds and barrage after all other means of communication had failed. Few, we imagine, realized the extent of the 'Pigeon Service' or that the United States had a similar organization with which at least one ornithologist, Mr. F. C. Lincoln, of the Colorado Museum, was connected. Mr. Gladstone also describes the use of Canaries, which are much more sensitive to poison gases than man, as a means of detecting the presence of gas in tunnelling operations at the front, while singing Canaries were used extensively on ambulance trains to cheer up the wounded soldiers. The controversy between the farmers and the bird protective societies as to whether birds, especially pheasants, were of more value during war times as food or as crop protectors, was hotly waged and resulted in some temporary modifications in the game regulations.

Mr. Gladstone's evidence is that air raids terrified some birds but not others, while sea birds that were at first frightened by the air planes soon became accustomed to them. Neither of these factors seems to have caused any actual destruction of bird life, but the sinking of oil ships by the submarines was a source of real danger, and large numbers of ducks and other sea birds perished from their plumage becoming hopelessly eaked with the oil, so that flight was impossible. On the actual battlefield in France the most reliable testimony is to the effect that the birds were but little affected by the terrific upheaval going on around them, and returned again to nest in the most devastated spots. Of course local conditions affected them to some extent, but generally speaking they seemed indifferent to the noise of battle. Mr. Gladstone in this connection cites Charles Waterton to the effect that the noise of a gun is the one sound to which birds never become accustomed, a theory which the war has pretty well disproved.

Upon migration and habits the war seems to have had little or no effect, although the destruction of large forest areas has, as in all cases of deforestation, affected the presence or abundance of species dependent upon such environment for their existence.

Mr. Gladstone has done a good work in collecting the information presented in this volume, which is not only an important record but a valuable contribution to bird behavior and an exceedingly interesting book for the general reader.—W. S.

Mathews' 'The Birds of Australia.'¹—The latest part of Mr. Mathews' sumptuous work concludes the fifth volume and also completes the treatment of the non-passerine birds, and the author takes this opportunity to add several species omitted from various preceding parts as well as several appendices, etc.

The part opens with the completion of the account of the Coucal, which includes a description of *Polophilus phasianinus melvillensis* (p. 391), and is followed by a consideration of that typically Australian group, the Lyre-

¹ The Birds of Australia. By Gregory M. Mathews. Volume VII, Part V. July 10, 1919. pp. 385-499. +i-xii [Introduction, etc., to Vol. V.]

birds. The biographical treatment is full and interesting, and the author continues to refer the *Menura alberti* to the separate genus *Harriwhitea*, which he recently established for it.

Following this come plates with text of *Globicera pacifica*, *Reinholdia reinholdi*, *Pterodroma inexpectata*, to which by the way he refers *Oestrelata fischeri* [sic] Ridgway and *A. scalaris* Brewster; *Diomedea chionopectera* and *Psephotellus chrysopterygius*.

These follow right after the Lyre-birds without any separate heading or anything to show the general reader that they do not belong to that family. Indeed, in the 'Contents' the Pigeon is so included, while all the others are listed under the genus *Reinholdia*! They could appropriately have been designated Appendix I. There is also a figure of a Cuckoo on the Pigeon plate to which we find no reference whatever, and stranger still a paragraph at the end of the text of the Parrot (*Psephotellus*) marked 'Addenda,' which deals with the nomenclature of a genus of Weaver Finches, a family that will not be considered until one of the last parts of the work.

We are forced to the opinion that a lot of supplementary material has been printed just as it came to hand, without proper editing or allocation, and this opinion is strengthened by a perusal of the other appendices. That designated 'Appendix A,' while it has no heading, is apparently a list of papers containing Mr. Mathews' descriptions of new Australian birds and a list of extralimital genera, species and subspecies described by him. The first section of the latter consists of new genera proposed in 'The Birds of Australia,' followed by another entitled "Other Genera," by which is apparently meant genera proposed in other works. There are four of these lists with the names arranged in the order in which they occur, but why they were not merged into one, with the names arranged alphabetically, we are at a loss to understand.

'Appendix B' is one of the most important contributions to ornithological bibliography that has appeared for some time, being a list of over 150 important ornithological works, with exact dates of publication or references to sources where this information may be obtained. Mr. Mathews has, as is well known, devoted a great deal of time to working out the history of the publication of the older ornithological works and has here generously placed at the disposal of others the results of his labors. To make the list still more accurate, it was submitted to Dr. Charles W. Richmond for criticism and correction, but here again the lamentable lack of editorial supervision which characterizes this part of the work is again in evidence. For some reason, Dr. Richmond's corrections and comments are not interpolated where they belong, but are printed all together as 'Addenda to Appendix B,' so that unless one looks in both lists for every publication he is liable to get erroneous information. In view of the great demand for the information contained in this appendix and the comparatively few persons who will have access to it in its present location, we trust that Mr. Mathews may in the near future consider pub-

lishing it in revised form in a single list as a number of 'The Austral Avian Record,' or in some journal where it would be generally available.—W. S.

Wetmore on Lead Poisoning in Waterfowl.¹—This is a report of especial interest to gunners and gun clubs. The birds that are affected pick up shot about the shooting grounds, where a considerable amount has naturally accumulated. In one marsh in Utah it was estimated that 75,000 shot gun shells are used each season, each of which contains about an ounce of shot, so that the accumulation is very great, and experimental sifting of the mud where the ducks fed discovered shot always present. Experiments on captive birds showed that six pellets of No. 6 shot were sufficient to cause the death of a Mallard. While magnesia sulphate acts as a cure there is apparently no way to check the poisoning, and attention of gunners is called to the lead poisoning so that the symptoms may be understood by persons finding birds so affected. The general results of this investigation have already been published in the *Journal of the Washington Academy of Sciences*, June 4, 1918.—W. S.

French's 'The Passenger Pigeon in Pennsylvania.'²—The title of this little book is slightly misleading, as fully half of the text is occupied with Indian and forest lore of Pennsylvania and accounts of the Passenger Pigeon in other parts of the United States, from Wilson, Audubon, Cooper, etc., as well as accounts of pigeons in general compiled from not very accurate sources. The portions devoted to the Passenger Pigeon in Pennsylvania are scattered through the volume, separated by chapters and paragraphs dealing with other topics, with a total lack of system or plan. They are of very unequal value, some from old pigeon hunters written in their declining years when memory is not always to be trusted, others consisting of newspaper articles reprinted verbatim and open to the usual criticism that attaches to such publications.

The best chapter is that by Col. H. W. Shoemaker on 'The Passenger Pigeon — Its Last Phase,' in which the final disappearance of the species is sketched and the last alleged observations enumerated. Even here, however, no mention is made of the last specimens actually secured in the state.

Some of the information contained in the book is absolutely erroneous, as for instance, the statement that two eggs constituted a clutch, when we have the testimony of reliable ornithologists from the time of Alexander Wilson down, that only one egg was laid.

¹ Lead Poisoning in Waterfowl. By Alexander Wetmore. Bulletin 793, U. S. Department of Agriculture. pp. 1-12. July 31, 1919.

² The Passenger Pigeon in Pennsylvania. Its Remarkable History, Habits and Extinction, with Interesting Side Lights on the Folk and Forest Lore of the Alleghanian Region of the Old Keystone State. By John C. French. Altoona, Pa. 1919. pp. 1-257, numerous half-tone illustrations. For sale at the Franklin Bookshop, 920 Walnut St., Philadelphia. Price, \$4.00.

While Mr. French's work contains much interesting reading, it cannot be considered in the same class as Mershon's well-known work or even Col. Paxson's little pamphlet, as an accurate account of the Passenger Pigeon.

There are two valuable historical illustrations, one of a stool-pigeon basket and the other of a pair of pincers used for twisting the necks of the birds caught in the nets. The other plates are portraits of old pigeon hunters or others mentioned in the book.—W. S.

Economic Ornithology and Bird Protection.—The U. S. Department of Agriculture has issued the usual synopsis of the Game Laws for 1919, compiled this year by G. A. Lawyer and F. L. Earnshaw,¹ while another pamphlet² by the former author explains the present status of the Federal protection of migratory birds and the Canadian treaty. Another important treatise on this same subject is U. S. Attorney, Francis M. Wilson's brief in the court action against the Treaty in the St. Joseph Division of the western district of Missouri, a masterly summary of the arguments which convinced a confessedly antagonistic judge of the validity of the law.

'Bird Notes and News'³ and the annual report of the Royal Society for the protection of Birds are full of details of bird protection in England after the war.

'The Audubon Bulletin,'⁴ winter 1918-1919 issue, is as usual one of the most attractive publications of its kind, well printed and well illustrated. The need of forest and game protection in southern Illinois is discussed by Robert Ridgway and shows both in text and illustrations his well known love of trees as well as birds. Other articles deal with the scenic beauty of the Mississippi, Theodore Roosevelt as a conservationist, the bird protective laws of Illinois, etc.

'The Alabama Bird-Day Book'⁵ abounds in good bird poems and interesting sketches suitable for school use compiled from various sources, while several of the Mumford colored plates of birds serve as illustrations. Few, if any, other States have publications so well suited to the purpose as this.

The West Chester Bird Club of Pennsylvania, organized some years ago for local bird study under the leadership of Dr. C. E. Ehinger, has issued an attractive little pamphlet⁶ giving an account of its activities, with some very creditable original bird poems.

¹ Game Laws for 1919. By Geo. A. Lawyer and Frank L. Earnshaw. Farmers' Bulletin 1077, U. S. Department of Agriculture. August, 1919. pp. 1-80.

² Federal Protection of Migratory Birds. By George A. Lawyer. Separate from the Yearbook of the Department of Agriculture. No. 785, pp. 1-16.

³ Bird Notes and News. Issued quarterly by the Royal Society for the Protection of Birds, 23 Queen Anne's Gate, London, S. W. I., England.

⁴ The Audubon Bulletin. Published by The Illinois Audubon Society, 1649 Otis Building, Chicago.

⁵ Alabama Bird Day Book, 1919. Issued by the Department of Game and Fish, John H. Wallace, Commissioner. pp. 1-103.

