Birds of Pennsylvania,

Provisional List,
Including Natives, Permanent Residents, Winter Residents, Spring and Fall Migrants, Occasional Visitants and "Stragglers" or Accidental Visitants.

Compiled by
B. H. Warren, M. D., State Ornithologist,
West Chester, Penna.

The numbers following the common names refer to Check-lists of Prof. S. F. Baird, (marked B) published in 1858; Dr. Elliott Coues, (marked C) published in 1873; Prof. Robt. Ridgway, (marked R) published in 1880; Dr. Elliott Coues (marked C) published in 1882, and that of the American Ornithologists' Union (marked U) published in 1886.

In addition to the different birds observed by myself, I have added a number of species which have been given in the writings (published and unpublished) of different observers. This list has been prepared for gratuitous distribution among ornithologists and oologists who are respectfully requested to make such additions and corrections as their field experience will warrant.

The following suggestions are offered to those who will kindly aid in the preparation of an accurate list of the Birds of Pennsylvania.

1. Mark with an * before the common names, the birds which breed regularly in your locality.
2. Place the letter R after the common names of birds found in your locality during all months of the year.
3. Indicate the birds which occur in your locality as spring and fall migrants, by the letter M.
4. Birds which are found in your locality only during the winter season mark with the letter W.
5. Place the letter Z after the common names of birds which occur in your locality as occasional visitants, and state if possible what month and year the species was last seen.
6. Birds which you regard as "stragglers" or accidental visitants, mark with the letter S.

Do you know of any Wild Pigeon (Ectopistes migratorius) roosts or breeding places in this State; if so where are they? Also state last authentic record of a Wild Pigeon roost or breeding place in Pennsylvania which is known to you.

Do you know of any birds not mentioned in the following list which are found in Pennsylvania? If so please name them and state by whom, where and when specimens were taken.

Do you know of any birds named in this list which are erroneously included in our fauna?
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<td>Puffin</td>
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<td>Black Guillemot</td>
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FALCO COLUMBARIUS (Linn.).
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American Hawk Owl. [B 62, C 326, R 407, C 479, U 377a.]
CONURUS CAROLINENSIS (Linn.)
Carolina Parroquet. [B 63, C 315, R 392, C 460, U 382.]
CROTOPYGA ANI (Linn.)
ANI. [B 66, 67, C 288, R 389, C 425, U 383.]
COCCYZUS AMERICANUS (Linn.)
Yellow-billed Cuckoo. [B 69, C 326, R 407, C 479, U 388.]
COCCYZUS ERYTHROPHALTUS (Wils.)
Black-billed Cuckoo. [B 70, C 328, R 388, C 428, U 388.]
CEVIRE ALCYON (Linn.)
Belted Kingfisher. [B 117, C 286, R 382, C 423, U 390.]
DRYOBATES VILLOSUS (Linn.)
Hairy Woodpecker. [B 74, C 291, R 397, C 429, U 393.]
DARYOBATES VILLOSUS LEUCOMELAS (Bodd.)
Northern Hairy Woodpecker. [B 74, C 297, R 398, C 430, U 407.]
DUSIBATES PUBESCENS (Linn.)
Downy Woodpecker. [B 76, C 299, R 361, C 440, U 394.]
DABOBATES BOREALIS (Vieill.)
Red-cockaded Woodpecker. [B 80, C 296, R 362, C 433, U 395.]
PICOIDES ARCTICUS (Swains.)
Arctic Three-toed Woodpecker. [B 82, C 300, R 387, C 443, U 400.]
PICOIDES AMERICANUS (Breinh.)
American Three-toed Woodpecker. [B 83, C 301, R 368, C 444, U 401.]
SPIYRAPICUS VARIUS (Linn.)
Yellow-bellied Sapsucker. [B 85, C 302, R 369, C 446, U 402.]
CEOPHILUS PILEATUS (Linn.)
Pileated Woodpecker. [B 90, C 294, R 371, C 432, U 405.]
MELANERPES ERYTHROCEPHALUS (Linn.)
MELANERPES CAROLINUS (Linn.)
COLAPTES AURATUS (Linn.)
Flicker. [B 97, C 312, R 378, C 457, U 412.]
COLAPTES CAFER (Gmel.)
Red-shafted Flicker. [B 98, C 314, R 3786, C 459, U 413.]
ANTROSTOMUS VOCIFERUS (Wils.)
Whip-poor-will. [B 112, C 265, R 354, C 397, U 417.]
CHORDEILES VIRGINIANUS (Gmel.)
Nighthawk. [B 114, C 267, R 357, C 399, U 420.]
CLILUTURUS PELOGICA (Linn.)
Chimney Swift. [B 109, C 271, R 351, C 405, U 423.]
TROCHILUS COLEBRIS (Linn.)
Ruby-throated Hummingbird. [B 101, C 275, R 335, C 409, U 428.]
TYRANNUS TYRANNUS (Linn.)
Kingbird. [B 124, C 242, R 304, C 368, U 444.]
MYIARCHUS CRINITUS (Linn.)
Crested Flycatcher. [B 130, C 247, R 312, C 373, U 452.]
SAYORNIS PHUEBE (Lath.)
Phoebe. [B 135, C 252, R 315, C 379, U 456.]