⁶ West Chester Bird Club, Historical Sketch, Summary of Year's Work, 1918-1919, July 1, 1919. pp. 1-20.

'California Fish and Game'¹ for April contains an article of the insectivorous habits of the Herring Gull, by A. C. Burrill, a convincing argument in favor of the bird, while in 'Fins, Feathers and Fur,'² Thaddeus Surber has an interesting paper on the Pine Co. Minnesota Game Refuge as a playground, and there is a remarkable photograph of Mallards at Crane Lake, Illinois. Taking the opposite view from that expressed in the 'Audubon Bulletin' this journal unhesitatingly condemns the Crow and endorses the national crow shoot.—W. S.

Report of the National Zoological Park.³—The second annual report of superintendent Ned Hollister shows a slight increase in the collections, notwithstanding the restrictions of war times. The birds include 190 species, represented by 706 individuals in comparison with 182 species and 683 individuals in 1917. Among the more notable acquisitions of the year were six Keas (*Nestor notabilis*) and eight Wekas or flightless Rails (*Ocydromus*) from South Island, New Zealand; a pair of Straw-necked Ibis (*Carphibis spinicollis*) from Australia; a pair of Thick-billed Parrots (*Rhynchopsitta pachyrhyncha*) from the Chiricahua Mountains, Arizona; and a Santo Domingo Parrot (*Amazona ventralis*). Forty-five birds were hatched during the year, including several American Coots. This is apparently the first record of the breeding of this species in captivity, at least in this country. Waterfowl (Anseriformes) constitute the largest group in the collection. Of the 40 species represented, two-thirds are North American. These birds are kept in an enclosure provided with a large pond, where they can be readily seen, and thus form one of the most attractive exhibits in the Park. A noteworthy feature of the report is the complete list of mammals, birds, and reptiles by species and individuals and the care exercised in the use of correct scientific names.—T. S. P.

Annual Report of the New York Zoological Society.⁴—The report for 1918 shows commendable progress in the various activities of the New York Zoological Society in spite of adverse conditions due to the war. Two sections of this report contain notes of ornithological interest. The Department of Birds, in charge of Lee S. Crandall, Curator, and William Beebe, Honorary Curator, has maintained its collections "somewhat reduced in numbers but still rich in rare and unusual forms." Only 16 species new to the collection were added during the year. Of these, the most important

¹ California Fish and Game. Published quarterly by the California Fish and Game Commission, Sacramento, Calif.

² Fins, Feathers and Fur, Official Bulletin of the Minnesota Game and Fish Department, Carlos Avery, Commissioner, St. Paul, Minn.

³ Report of the Superintendent of the National Zoological Park for the Fiscal Year ending June 30, 1918. Reprint from Ann. Rept. Smithsonian Institution for 1918, pp. 66-81, Washington Govt. Printing Office, 1919.

⁴ Twenty-Third Annual Report of the New York Zoological Society, 1918, Svo, pp. 156, 1919 (Dept. of Birds, pp. 67-70, Tropical Research Station, pp. 84-86). Office of the Society, 111 Broadway, New York.

were a male Argus Pheasant (*Argusianus argus*), an adult male Regent Bird (*Sericulus chrysocephalus*), a Green-backed Trumpeter (*Psophia viridis*), a Double-banded Puff-bird (*Bucco bicinctus*) "probably never before exhibited alive," and a chick of the Galeated Curassow (*Pauxi pauxi*). Among the birds bred in the Park during the year were three Upland Geese (*Chloëphaga magellanica*) and a Banded Curassow (*Crax sclateri*)—both apparently first records of the breeding of these species in the United States. The census of birds on January 1, 1919, showed 736 species represented by 2,406 individuals as compared with 813 species and 2,799 individuals the previous year. The number of species in some of the larger groups in the collection were as follows: Galliformes, 68; Columbiformes, 61; Anseriformes, 54; Psittaciformes, 66, and Passeriformes, 332.

The Tropical Research Station in the Bartica District of British Guiana was compelled to suspend field work, but the Director, William Beebe, and the Preparateur, John Tee Van, "spent all the time available in a careful review of past collections and of zoological literature for records of the higher vertebrates of British Guiana, resulting in a preliminary check list" which will be published in the near future. The number of species of birds credited to the Bartica District is 426. An expedition in charge of Director Beebe sailed in February, 1919, to reopen the station on a new and permanent site at Katabo, at the junction of the Mazaruni and Cuyuni Rivers.—T. S. P.

The Meaning of Natural Control.—In a paper¹ with this title Mr. John D. Tothill calls attention to the obvious fact that in each generation of any animal, all but two individuals from the total progeny of each pair must perish. This mortality is due chiefly to natural control, and in explaining how the natural control of certain insects is accomplished the author makes certain interesting references to birds.

Among predatory enemies of insects the chief are birds and insects. In the case of the Forest Tent-caterpillar the percentage of destruction due to various enemies is estimated, and chickadees and mites together are credited with the destruction of 25 % of the eggs. Doubtless the major share of these fall to the chickadees. As further examples of the work of birds, the author states that the Cecropia moth in New Brunswick is held in check chiefly by the Downy and Hairy Woodpeckers, and that the Red-eyed Vireo is one of the chief factors in the control of the Fall Webworm.

In the tabulation of the enemies of the latter insect, birds are credited with a percentage of destruction of the broods, varying in different years, from 11.4 % to 89.5 %. In 1912, when the insect was fairly plentiful, a reduction in numbers was brought about chiefly by parasites (insects). In succeeding years the parasites gradually died out as the insect became rare, and control was maintained almost exclusively by birds.—W. L. M.

¹ Proc. Ent. Soc., Nova Scotia, 1918, pp. 10-14.

An Essay on Crows.— In a paper¹ devoted chiefly to the Australian Corvidæ, W. W. Froggatt gives interesting historic lore, and notes on the habits of crows and ravens of all parts of the world. The American Crow is treated under the name *Corvus corone*.

The Australian Crows, like their relatives the world over, are severely criticised for certain injurious traits, and Mr. Froggatt is in sympathy with efforts to control their numbers when necessary. On the other hand, he points out their valuable habits in the way of feeding on insects and in cleaning up carrion. He asserts that they are the best scavenger birds in Australia, and that it is preferable to maintain them in numbers than to introduce carrion-feeder birds from other countries, a movement that has actually been taken up by the Australian Government. In a land where the introduction of exotic species has proved so disastrous as it has in Australia, it would seem that further experiments along this line would be avoided.— W. L. M.

Two Papers on African Economic Ornithology.— Captain S. S. Flower and Mr. M. J. Nicoll are the authors of a profusely and well illustrated brochure² intended to acquaint the people of Egypt with 25 of the more important birds protected by law. The authors state that previous efforts along educational lines have borne fruit. Protected birds are still sold for food in Cairo, however, being picked to hide their identity. Better knowledge of the birds on the part of officials, one of the objects of the bulletin reviewed, is expected to help end this traffic. The authors remark that: "Egypt is a country specially adapted to ravages by insect-pests, because natural enemies of these insects (*e. i.*, birds) are scarce. It is recognized as an axiom that no artificial system of insect destruction is comparable in effect with that which nature herself imposes by means of natural enemies, and it therefore becomes essential that every possible effort to preserve insectivorous birds should be carried out by the cultivators, as well as being supported by all who have an interest in the welfare of agriculture in the country."

In an account of 'Some Insects Injurious to the Black Wattle (*Acacia mollissima* Wild.),' a tanbark plant, C. B. Hardenberg notes³ that birds have both an injurious and a beneficial relation with respect to the chief insect enemy of the plant, the bagworm. Circumstantial evidence indicates that birds serve to distribute the pest, but the bird-carried bagworms usually are insignificant compared to the general infestation due to other agencies. Four kinds of birds have been observed feeding on the bagworm in various stages, thus contributing toward the natural control of this well-protected insect.— W. L. M.

¹ The Crow Family. The Australian Zoologist, Vol. 1, Pt. 6, Nov. 11, 1918, pp. 189-195.

² The Principal Species of Birds Protected by Law in Egypt. Ministry Agr., Cairo, 1918, pp. iv + 8, 8 Col. Pls.

³ Bul. 1, 1918, Dept. Agr., Union, S. Africa, 1919, pp. 25, 34-35.

Report on the Economic Value of Eight British Birds.—In a recent report¹ Professor Walter E. Collinge further shows his reliance on the volumetric method of analyzing the contents of birds' stomachs, and throws a clearer light on the economic relations of eight species of British birds. The Jackdaw although having a bad name like most of the Crow family, is found, on the whole, considerably more beneficial than injurious. Only occasionally is combating it warranted. The Starling has increased enormously in England during the past 15 years and consequently has been forced to change its feeding habits. Repressive measures calculated to bring the bird back to its normal abundance are needed; then it is practically certain the species could again be classed as useful. The Chaffinch is not of decided economic importance, one way or the other. It destroys some fruit buds and grain, which it seems to pay for by an equivalent consumption of injurious insects. Vigorous methods either for or against the bird are not indicated. The Yellow Bunting, like the Chaffinch, has an almost neutral economic significance. The Great Tit and the Blue Tit are shown to be heavy consumers of injurious insects. Both species differ from the American Titmice in doing some damage to fruit, but the conclusion as to their general economic tendencies is, as would be expected, distinctly favorable. Two thrushes are reported upon, of which the Song Thrush is shown to damage fruit, at times, but to compensate for it by insect destruction, and the Fieldfare is shown to be almost exclusively beneficial.—W. L. M.

The Ornithological Journals.

Bird-Lore. XXI, No. 3. May-June, 1919.

The Warblers of Central New York. By Arthur A. Allen (concluded).

Notes from A Traveller in the Tropics. IV. Peru. By Frank M. Chapman.—An interesting account of familiar species with figures of the White-throated Song Sparrow (*Brachospiza capensis*) and the Flightless Grebe of Lake Titicaca (*Centropelma micropterum*).

Purple Finches. By Mrs. H. F. Straw.—Interesting notes on habits.

Two Thrushes. By T. A. Taper.—Olive-back and Hermit with observations on nesting.

The migration and plumage notes refer to the Blue, Green and Steller's Jays, with plate by Fuertes, while the Audubon leaflet treats of the Least Bittern, the plate being by Horsfall.

Bird-Lore. XXI, No. 4. July-August, 1919.

Nature and England. By Frank M. Chapman.—An impressive picture of England in spring time and her people recovering from the strain of war.

¹ Some Further Investigations on the Food of Wild Birds. Journ. Board Agr. [London], 25, No. 12, March, 1919, pp. 1444-1462, 9 figs. (diagrams).

A Pocket Sanctuary. By F. Randle.—Treats of familiar Oregon birds. The Night Warbler. By H. E. Tuttle.—A remarkably fine photograph of the Ovenbird on its nest, with appropriate text.

The Condor. XXI, No. 3. May-June, 1919.

Some Notes on the Egg of *Aepyornis maximus*. By Wm. C. Bradbury. With photographs.

Autobiographical Notes. By Henry Wetherbee Henshaw. With portrait.—A delightful article to be continued in succeeding numbers. It abounds in interesting historical and biographical information.

A Return to the Dakota Lake Region. By Florence M. Bailey. VI. The Coulee of the Meadows.

Malcolm Playfair Anderson. By M. B. Anderson.

Description of an Interesting Junco from Lower California. By Harry C. Oberholser.—*Junco oreganus pontilis* (p. 119) from the Hanson Laguna Mountains.

The Condor. XXI, No. 4. July-August, 1919.

A Favorite Nesting Haunt of the Merrill Song Sparrow. By Henry J. Rust.—With excellent photographic illustrations.

Nesting of the Northern Pileated Woodpecker. By H. W. Carriger and Gurnie Wells.

A Return to the Dakota Lake Region. By Florence M. Bailey.—VII. The Gem of the Sweetwaters in Cove and Shore.

A Short Paper on the Hutton Vireo. By Clark C. Van Fleet.

The Wilson Bulletin. XXXI, No. 1. March, 1919.

The Food Habits of the Smith Sound Eskimos. By W. E. Ekblaw. Migration Records for Kansas Birds. By Bessie P. Douthitt. (Continued in June.)

Description of a New Red-winged Blackbird from Texas. By Harry C. Oberholser.—*Agelaius phaniceus megapotamus* (p. 20). Rio Grande Valley, type from Brownsville.

The Wilson Bulletin. XXXI, No. 2, June, 1919.

The Snow Bunting, an Arctic Study in Black and White. By W. E. Ekblaw.

The Bald Eagle in Louisiana. By A. M. Bailey.

The Gray Kingbird in Wakulla County, Florida. By John Williams.

A Day with Lake County Birds. By F. N. Shankland.

The Oölogist. XXXV, No. 4. April, 1919.

Nesting of the American Hawk Owl. By A. S. Henderson.

Cowbird Study in Iowa. By E. A. Stoner.—Gives data for a number of nests containing Cowbird eggs.

The Ibis. XI Series, Vol. I, No. 3. July, 1919.

A Preliminary Study of the Relation between Geographical Distribution and Migration with Special Reference to the Palæarctic Region. By R. Meinertzhagen.—This is a plea for the importance of the recognition of subspecies as an aid to the study of migration. All through his discussion, however, the author seems to have but one phase of migration in mind,

i. e. migration routes. With his statements in this connection we heartily agree.

On Birds from South Annam and Cochin China. Part I. Phasianidæ — Campophagidæ. By H. C. Robinson and C. Boden Kloss.— This is the first instalment of a fully annotated list of birds collected by Kloss during a couple of months early in 1918. In all 1525 specimens were obtained, representing 235 species and subspecies of which 34 are described as new. The itinerary, which is interesting reading, is prepared by Kloss and the annotated list by the two authors together. The present installment covers 62 pages and we notice the following new forms: *Arboricola rufogularis annamensis* (p. 403), Langbian Peaks; *A. brunncipectus albigula* (p. 405), Dran; *Pyrotrogon crythrocephalus annamensis* (p. 424), Dran; *Cyanops oorti annamensis* (p. 428), Dalat; *C. franklini auricularis* (p. 428), Langbian Peaks; *Niltava grandis decorata* (p. 444); *Dendrobiastes hyperythra annamensis* (p. 445); *Cryptolopha castaneiceps annamensis* (p. 447); *C. malcolm-smithi* (p. 448); *C. tephrocephala ocularis* (p. 448); all the latter from the Langbian Peaks. There are colored plates of the two Tree Partridges and a number of views of the country. The authors decide that the great majority of those species which are not typically Indo-Chinese are distinctly Himalayan, with some Malayan forms which here reach the limit of their range. Typical Chinese species were unexpectedly few.

On the Plumage-development of *Necton torquatum*, *Pacilonetta erythrorhyncha* and *Anas undulata*. By F. E. Blaauw.— Descriptions of various plumages.

List of the Birds of the Canary Islands. Part III. Picidæ — Sulidæ. By David A. Bannerman.— Another installment of this almost monographic account.

Further Ornithological Notes from the Neighborhood of Cape San Antonio, Province of Buenos Ayres. Part II. Trochilidæ — Plataleidæ. By Ernest Gibson.— An entertaining account of Argentine bird life.

Bulletin of the British Ornithologists' Club. No. CCXLII. April 30, 1919.

The following new forms are described: By W. L. Sclater, *Leucopternis ghiesbreghtii costaricensis* (p. 76), Carillo, Costa Rica; by E. Stuart Baker, *Rhinorhina chlorophaea fuscigularis* (p. 77), Sarawak, Borneo; and *Poliopsis leucocephalus annamensis* (p. 77), Nhatrang; by Chas. Chubb, *Synallaxis maceonelli* (p. 78), Mt. Roraima, British Guiana.

Bulletin of the British Ornithologists' Club. CCXLIII. June 4, 1919.

Lord Rothschild having obtained some specimens of *Ostriches* from the Syrian desert finds them distinctly smaller than the North African form, a fact that had already been suggested by the smaller size of the eggs, he therefore describes it as *Struthio camelus syriacus* (p. 83), wisely restricting *camelus* to the African bird.

Dr. Hartert describes *Melanocorypha bimaculata gaza* (p. 84), Shellal, Palestine, and *Corvus cornix julæus* (p. 85), Bir Salem, Palestine. He also

discusses the nomenclature of the Guinea-fowls, and although he says that were we starting afresh the specific name *meleagris* Linn. would have to be applied to the species now known as *ptilorhyncha*, it is undoubtedly based upon a mixture of this and the West African form to which it is usually applied. Like Lord Rothschild he prefers not to upset current nomenclature although he does not apparently definitely fix the application of Linnæus' name. In order to complete the work we would therefore definitely, restrict *Phasianus meleagris* to the West African Guinea-fowl usually called by that name or by Pallas' name *Numida galeata*. The attitude of Lord Rothschild and Dr. Hartert is most praiseworthy and we should like to see it adopted by certain authors who rush into changes that might easily be avoided without violating the rules of any Code.

W. L. Sclater describes *Spizaetes batesi* (p. 87), Bitey, Cameroons and Chas. Chubb proposes *Lophotriccus macconnelli* (p. 90), Ituribisi, British Guiana.

Bulletin of the British Ornithologists' Club. No. CCXLIV. June 30, 1919.

Chlorophoneus andaryæ (p. 94), is described by Sir. F. Jackson from Uganda. Chas. Chubb proposes a new genus *Microcochlearius* (p. 98) for *Euscarthmus josephinae* Chubb.

D. A. Bannerman proposes *Crateropus tenebrosus claudei* (p. 99) from Poko, Belgian Congo.

British Birds. XII, No. 11. April, 1919.

Ornithological Notes from Norfolk for 1918. 25th Annual Report. By J. H. Gurney.

British Birds. XII, No. 12. May, 1919.

Birds of the Battlefields. By Capt. Arthur deC. Sowerby.

Bird Notes from the Western Front. (Pas-de-Calais). By Capt. W. S. Medlicott.

British Birds. XIII, No. 1. June, 1919.

Additions and Corrections to the Hand-List of British Birds. By the Authors.—Several of these affect species in the A. O. U. List. The American Goshawk is added under the name *Accipiter gentilis atricapillus*, the bird being regarded as a subspecies of the European while the genus *Astur* is not recognized. The generic names *Machetes* and *Calidris* are rejected in favor of *Philomachus* and *Crocethia*, they having been used in other connections by an anonymous author of earlier date, as pointed out by Dr. C. W. Richmond. Mr. Ridgway in the last volume of his 'Birds of North and Middle America,' it will be noticed refuses to recognize this anonymous author, but according to our Code Dr. Richmond and the authors of the British 'List' must be followed. The name of the Glaucous Gull is changed to *Larus hyperboreus* following the A. O. U. 'Check-List.'

The Bittern in the Norfolk Broads. By Emma L. Turner.—This bird has been regarded as a "lost breeding species" in England, having been driven out by persistent persecution. During the war, however, it has reestablished itself and the hope of the author is that it may be allowed to

persist. "The war" she writes "has been a godsend to the birds of Great Britain, because it has kept the majority of gunners and collectors busy elsewhere." Nevertheless in Norfolk evidence has been collected of the killing of fifteen Bitterns during the past year.

The Ruff.—An Early Record. By W. H. Mullens.—An account of a rare and curious black letter tract describing the occurrence of the Ruff in England in 1586.

British Birds. XIII, No. 2. July, 1919.

The Pied and White Wagtails. By H. F. Witherby.—Descriptions and figures of the various plumages of these two allied races.

Note on the Drumming of Woodpeckers. By J. S. Huxley.—The dead hollow stub upon which a Woodpecker had been seen drumming on many occasions was cut off and showed no marks of the bill whatever. Prof. Huxley points out that it is the rapidity of the strokes not their force that produces the resonant sound and cites the action of a Red-headed Woodpecker in the United States drumming on a tin post covering where the best result in sound could be secured. The reviewer has noticed the same species persistently drumming on a lightning rod.

The Birds of Bardsey Island (Wales). By N. F. Ticehurst. (Continued in the August number.)

British Birds. XIII, No. 3. August, 1919.

Down Tracts of Nestling Birds. By Collingwood Ingram.—Discussion of the nomenclature of feather tracts of the head.