EMPIDONAX FLAVIVENTRIS (Baird.)
Yellow-bellied Flycatcher. [B 144, C 259, R 322, C 388, U 463.]

EMPIDONAX ACADICUS (Gmel.)
Acadian Flycatcher. [B 143, C 256, R 324, C 384, U 465.]

EMPIDONAX PUSILLUS TRAILLII (Aud.)
Traill’s Flycatcher. [B 140, C 257, R 325a, C 385, U 466a.]

EMPIDONAX MINIMUS (Baird.)
Least Flycatcher [B 142, C 258, R 326, C 387, U 467.]

ALAUDA ARVENSIS (Linn.)
Skylark. [B—, C 55 bis, R 299, C 88, U 473.]

OTOCORIS ALPESTRIS (Linn.)
Horned Lark. [B 302, C 53, R 300, C 82, U 474.

OTOCORIS ALPESTRIS PRATICOLA (Hensh.)
Prairie Horned Lark. [B—, C—, R—, C—, U 474b.]

CYANOCITTA CRISTATA (Linn.)
Blue Jay. [B 434, C 234, R 289, C 349, U 471.]

PERISOREUS CANADENSIS (Linn.)
Canada Jay. [B 442, C 239, R 297, C 359, U 484.]

CORVUS CORAX SINUATUS (Wagl.)
American Raven. [B 423, 424, C 226, R 280, C 338, U 486.]

CORVUS AMERICANUS (Aud.)
American Crow. [B 426, C 228, R 282, C 340, U 488.]

CORVUS OSSIFRAGUS (Wils.)
Fish Crow. [B 429, C 229, R 283, C 343, U 490.]

DOLICHONYX ORYZIVORUS (Linn.)
Bobolink. [B 399, C 210, R 257, C 312, U 494.]

MOLOTHrus ALTER (Bodd.)
Cowbird. [B 400, C 211, R 258, C 313, U 495.

XANTHOCEPHALUS XANTHOCEPHALUS (Bonap.)
Yellow-headed Blackbird. [B 404, C 213, R 260, C 319, U 497.]

AGELAIUS PHENICEUS (Linn.)
Red-winged Blackbird. [B 401 part, C 212 part, R 261 part, C 316 part, U 498.]

STURNELLA MAGNA (Linn.)
Meadowlark. [B 406, C 214, R 263, C 320, U 501.]

ICTerus SPURIUS (Linn.)
Orchard Oriole. [B 414, C 215, R 270, C 324, U 506.]

ICTerus GALBULA (Linn.)
Baltimore Oriole. [B 415, C 216, R 271, C 326, U 507.]

SCOLECOPHAGUS CAROLINUS (Mull.)
Rusty Blackbird. [B 417, C 221, R 273, C 331, U 509.]

QUISCALUS QUISCULA (Linn.)
Purple Grackle. [B 421, C 225, R 278, C 335, U 511.]

QUISCALUS QUISCULA AENEUS (Ridg.)
Bronzed Grackle. [B—, C 225a, R 278b, C 337, U 511b.]

PINICOLA ENUCLEATOR (Linn.)
Pine Grosbeak. [B 304, C 137, R 166, C 190, U 515.]

CARPODACUS PURPUREUS (Gmel.)
Purple Finch. [B 305, C 139, R 168, C 194, U 517.]

LOXIA CURVIROSTRA MINOR (Brehm.)
American Crossbill. [B 318, C 143, R 172, C 199, U 521.]

LOXIA LEUCOPTERA (Gmel.)
White-winged Crossbill. [B 319, C 142, R 173, C 198, U 522.]

ACANTHUS LINARIA (Linn.)
Redpoll. [B 320, C 146, 146a, R 179, C 207, U 528.]