Avicultural Magazine. X, No. 6. April, 1919.

The Pigeons of the Gambia. By E. Hopkinson. (Continued.)

Avicultural Magazine. X, No. 7. May, 1919.

The History of Birds' Nests. By A. G. Butler.—A speculative discussion.

The Necessity of State Action for the Protection of Wild Birds. By W. E. Collinge.

A Curious Habit of the Moorhen. By E. G. B. Meade-Waldo.—One young fed by another.

Avicultural Magazine. X, No. 8. June, 1919.

The Wattle of Cabot's Tragopan. By H. D. Astley.—A criticism of the plate in Beebe's 'Pheasants.'

Avicultural Magazine. X, No. 10. August, 1919.

Bird Life in South Africa. By F. W. H. Seppings.

Bird Life about Moree, N. S. W. The Home of the White-winged Blue Wren. By an old Australian Bird Lover.

The Emu. XVIII, Part 4. April, 1919.

A New Pigeon for Australia. The Red-cered Pigeon (*Globicera rubricera*). By J. A. Kershaw.

Notes on Birds Breeding in Dampier Archipelago, N. W. Coast of Australia. By F. L. Whitlock.

Further Notes on Additions to the "H. L. White Collection." By A. J. Campbell. (Continued.)

Down Marlo Way. By Dr. Brooks Nichols and others.

The Birds of the Pilliga Scrub, New South Wales. By J. B. Cleland.

Six Months' Record of a Pair of Mallee-Fowls. By J. A. Ross.—A valuable record.

Report on Investigations in Regard to the Spread of Prickly Pear by the Scrub Turkey. By G. B. Brookes.—The results of the investigation showed that the bird was not an active agent in spreading the plant.

The Emu. XIX, Part I. July, 1919.

Notes on Birds Observed in the Upper Clarence River District, N. S. W., Sept.—Dec., 1918. By J. Ramsey.

Material for a Study of the Megapodidae. By R. W. Shufeldt.—A review of the literature and a list of specimens in the U. S. National Museum arranged according to Ogilvie-Grant (British Museum Catalogue, Vol. XXII). Numerous illustrations from photographs of skins and mounted specimens.

The Black-throated Honey-eater (*Melithreptus gularis*). By P. A. Gilbert.

Bird Notes from Mackay, Queensland. By W. G. and R. C. Harvey.—With remarkably fine illustrations from photographs of wild birds.

An Ornithologist with the A. I. F. in Egypt and Palestine. By F. L. Berney.

A Dipterous Parasite on Nestling Birds. By P. A. Gilbert.

The Changes in Colour of the Bill of the Black Moor-Hen. By W. B. Alexander.

Revue Francaise d'Ornithologie. XI, No. 119. March 7, 1919. [In French.]

Notes on the Common Cormorant of Sfax. By P. Bede.

Revue Francaise d'Ornithologie. XI, No. 120. April 7, 1919.

On the Mechanical Balance between the Comparative Length of the Wing and Tarsi in Birds. By M. Boubier.

Critical Notes on the Hummingbirds. By M. E. Simon.—Fifteen new genera are proposed.

Revue Francaise d'Ornithologie. XI, No. 121. May 7, 1919.

Inquiry into the Disappearance of the Sparrow in the South. By A. Menegaux.

L'Ornithologiste (Organ of the Swiss Society for the Study and Protection of Birds.) [In German.] XVI, Nos. 1–10, October, 1918–July, 1919.

Contains articles on local bird life with an Analysis of the Song of the Creeper. By H. Stadler and C. Schmitt, in No. 4.

El Hornero. I, No. 3. December, 1918. [In Spanish.]

The Lariformes of the Republic of Argentina. By R. Dabbene.—Reviews the Terns.

Biological Notes on the Birds of North-eastern Argentina. By Luis Dinelli. (Continued.)

List of the Birds of Mendocina. By Renato Sanzin.

The Fantastic Ornithology of the Conquistadors. By A. Cardoso. (Continued.) — With illustrations from old works.

Notes on a Collection of Birds from the Island of Martin Garcia. By R. Dabbene. (Continued).

Description of Two Forms of Birds Apparently New from N. W. Argentina. By R. Dabbene. *Penclope nigrifrons* (p. 178), Cerro de Calilegua, Jujuy and *Spinus ictericus magnirostris* (p. 181), Sierra del Cajon, Salta.

Ardea. VII, No. 4, 1918. [In Dutch.]

Ornithological Observations in Holland. By E. D. Van Oort.— Includes records of a number of hybrid ducks. *A. boschas* with *Dafila acuta*, *Mareca penelope* and *Chaulelasmus streperus* and *Dafila acuta* with *Mareca penelope*.

Reports from the Ornithological Experiment Station at Heuman. By Jan J. Luden van Heumen.— Elaborate report on the food of the Pheasant (*Phasianus colchicus*) with stomach and crop contents of 96 individuals.

Tori [Birds]. II, No. 7. 1918.

Through the courtesy of our Corresponding Fellow in Tokyo, Mr. Nagamichi Kuroda, we are able to present translations of the titles of the principal articles in the last number of "Tori" for 1918 published in Japanese by the Ornithological Society of Japan.

1. An Annotated List of the Birds of Quelpart Island. By Nagamichi Kuroda and Tamezo Mori.

2. Observations on Young Birds of *Ninox scutulata*. By M. Kawaguchi.

3. Occurrence of *Chatharacta antarctica* and *Syrhaptus paradoxus* in Japan. By Nagamichi Kuroda.

4. A Collection of Birds from the Loo Choo Islands and Amamioshima. By E. Horii.

5. A List of Birds collected on the west coast of Kamchatka. By T. Momiyama.

The number also contains a portrait of the late M. Naniye.

Tori [Birds] (Bulletin of the Ornithological Society of Japan). II. No. 8, 1919. [In Japanese. Beginning with this number the table of contents is also printed in English].

Frontispiece. A flock of Water-fowls on the outer Moat of the Imperial Palace.

On some specimens of birds from Saghalin in the Sapporo Museum. By T. Momiyama.

On the migration of some common species of birds in the vicinity of Seoul, Corea. By N. Kuroda and J. Mikayoda.

On the habits and sexual differences of the Himalayan Cuckoo. By M. Kawaguchi.

Migration and habits of swallows in Shikoku. By Y. Enomoto.

Notes on some birds from Iruma-gun, Prefect, Saitama. By T. Momiyama and M. Nomura.

History of the Audubon Movement. Translated by S. Uchida.

Ornithological Articles in Other Journals.

Brigham, Edward M. The Hoactzin — Only Survivor of an Ancient Order of Four-footed Birds. (Natural History, XIX, February, 1919.) — An account of the discovery of the quadrupedal nature of the young by the discoverer.

Evans, William. The Great Crested Grebe in Forth. (The Scottish Naturalist March-April, 1919.)

Evans, William. Woodcock and the Safety of their Young. (*Ibid.*)

Baxter, Evelyn V. and **Rintoul**, L. J. On the Great Crested Grebe as a Scottish Breeding Species. (*Ibid.*, May-June, 1919.)

Rintoul, Leonora J. and **Baxter**, Evelyn V. Report on Scottish Ornithology in 1918. (*Ibid.* July-August, 1919.)

O'Donoghue, C. H. and **Gowanlock**, J. Nelson. Notes on the Caspian Tern (*Sterna caspia*) and the Parasitic Jaeger (*Stercorarius parasiticus*) in Manitoba. (Canadian Field-Naturalist, April, 1919.) — A number of other species are also listed.

Taverner, P. A. The Birds of Shoal Lake. Manitoba. (*Ibid.*) — Continued from The Ottawa Naturalist, XXXII, p. 164.

Farley, F. L. The White Pelican, *Pelecanus erythrorhynchos*, in Alberta. (*Ibid.*, May, 1919.)

Hornaday, W. T. Beebe's Great Pheasant Monograph. (N. Y. Zoological Society Bulletin. January, 1919.)

H[ornaday], W. T. Bird Notes from South America. The Truth about Gathering Egret Plumes in Venezuela, Slaughter of the Condors, and Insect Pests Follow Bird Slaughter. (*Ibid.*) — Extracts from Leo E. Miller's 'In the Wilds of South America.'

Crandall, Lee S. Rare Birds in the Zoological Park. (*Ibid.*) — Emus, Upland Geese, etc.

Shufeldt, R. W. The Osteology of the Giant Gallinule of the Philippines, *Porphyrio pulverulentus* Temminck. With notes on the Osteology of *Tachybaptus philippensis* (Bonnaterre) and *Hydrophasianus chirurgus* (Scopoli). (Philipp. Jour. of Sci., January, 1919.)

C[ulin], S[tewart]. Japanese Color Prints Illustrating Samuel Smiles' Self Help. (Brooklyn Museum Quarterly, April, 1919.) — This work was translated into Japanese in 1878 under the title 'The Western Countries' Book of Successful Careers.' Audubon's was one of these and the illustration which accompanied the sketch is reproduced here. It represents the ornithologist on his knees opening the box in which were his drawings that had been destroyed by rats. It adds one more to the list of portraits given by Prof. Herrick.

Nichols, J. T. Notes and Habits of Shore Birds. (Bulletin of the American Game Protective Association, April, 1919.) — An excellent account of some of the commoner species.

Cole, L. J. and **Lippincott**, W. A. The Relation of Plumage to Ovarian

Condition in a Barred Plymouth Rock Pullet. (Biological Bulletin, March, 1919). — A pullet with ovarian tumor developed male plumage but reverted to female upon the implantation of ovarian tissue. The barring in Plymouth Rock poultry differs in the two sexes and in this instance the 'male' plumage while male in shape and structure resembled the female in barring.

Publications Received.—**Adams**, Charles C. The Roosevelt Wild Life Forest Experiment Station. (Science, XLXI, June 6, 1919.)

Bangs, Outram, and **Penard**, Thomas E. Some Critical Notes on Birds. (Bull. Mus. Comp. Zool., LXIII, No. 2.)

Bangs, Outram. A New Striated Grass Warbler from the Philippines. (Proc. N. E. Zool. Club, June 6, 1919.)

Bent, Arthur Cleveland. Life Histories of North American Birds, Order Pygopodes. (Bull. 107, U. S. Nat. Mus., 1919.)

Childs, John Lewis. First Supplement to a Catalogue of the Natural History Books in the Library of John Lewis Childs. July 1, 1919.

Chubb, Charles. Notes on collections of Birds in the British Museum, from Ecuador, Peru, Bolivia, and Argentina. Part II. Podicipediformes—Accipitriformes. (Ibis, April, 1919.)

Cole, Leon J., and **Kelley**. Studies on Inheritance in Pigeons. III. Description and Linkage Relations of Two Sex-Linked Characters. (Genetics, March, 1919.)

Cole, Leon J., and **Lippincott**, William A. The Relation of Plumage to Ovarian Condition in a Barred Plymouth Rock Pullet. (Biological Bulletin, March, 1919.)

French, John C. The Passenger Pigeon in Pennsylvania. Altoona, Pa., 1919. Price \$4.00. Franklin Book Shop, 920 Walnut St., Philadelphia.

Gladstone, Hugh S. Birds and the War. Skeffington & Son, Ltd., 34 Southampton St., Strand, W. C. 2, London. 1919. Price 5s. net.

Lawyer, George A., and **Earnshaw**, Frank L. Game Laws for 1919. Farmers' Bulletin 1077, U. S. Dept. of Agriculture, August, 1919.

Lawyer, George A. Federal Protection of Migratory Birds. (Yearbook of the U. S. Dept. of Agriculture, 1918.)

Lonnberg, Einar. (1) Hybrid Gulls (Arkiv. Zool. Svensk. Vetensk. Acad., Band 12, No. 7, 1919). (2) Birds Collected in Eastern Cogo by Capt. Elias Arrhenius. (*Ibid.*, Band 10, No. 24.) (3) Notes on Some Interesting East African Birds. (*Ibid.*, Band 11, No. 5, 1919.)

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CORRESPONDENCE.

Permits to Collect Birds for Scientific Purposes in Canada.

EDITOR OF 'THE AUK':

Considerable confusion and delay has arisen because ornithologists wishing to collect birds or their nests or eggs in the Dominion of Canada have not been familiar with the law.

Application for permission to take migratory insectivorous, migratory game, or migratory non-game birds, as defined in the Migratory Birds Convention, in Canada, should be made to J. B. Harkin, Commissioner of Dominion Parks, Department of the Interior, Ottawa. As other kinds of permits are issued by this department, be sure to state explicitly that you wish to collect the migratory birds protected by federal law. Permits will be issued as promptly as possible, but the collector should allow two or three weeks' time in case unforeseen difficulties arise.

Applications from recognized museums or scientific societies do not require to be supported by testimonials. The director of the museum should make application for each person who is collecting for the museum. If there is doubt as to the museum being well-known, it is suggested that written testimonials be furnished as required for individuals.

Individual collector's applications must be supported by written testimonials from two well-known ornithologists. Mere endorsement of the application will not suffice. The testimonial should refer fully to the ornithological work of the applicant and state the writer's opinion as to the value of that work.

Applicants should state the locality, if possible, certainly the Province in which they intend to collect.

Permits issued by this branch allow the holder to take birds protected by the Migratory Birds Treaty. Many other species are protected by Provincial laws, and permission to take them should be sought from the Provincial authorities.

The provincial officers concerned are:

	<i>Position</i>	<i>Address</i>	<i>Province</i>
Secretary, Game Conservation Board		Victoria	British Columbia
Chief Game Guardian		Edmonton	Alberta
Chief Game Guardian		Regina	Saskatchewan
Chief Game Guardian		Winnipeg	Manitoba
Deputy Minister of Game & Fisheries		Toronto	Ontario
Deputy Minister, Department of			

<i>Position</i>	<i>Address</i>	<i>Province</i>
Colonization, Mines and Fisheries	Quebec	Quebec
Deputy Minister of Lands and Mines	Fredericton	New Brunswick
Chief Game Commissioner	Halifax	Nova Scotia
	Charlottetown	Prince Edward Island

Any shipment whatever, by mail, express, or freight, of migratory bird specimens must be labelled with the number of the permit, the name and address of the shipper, and an accurate statement of the contents, in order to comply with the law.

So that all permit holders will have a proper concept of the principles governing the issue of scientific permits, these principles are printed in full with each permit. This portion of the permit was written by Mr. P. A. Taverner and Dr. R. M. Anderson, of the Museum of the Geological Survey of Canada.

As it is of general interest to ornithologists, it is quoted in conclusion.

Permit Principles.

Permits to take migratory birds, their nests and eggs, under the Migratory Birds Convention Act and Regulations are granted for the sole purpose of scientific study and not for the collection of objects of curiosity or personal or household adornment. Therefore, only such persons as take a serious interest in ornithology, and are competent to exercise the privilege for the advancement of knowledge, are eligible to receive such permits.

It is expected that the holders of permits will use them with reasonable discretion, taking only such specimens as their scientific needs require and avoiding unnecessary waste of life. The habitual taking of numbers of individuals for the purpose of obtaining a few specially desirable ones is deprecated, and it is urged that the collector take no more specimens than he has reasonable prospects of caring for, and will conscientiously endeavor to properly prepare each and all when taken.

It is also recommended that the holders of permits will, so far as is consistent with their object, be considerate of the local feeling in the neighbourhood where they collect and will demonstrate both by actions and speech that the scientific collector is sympathetic towards the principles of wild life conservation and not the rival of legitimate sportsmen.

It is required as an evidence of good faith that holders of permits label their specimens with the customary scientific data and properly care for them, not only at the time of collection but thereafter, giving them all reasonable protection against insect pests and other agencies of destruction, and will not permit them to be destroyed through carelessness or indifference.

As permits are granted for the purpose of general scientific advancement and not for individuals' benefit, specimens taken under them are to be

regarded as being in the nature of public trusts, and should be accessible to all duly qualified students, under only such reasonable restrictions as are necessary for their protection or as is consistent with the owner's work.

Finally, it is urged that provision be made so that specimens taken will ultimately find their way into permanent or public collections where they will be available for study by future generations and not be wasted and lost through neglect.

While all these conditions are not strictly mandatory, and their spirit will be liberally interpreted, they will be considered in the granting or renewal of each permit, and evidence of gross violation of them may be deemed sufficient ground for the refusal of an application or for the revocation of any permit already granted.

It is hoped and expected that the justice of these principles will be realized and that collectors will co-operate in advancing science to the utmost without unnecessary waste of valuable bird life.

HOYES LLOYD.

Ornithologist, Dominion Parks Branch. Dept. of the Interior.
Ottawa, June 30, 1919.

**Capt. Thomas Brown's 'Illustrations of the American Ornithology
of Wilson and Bonaparte.'**

EDITOR OF 'THE AUK':

In 'The Auk' for April, 1903, pp. 236-241, I gave an account of Capt. Thomas Brown's Edinburgh reproductions of the plates of Wilson and Bonaparte's 'American Ornithology.' I showed that Brown's scheme involved three independent reproductions of the American plates, one on copper in folio, one on copper in royal octavo, and one on stone in 16 mo. The three books that resulted from Brown's endeavor are among the rarest in ornithological literature and therefore of great interest to bibliographers.

In 1903 I was able to place only three copies (one imperfect) of the folio edition and one of the 16 mo. edition, the latter consisting of nineteen plates bound in a copy of Jameson's 1831 edition of Wilson and Bonaparte in your own library, Mr. Editor. Many years ago Professor Alfred Newton supplied Dr. Coues with a description of Part I of this miniature edition, and its title-page is quoted in Coues's Bibliography, 'Birds of the Colorado Valley,' p. 600; but when I saw Professor Newton in June, 1902, he had lost all recollection of it and we together searched his library for it in vain.

Of the existence of the royal-octavo edition I was unable to find a trace. I surmised, however, from the way the plates of Jardine's 1832 Wilson and Bonaparte were unmercifully trimmed to match the size of the text, that this edition was soon appropriated by Jardine to illustrate his own work.

This surmise is rendered a certainty by a copy of a book now in my possession. It consists of the ninety-seven hand-colored copper plates of Jardine's edition, printed on larger paper, with three title-pages bound in. The titles read as follows:—

Illustrations | of the | American Ornithology | of | Alexander Wilson, | and | Charles Lucian Bonaparte. | Engraved by W. H. Lizars, | and Coloured by Captain Thomas Brown, F. L. S. | President of the Royal Physical Society. | Edinburgh: | Printed by Andrew Shortrede. | MDCCC XXXII.

The book is of a squarish shape and might well be termed a small quarto. It is bound in full green morocco, gilt-edges. The plates (trimmed) measure 10 in. \times 7 $\frac{1}{8}$ in. In untrimmed copies of Jardine's edition these plates measure 8 $\frac{1}{2}$ in. \times 5 $\frac{3}{8}$ in. This book was offered for sale in 1918 by E. P. Dutton & Co. of New York (catalogue price, \$40); was bought by N. J. Bartlett & Co. of Boston and sold by them to Mr. John E. Thayer of Lancaster, Mass., who generously gave it to me.

In Maggs Bros.' catalogue No. 316, London, November, 1913, a book was advertised called 'Wilson (Alex.) and Bonaparte (Charles Lucian), Illustrations of American Ornithology,' 4to, morocco, gilt, Edinburgh, 1832, £4, 4s. It was described as a complete set, on large paper, of the plates of Jardine's edition, with three title-pages bound in. What I infer from the description was the same copy was still offered for sale at the same price in Maggs' catalogue, No. 355, in 1917. Judging from the description this was without doubt the same work that Mr. Thayer secured and I fancy from its peculiarities that it was the identical copy.

Since the publication of my letter in 'The Auk' of April, 1903, I have succeeded in placing eight more copies of Brown's folio 'Illustrations.' I append a census of the known copies, which I hope may be the means of bringing others to the light.

It appears from contemporary notices that a few copies of the folio edition were issued in elephant folio. The only example of this *édition de luxe* that I know of is one that I bought of Walter T. Spencer, a London bookseller, in July, 1904. It was offered for sale in Spencer's catalogue No. 120 for £3, 10s. Mr. Spencer informed me that he got it at an auction sale in Dundee in the winter of 1903-04. It lacks six plates (4, 5, 11, 14, 84, 93), but is otherwise in superb condition, and is bound, uncut, in half green-morocco. The plates measure 27 in. \times 22 in.; they are colored (especially as regards the landscape accessories of the water-bird plates) more skillfully than in the smaller folio issue.

Of the smaller, royal folio issue, I have located the following copies:—

1. Library of the Zoölogical Society of London. A perfect copy, which I collated May 8, 1902 (see 'The Auk,' April, 1903, p. 237).

2. Library of Cambridge University. This copy was bought in 1900 for £2, 5s. from Richard Cameron, a book-dealer of Edinburgh, by Professor Alfred Newton of Magdalen College, Cambridge. From a letter which I received from Professor Newton in July, 1900, I learn that this

copy, although it contains the full number of pages and plates, is "by no means in good condition." It is bound in cloth and measures 21 in. \times 16½ in. I assume that it came with the rest of Professor Newton's library into the possession of Cambridge University on the death of the Professor.

3. Library of the Arnold Arboretum, Harvard University, Jamaica Plain, Mass. Purchased for \$200 from N. J. Bartlett & Co. of Boston in 1911 by Mr. John E. Thayer and presented by him to the Arnold Arboretum. A perfect copy, bound in full purple morocco, gilt edges, 19¾ in. \times 15¼ in.

4. Library of John E. Thayer, Lancaster, Mass. Bought of N. J. Bartlett & Co., Boston, for \$25. Perfect copy, bound in half morocco. Plate 44 wants fig. 5 (Hudsonian Titmouse) and plate 61 wants two figures (Mangrove Hummingbirds). These figures were apparently added after this copy was printed off.

5. Library of Samuel Henshaw, Cambridge, Mass. Bought of John Wheldon & Co., London, for £24, in July, 1907. Full red-morocco binding, gilt edges, by W. H. Smith & Son, Strand, London. 20¾ in. \times 15¾ in. A perfect copy and an early one, as plate 44 lacks the figure of the Hudsonian Titmouse, and plate 61 the two figures of the Mangrove Hummingbird. This copy has the original *printed* dedication to the Earl of Airlee, dated Edinburgh, May, 1831. This leaf was cancelled by the later *engraved* dedication to the same nobleman, which is also bound in this copy. On page ii is written "T. Thurlow, Esq., Horsham."

6. Library of Theodore N. Vail, Morristown, N. J. Perfect copy, half red-morocco, gilt edges. Formerly belonged to Mr. Frederic Gallatin, Jr., of New York. Catalogue of a Collection of Books on Ornithology in the Library of Frederic Gallatin, Jr., p. 139, New York, 1908.

7. Library of H. C. Tuttle, Naugatuck, Conn. Bought of Quaritch in London, 1919, by N. J. Bartlett & Co., of Boston, and sold by them in June, 1919, to Mr. Tuttle for \$200. Bound in half dark-green morocco, gilt edges, 21 in. \times 16 in. Plate 112 is a hand-made copy of the original. This copy, like Nos. 4 and 5, is an early impression before the three figures were added to plates 44 and 61.

8. Library of Walter Faxon, Lexington, Mass. Bought of William J. Gerhard, Philadelphia book-dealer, June 20, 1904, for \$25. Mr. Gerhard imported it from Brussels at a cost of \$18.50. Bound in half calf, gilt edges, 20¾ \times 16½ in. Wants four plates (1, 19, 104, 124) and has been roughly used by some former owner. Contains a pencil autograph "Rich. Darling," and an embossed book-plate with the initials I C and an armorial crest,—a wivern segreant azure.

9. Library of Mrs. R. E. Hopkins, Tarrytown, N. Y. This copy fetched \$31 at Bangs's auction-sale in New York, Nov. 23, 1896. It came under the same auctioneer's hammer again on Feb. 23, 1897, when it went to Major R. E. Hopkins for \$34. It was shown to me in 1901 by the widow of Major Hopkins. An imperfect copy, lacking title-page, dedication, index, and thirty-seven plates. It has one of the original-part wrappers bound in (see 'The Auk,' April, 1903, p. 238).

10. Library of Ruthven Deane, Chicago, Ill. A fragment, bought of Dodd, Mead & Co., New York, Nov. 1, 1909, consisting of the first five parts of five plates each, in the paper wrappers as issued. One of the wrappers was given by Mr. Deane to Mr. John E. Thayer.

The fate of the following three copies I have not been able to learn:—

In Bernard Quaritch's General Catalogue, London, 1880, p. 375, the first six parts of Brown's "Illustrations," consisting of thirty colored plates, royal folio, were offered for sale at £5.

At a sale of Duke of Sutherland property by Sotheby, Wilkinson and Hodge, London, Nov. 19-24, 1906, a complete copy was sold, royal folio, half morocco, gilt tops, for £7. It was bought by Walford Bros., book-dealers in London, but whether on a private order or not I do not know.

In N. J. Bartlett's Catalogue No. 64, Boston, November, 1915, a copy was advertised at \$170, half morocco, uncut, 123 colored plates (there should be 124).

This work was issued in parts, each part containing five plates. The first part appeared in 1831, price, 15s., colored, 10s. 6d., plain, for the royal folio edition; £1, 1 s. for the elephant folio. By the time part IX. was published the price per part had risen to £1, 1s., colored, 12s. plain, for the regular edition; and to £1, 11s., 6d., colored, 15s. plain, for the elephant folio. I know of no copies with plain plates.

Capt. Brown's "Illustrations of the Game Birds of North America," which is nothing but sixteen plates of the larger work, issued with a different title-page, dated 1834 (see 'The Auk,' April, 1903, pp. 238-240), is an even scarcer book. I can locate only three copies of it, *viz.*:—

1. Library of Walter Faxon, Lexington, Mass. I bought this in a bookshop in Birmingham, June 2, 1902, for £1, 10s. It is bound in cloth, uncut; the plates measure $21\frac{1}{2}$ in. \times $16\frac{1}{2}$ in. It contains the book-plate of C. I. Anderson, and the autograph signature of A. A. Anderson, Stoke Newington. The water-marks on the plates of this copy are dated 1835, indicating that these plates were published a year later than the year on the title-page.

2. Library of John E. Thayer, Lancaster, Mass. Bought of John Wheldon & Co., London (Cat. 34, 1906, £5, 18s.), by N. J. Bartlett & Co., of Boston, Mass., and sold by the latter to Mr. Thayer. Royal folio, cloth boards.

3. John Crerar Library, Chicago, Ill. For the knowledge of this copy I am indebted to Mr. Ruthven Deane. He informs me that it measures 21 in. \times $16\frac{1}{2}$ in.

A copy of the "Illustrations of the Game Birds" was listed in R. H. Porter's Catalogue of the late Rev. H. B. Tristram's Library, 1906, £3, 3s., but I do not know where this copy now rests.

Yours very truly,

WALTER FAXON.

Lexington, Mass., August 12, 1919.

Feeding of Grackles.

EDITOR OF 'THE AUK':

In 'Bird Genealogy' (Auk, XXIX, 1912, p. 294), I called attention to an interesting habit of the Bronzed Grackle of picking up food from the water, after the manner of a Herring Gull. "A Grackle will hover close to the water its head to the wind, and then suddenly drop, and with its bill pick up from the surface some morsel as gracefully as a Gull. This they do at times without wetting their plumage; at other times the bill, feet and tail are immersed, while I once saw a Grackle splash his whole body into the water and entirely immerse his head, to emerge without difficulty, carrying in his bill what appeared to be a small silvery fish."

This latter incident I witnessed at the Charles River Basin in Boston. Since then this habit has become more common among the Grackles in this locality, and at almost any hour of the day during this last June, one may see several Grackles dipping into the water for fish. The fish are brought to the coping of the Esplanade and eaten, or taken away to feed, no doubt, the young or mate. With the kind assistance of a Park policeman who succeeded in frightening off the birds before they could seize and carry off the fish from the coping, I secured three of these fish. They proved to be the three-spined Stickleback, *Gasterosteus aculeatus*.

Whether this is a new habit acquired by a small community of Grackles, or whether it is an old and universal habit I am anxious to learn, and it is for this reason that I am sending this letter to 'The Auk.' In either case the matter seems to me to be of exceeding interest to the student of habits and of evolution. Hitherto I have been unable to find any reference in literature to the habit. I shall be much obliged for any light on the subject.

On several occasions I have noticed that the fish were alive and active when the Grackles deposited them on the coping.

CHARLES W. TOWNSEND.

Boston, Mass.

NOTES AND NEWS.

AMERICAN ornithology suffered an irreparable loss in the death of William Brewster on July 11, last. While it was generally known that his health had been failing for several years past, few outside the circle of his most intimate friends knew that his condition was critical, and the news of his death came with the shock of an unexpected blow.

Great as were his attainments as an ornithologist it was not these alone that gained him the wide recognition that he received. His fair and impartial judgment of all questions that came before him created a profound and widespread respect for his opinion; his keen and unconcealed delight in everything out of doors, be it bird, mammal, or plant, was contagious and inspiring; while his uniform courtesy and kindness to young student and master alike, endeared him to all with whom he came in contact.

To the American Ornithologists' Union the death of William Brewster is a calamity. To him more than to anyone else was due the founding of the Nuttall Ornithological Club, from which sprang the A. O. U., and both organizations throughout their existence have profited from his counsel and advice in all matters concerned with their activities. So closely indeed was he associated with the life of the Union that we find it almost impossible to conceive of a meeting of the Council without Mr. Brewster's presence. His influence was always toward the best effort and the highest ideals, both in scientific work and in personal conduct, and association with him was always stimulating and improving.

Probably he himself never realized the part he played in shaping the ornithological activities of others, and his influence upon the development of American ornithology cannot easily be measured.

The president of the A. O. U. has appointed Mr. Henry W. Henshaw, Mr. Brewster's lifelong friend, to prepare the biographical sketch which will be presented at the annual meeting of the Union in November, and which will appear in the January issue of 'The Auk.'—W. S.

Motoyoshi NAMIYE of Tokyo, Japan, a Corresponding Fellow of the A. O. U., died May 24, 1918. He was born at Maruyama-Nishikata-machi, Hongo, Yeddo (Tokyo), February 15, 1854. He was a member of the faculty of Zoology in the Tokyo Educational Museum, and Assistant of the Zoological Institute, Science College, Imperial University of Tokyo, an honorary member of the Tokyo Zoological Society, and a councilor of the Ornithological Society of Japan. He was actively interested in birds, mammals, reptiles, and amphibia and published many interesting papers on these groups of vertebrates. Following are the principal places in

Japan where he made collections, and as a result of these collections many important additions were made to our avifauna: The Province of Yamato on the island of Hondo in 1876, the Loo Choo Islands in 1886 and 1909, the Seven Islands of Idzu in 1887, and Tsushima in 1891.

Four Japanese birds bear his name: *Dryobates leucotos namiyei* Stejneger, 1886; *Luscinia komadori namiyei* (Stejneger), 1886; *Chelidon javanica namiyei* Stejneger, 1886; and *Parus varius namiyei* Kuroda, 1918.—NAGAMICHI KURODA.

MERRILL WILLIS BLAIN, an Associate of the Union from 1910 to 1916, died at his home in Los Angeles, December 26, 1918, in the 25th year of his age. According to a brief notice in 'The Condor' for May, 1919, he was born at Oceanview, Calif., April 24, 1894, received his early education in San Francisco, and at the time of his death was a third-year student in the Detroit College of Medicine and Surgery. He was an enthusiastic ornithologist, a member of the Cooper Ornithological Club and the Wilson Ornithological Club, and had a good collection of the birds and eggs of Southern California.—T. S. P.

LEO WILEY of Palo Verde, Imperial Co., Calif., who was elected an Associate of the Union in 1917, died of pneumonia following an attack of influenza, at Shandon, Calif., October 31, 1918. Mr. Wiley was born at Silverton, Colo., September 20, 1890, and at the time of his death was 28 years of age. He was the only son of A. P. Wiley and when four years old lost his mother. At an early age he developed a taste for natural history and when not in school spent much time in the company of his father in the wilds of Colorado and California. After a year with A. E. Colburn, the taxidermist of Los Angeles, he followed the trade of taxidermist at Palo Verde. During the Colorado River Expedition of 1910, Dr. Joseph Grinnell learned of young Wiley's interest in natural history and induced him to report things of interest among the birds of the region. As a result many specimens found their way to the Museum of Vertebrate Zoology at Berkeley, and some of his observations appeared in the columns of 'The Condor.' Among several notes of interest are his records of the breeding of the White-winged Dove, the Mexican Ground Dove, and Harris' Hawk near Palo Verde. Of the last species four young were found in July, 1916, and a set of three eggs on April 5, 1917. Since his death his collection has been presented by his father to the Museum of Vertebrate Zoology at Berkeley, Calif., where it will be accessible and permanently preserved.—T. S. P.

A COMMITTEE has been formed in England under the chairmanship of Lord Rothschild to establish a memorial to the late Frederick DuCane Godman, in acknowledgment of his lifelong devotion to the interests of natural history. The memorial will take the form, primarily, of a bronze tablet with medallion portraits of Mr. Godman and his friend and colla-

borator, the late Osbert Salvin, which is to be placed in the Natural History Museum at South Kensington. Any surplus over what may be required for the tablet will be added to a fund to be known as the "Godman Memorial Exploration Fund" for which the widow and daughters of Mr. Godman have subscribed £5,000, the proceeds to be devoted to the making of collections for the advancement of science and for the benefit of the Museum.

This plan cannot be too highly endorsed and we trust that the necessary subscriptions will soon be secured. Salvin and Godman will ever be remembered in America by their classic 'Biologia Centrali-Americana,' while both were Honorary Fellows of the A. O. U. Subscriptions should be sent to C. E. Fagan, Honorary Treasurer of the Godman Memorial, Natural History Museum, Cromwell Road, London, S. W. 7.

MR. P. WYTSMAN, editor of 'Genera Avium,' has issued a circular soliciting additional subscribers to this worthy work. Additional support is absolutely necessary on account of the greatly increased cost of publication. He may be addressed Quatre-Bras, Tervueren (Belgium) and circulars and sample plate will be sent upon application.

INDEXES TO ORNITHOLOGICAL LITERATURE — JOURNALS.— A large proportion of modern ornithological literature appears in the form of short articles and notes in journals or other periodical publications. These are usually indexed on completion of the volume in which they are published, but as the series increases consultation of the annual indexes becomes so burdensome that few readers take the time necessary to run through many years. Thus the contents are apt to become practically lost unless made available through the publication of good general indexes. The recent appearance of the 'Second Ten-Year Index to the Condor' and the plans now being made for another decennial 'Index of The Auk,' suggest the importance of more attention to this feature of ornithological publication and more careful consideration of what has already been accomplished in rendering accessible the ever-increasing mass of ornithological papers.

Among English serials the 'Proceedings of the Zoological Society of London,' one of the oldest scientific publications now in existence which publishes papers on birds, was begun in 1833 and has thus far published 7 general indexes for its 80 or more volumes — the first in 1847 and one every ten years from 1860 to 1910. 'The Ibis,' now in its 61st volume, began in 1859 and has appeared in series of six volumes each. It has the distinction of being one of the most frequently indexed scientific journals, with at least four sets of indexes — an annual one at the end of each volume, a six-year subject index at the close of each series, a general index of genera and species at the end of each third series, and a general subject-index for the first 36 volumes. Of the general indexes three have been published for series 1-3, 4-6, and 7-9, covering the years 1859-1912; but only one general subject-index has thus far appeared and this includes the first six series from 1859 to 1894. For later years it is necessary to consult the indexes at the end of each series. In addition a list of the

'Coloured Plates of Birds' from 1859 to 1917 has appeared in the volume for 1918, pp. 10-51. 'Stray Feathers' has had a general index provided for its eleven volumes, 1873-1888, and 'Novitates Zoologicae' in a recent number (vol. XXI, p. 457) has a list of the new species described in the first 20 volumes.

Of the German serials at least three are provided with general indexes. The earliest is 'Naumannia,' which has an index to six of its eight volumes for the years 1850-1856. The 'Journal für Ornithologie,' founded in 1853, has issued three general indexes — one for the 15 years 1853-1867, a second for the 26 years 1868-1893, and the third for the 20 years 1894-1913 — thus including 61 of its 67 volumes. The second index, containing 296 pages, appeared in the first quarter of 1894, less than three months after the completion of the last volume indexed, and established a record for prompt publication that is not likely to be surpassed. The third periodical, the 'Ornithologische Monatschrift,' established in 1876, has at least two general indexes issued at 12-year intervals for the years 1876-1887 and 1888-1899.

Of the American journals, several have thus far been provided with general indexes. 'The Auk' has two, one covering the 25 years, 1876-1900, and including the eight volumes of the 'Bulletin of the Nuttall Ornithological Club' in addition to the first seventeen of 'The Auk'; and the second, a decennial index for the years 1901-1910. Another decennial index for the volumes from 1911 to 1920 should be prepared in the near future. 'Bird Lore,' now in its 21st volume, has a general index to the first 15 volumes, and 'The Condor,' also in its 21st volume, has issued two decennial indexes for the volumes down to the close of 1918. In this connection mention should perhaps be made of Howe's 'Faunal Index to the Ornithologist and Oologist,' volumes I-XVIII, which appeared in 'Contributions to North American Ornithology,' vol. I, 1901-1904. This is incomplete, but includes the states from Alabama to New Mexico.

No general indexes have been provided for 'British Birds,' 'The Emu,' the 'Ornithologische Monatsberichte,' 'Cassinia,' the 'Wilson Bulletin,' and certain other ornithological journals, and consequently readers must consult each volume to ascertain the contents. In the case of the eleven journals above mentioned it is possible by consulting about 25 general indexes to gain ready access to notes and observations scattered in more than 300 volumes containing many thousands of pages.— T. S. P.

WHERE AMERICAN ORNITHOLOGISTS REST. — Mt. Vernon, Va., and Sleepy Hollow Cemetery in Concord, Mass., have become famous as the last resting places of some of America's leading men. George Washington's tomb at Mt. Vernon is the mecca of many a traveler from abroad who visits the National Capital, and the graves of Emerson, Hawthorne, Thoreau, and others in Sleepy Hollow are frequently visited and widely known. Botanists often place on record references to the spots which mark the graves of their departed men of genius, but ornithologists apparently have given less attention to such details. Few persons can tell the location of

the last resting places of many of our leading ornithologists and fewer still have visited the spots associated so closely with the history of American ornithology: Arlington National Cemetery, containing the stones of Bendire and Coues; Oak Hill in Georgetown, the resting place of Baird, Gill, Jouy, and Kidder; the Old Swedes' Churchyard in Philadelphia, with its graves of Alexander Wilson and George Ord; Trinity Church Cemetery in New York near the old Audubon home, where John James Audubon, his wife, and two sons, and George N. Lawrence are buried; and Mount Auburn Cemetery in Cambridge, the burial place of Thomas M. Brewer, William Brewster, Henry Bryant, Samuel Cabot, Jr., James C. Merrill, and Henry A. Purdie — these and several others that might be mentioned are all spots of special ornithological interest.

To facilitate the location of these places by those who may be interested, a list has been prepared, containing such data as are now available regarding the graves of 35 of America's leading students of birds. More than half of these ornithologists were former members of the A. O. U. Their graves are located as definitely as possible and, with the data here given, may be readily found. All except four or five are marked with stone monuments:

JOHN JAMES AUDUBON, 1785-1851.

New York City — Trinity Church Cemetery, 155th St. and Broadway (immediately in rear of the church).

JOHN BACHMAN, 1790-1874.

Charleston, S. C. — St. John's Lutheran Church, cor. Charles and Clifford Streets (in front of the altar).

SPENCER FULLERTON BAIRD, 1823-1887.

Washington, D. C. — Oak Hill Cemetery, Georgetown, Baird-Churchill vault, facing Rock Creek.

FOSTER ELLENBOROUGH LASCELLES BEAL, 1840-1916.

Beltsville, Prince George Co., Md., about 10 miles northeast of Washington, D. C. — St. John's P. E. Churchyard.

CHARLES EMIL BENDIRE, 1836-1897.

Washington, D. C. — Arlington National Cemetery, Va. (north of main road between Ft. Myer entrance and Arlington Mansion, and 100 yards east of the gate).

GEORGE AUGUSTUS BOARDMAN, 1818-1901.

St. Stephen, N. B. — Rural Cemetery.

FRANK BOLLES, 1856-1894.

Cambridge, Mass. — Forest Hills Cemetery, Lot 2368, Thistle Path (unmarked).

THOMAS MAYO BREWER, 1814-1880.

Cambridge, Mass. — Mt. Auburn Cemetery, Lot 792, Yarrow Path.

WILLIAM BREWSTER, 1851-1919.

Cambridge, Mass. — Mt. Auburn Cemetery, Lot 1099, Larch Avenue.

- THOMAS BRIDGES, 1807-1865 (First resident California ornithologist).
San Francisco, Calif.—Laurel Hill Cemetery, Lone Mountain, South Ridge, Tier 58, Lot 24 (unmarked 1917).
- HENRY BRYANT, 1820-1867.
Cambridge, Mass.—Mt. Auburn Cemetery, Lot 391, Alder Path.
- SAMUEL CABOT, JR., 1815-1885.
Cambridge, Mass.—Mt. Auburn Cemetery, Lot 526, Rose Path.
- JOHN CASSIN, 1813-1869.
Philadelphia, Pa.—North Laurel Hill Cemetery, Ridge Ave., near Schuylkill River, Lot 97, Sec. J.
- WELLS WOODBRIDGE COOKE, 1858-1916.
Ripon, Wis.
- JAMES GRAHAM COOPER, 1830-1902.
Oakland, Calif.—Mountain View Cemetery, Plot 31, Lot 15.
- ELLIOTT COUES, 1842-1899.
Washington, D. C.—Arlington National Cemetery, Va. (north of main road between Ft. Myer entrance and Arlington Mansion).
- DANIEL GIRAUD ELLIOT, 1835-1915.
New York City — Woodlawn Cemetery.
- WILLIAM GAMBEL, 1819?-1849.
Rose's Bar, Feather River, Calif.—(grave obliterated.)
- THEODORE NICHOLAS GILL, 1837-1914.
Washington, D. C.—Oak Hill Cemetery, Georgetown, Lot in eastern part of Cemetery near Rock Creek.
- JACOB POST GIRAUD, JR., 1811-1870.
New York City — Marble Cemetery, Second St. (Giraud vault, No. 167).
- PIERRE LOUIS JOUY, 1856-1894.
Washington, D. C.—Oak Hill Cemetery, Georgetown, South Border, Lot 1, Site 62 (unmarked).
- JEROME HENRY KIDDER, 1842-1889.
Washington, D. C.—Oak Hill Cemetery, Georgetown.
- LUDWIG KUMLIEN, 1853-1902.
Milton, Wis.
- GEORGE NEWBOLD LAWRENCE, 1806-1895.
New York City — Trinity Church Cemetery, 155th St. and Broadway (Lawrence vault, west of Broadway).
- GEORGE ARCHIBALD McCALL, 1802-1868.
Philadelphia, Pa.—Christ's Church.
- EDGAR ALEXANDER MEARNs, 1856-1916.
Washington, D. C.—Washington Biologists' Field Club, Plummer Island, Potomac River (about 9 miles above Washington).
- JAMES CUSHING MERRILL, 1853-1902.
Cambridge, Mass.—Mt. Auburn Cemetery, Lot 3487, Snowdrop Path.
- GEORGE ORD, 1781-1866.
Philadelphia Pa.—Old Swedes' (Gloria Dei) Churchyard.

DANIEL WEBSTER PRENTISS, 1843-1899.

Washington, D. C.—Glenwood Cemetery, Sec. 4, Lot 6.

HENRY AUGUSTUS PURDIE, 1840-1911.

Cambridge, Mass.—Mt. Auburn Cemetery, Lot 1484, Mimosa Path.

WILLIAM LE GRANGE RALPH, 1851-1907.

Utica, N. Y.—Forest Hill Cemetery.

THOMAS SAY, 1787-1834.

New Harmony, Ind.—Main St. (in rear of house in which he died).

JOHN KIRK TOWNSEND, 1809-1851.

Washington, D. C.—Congressional Cemetery, Range 34, Site 201.

BRADFORD TORREY, 1843-1912.

South Weymouth, Mass.

ALEXANDER WILSON, 1766-1813.

Philadelphia, Pa.—Old Swedes' (Gloria Dei) Churchyard.

T. S. PALMER.

COMPLETE SETS OF 'THE AUK.'—A recent survey made by the Secretary indicates that complete sets of 'The Auk,' including the two general indexes, are comparatively rare and are becoming more valuable year by year. While there is no complete list of such sets at present available it is probable that the total number does not exceed 150 and the total of those actually located falls considerably below this figure. Nearly half of those now known are in public libraries and nearly 25 per cent of those in private libraries are in Washington, D. C. As time goes on the number in public libraries will increase and the number of private sets will tend to decrease. During recent years several sets have been destroyed by fire, at least two having been burned in the San Francisco fire of 1906 and another in the fire in the library of Wellesley College a few years ago. Members will do well to look over their sets and secure any missing volumes while still obtainable. Owners of complete sets who have not already done so are requested to communicate with the Secretary in order that the record of such sets may be made as accurate as possible.—T. S. P.

MR. ROBERT CUSHMAN MURPHY, of the Brooklyn Museum, sailed on August 23 for Peru, where he will be engaged for several months in making investigations of the birds of the coastal islands. Moving pictures will be made of some of the great colonies of Pelicans, Cormorants, and other sea birds of that region.

LIEUT. ERNEST G. HOLT left in July for São Paulo, Brazil, where he expects to be located during the next three years. He will be engaged in private business but will devote his spare time to collecting and studying birds and mammals.

THE SMITHSONIAN AFRICAN EXPEDITION, which will cross the continent from south to north, following the Cape to Cairo route, reached Cape Town,

South Africa, about the middle of August. The expedition, which is under the direction of Edmund Heller, will devote special attention to making moving pictures. Mr. H. C. Raven, who returned recently from Celebes, will collect birds and mammals. After working in the vicinity of Cape Town, the party will proceed northward to the Falls of the Zambesi and Rhodesia.

ACCORDING to the July 'Ibis,' two Foreign Fellows of the Union are in Spain this summer. Dr. Ernest Hartert is collecting on the mainland and Mr. H. F. Witherby is working on the Balearic Islands.

MR. H. S. SWARTH and Mr. Joseph Dixon have been working this summer in southeastern Alaska in the interests of the Museum of Vertebrate Zoology. They left Berkeley in May, expecting to be absent about four months. Their route lies in the vicinity of Wrangel and extends up the Stikine River into the interior, in the vicinity of Telegraph Creek.

FROM the July 'Condor' we learn that A. B. Howell has been touring northern California and Oregon, visiting the type localities of certain birds and mammals; H. G. White and Richard M. Hunt are collecting in the Santa Lucia Mountains in southern Monterey County, Calif., for the Museum of Vertebrate Zoology; and Lawrence Huey has been in the field in the northern Sierra Nevada in the interests of Donald R. Dickey.

THE DENVER Museum has had a party in southern Louisiana this summer, obtaining material for several habitat groups from some of the bird colonies on the coast.

THE Fifth Oological Dinner in London was announced for September 10. This dinner, to which naturalists interested in Oology, whether members of the B. O. U. or not are invited, has become a regular annual meeting in September. Its objects are "to furnish opportunities of discussing Oology, exhibiting rare eggs and generally stimulating investigation in the branch of science." An exhibit of the eggs of Warblers was the feature of the meeting this year.

THE editor of 'The Auk' was engaged in field work in the Chiricahua Mountains, Arizona, from May 19 to August 1, at the hospitable camp established there by J. Eugene Law, Business Manager of 'The Condor.' His absence necessitated the printing of the July 'Auk' before he left Philadelphia, and will account for certain delays in publishing and acknowledging contributions.

MEMBERS intending to present papers at the next annual meeting, to be held in New York City, November 11-13, are requested to notify the Secretary before November 5 as to the titles of their communications and

the length of time required for their presentation. In order to allow time for discussion, which is one of the principal objects of the meeting, papers which are not illustrated should be limited to 30 minutes or less. A special invitation is extended to Associates to present papers and take part in the discussions. The meeting promises to be one of the best ever held. We cannot too strongly urge all members to be present, and this reminder is especially directed at those who have not previously attended these gatherings.

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ERRATA.

- Page 15, line 4, for *hudsonicus* read *hudsonius*.
 " 37, " 15 from bottom, for *hudsonicus* read *hudsonius*.
 " 71, " 12 from bottom, for *sayi* read *sayus*.
 " 138, " 20, for county read country.
 " 143, " 21, for K. read M.
 " 145, " 8 from bottom, for Lawler read Lawyer.
 " 153, " 11, for Oberholder read Oberholser.
 " 157, " 18 from bottom, for L. H. read S. H.
 " 162, " 9, for Lieut. read Lieut.-Col.
 " 163, " 4, for December 26 read December 25.
 " 286, " 16, for Megalaima read Megalæma.
 " 304, " 22 for *Peles* read *Veles*.
 " 308, " 9 from bottom, for Erkblaw read Ekblaw.
 " 309, " 16, for Simonds read Simons.
 " 310, " 2 from bottom for Woodchuck read Woodcock.
 " 312, " 16, for *Nothorchilus* read *Notorchilus*.
 " 323, " 10, for 85 read 83.

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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
34	1916, Nov. 13-16	5th Philadelphia	26	830*
35	1917, Nov. 12-15	8th Cambridge	21	891
36	1918, Nov. 11	12th New York	14	953

The next regular meeting — the 37th Stated — will be held at New York, Nov. 11-13, 1919.

* Decrease due largely to change from Spring to Fall leaving 18 months without an election.





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