ACANTHUS LINARIA ROSTRATA (Cones.)
Greater Redpoll. [B—, C—, R 179a part, C 208 part, U 528b.]
SPINUS TRISTIS (Linn.)
American Goldfinch. [B 313, C 149, R 181 C 213, U 529.]

SPINUS PINUS (Wils.)
Slate-colored Junco. [B 317, C 148, R 185, C 212, U 533.]

PLECTROPHENAX NIVALIS (Linn.)
Snowflake. [B 325 part, C 152 part, R 186 part, C 219 part U 554.]

CALTARIUS LAPPONICUS (Linn.)
Lapland Longspur. [B 326, C 153, R 187, C 220, U 536.]

POOCATI GRAMINEUS (Gmel.)
Vesper Sparrow. [B 337 part, C 161, R 197, C 232, U 540.]

AMMODRAMUS PRINCES (Mayn.)
Ipswich Sparrow. [B—, C 158, R 192, C 225, U 541.]

AMMODRAMUS SANDWICIIENSIS SAVANNA (Wils.)
Savanna Sparrow. [B 332, C 159, R 1930, C 227, U 542a.]

AMMODRAMUS SAVANNARUM PASSERINUS (Wils.)
Grasshopper Sparrow. [B 338, C 162, R 198, C 234, U 546.]

AMMODRAMUS HENSSLowy (Aud.)
Henslow's Sparrow. [B 339, C 163, R 199, C 236, U 547.]

CHIONIDESTES GRAMMATUS (Say.)
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ZONOTRICHIA LITUICOLY (Forst.)
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ZONOTRICHIA ALBICOLLIS (Gmel.)
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SPIZELLA MONTICOLA (Gmel.)
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SPIZELLA SOCIALIS (Wils.)
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SPIZELLA PUSILLLA (Wils.)
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JUNCO HYEMALIS (Linn.)

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English or European House Sparrow. [B—, C—, R—, C—, U—.]

MELOSPIZA FASCIATA (Gmel.)
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MELOSPIZA LINCOLN (Aud.)
Lincoln's Sparrow. [B 368, C 167, R 234, C 242, U 583.]

MELOSPIZA GEORGIANA (Lath.)
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PASERILLA ILACA (Merr.)
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PIPILIO ERYTHROPIHIALMUS (Linn.)
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CARDINALIS CARDINALIS (Linn.)
Cardinal. [B 390, C 203, R 242, C 299, U 593.]

HABIA LUDOVICIANA (Linn.)
Rose-breasted Grosbeak. [B 380, C 193, R 244, C 289, U 595.]

GUIRACA CERULEA (Linn.)
Blue Grosbeak. [B 382 part, C 195 part, R 246 part, C 291 part, U 597.]

PASSERINA CYANEA [Linn.]
Indigo Bunting. [B 387, C 199, R 248, C 295, U 598.]

SPIZA AMERICANA (Gmel.)
Dickcissel. [B 378, C 191, R 251, C 287, U 604.]

SPIZA TOWNSENDI.
Townsend's Bunting. [B 379, C 192, R 255, C 288, U 19, Hypothetical List.]
PIRANGA ERYTROMELAS (Vieill.)
Scarlet Tanager. [B 220, C 107, R 161, C 154, U 608.]

PIRANGA RUBRA (Linn.)
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PROGNE SUBIS (Linn.)
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PETROHIDON LUNICONS (Say.)
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CHELIDON ERYTHROGASTER (Bodl.)
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TACHYCINTH BICOLOR (Vieill.)
Tree Swallow. [B 227, C 112, R 155, C 160, U 614.]

CLIVICOLA RIPARIA (Linn.)
Bank Swallow. [B 229, C 115, R 157, C 163, U 616.]

STELVIDOPTERYX SERRIPENNIS (Aud.)
Rough-winged Swallow. [B 230, C 116, R 158, C 164, U 617.]

AMPELIS GARRULUS (Linn.)
Bohemian Waxwing. [B 232, C 118, R 150, C 166, U 618.]

AMPELIS CEDRORUM (Vieill.)
Cedar Waxwing. [B 233, C 119, R 151, C 167, U 619.]

LANIUS BOREALIS (Vieill.)
Northern Shrike. [B 236, C 134, R 148, C 186, U 261.]

LANIUS LUDOVICIANUS (Linn.)
Loggerhead Shrike. [B 237, C 135, R 149, C 187, U 622.]

LANIUS LUDOVICIANUS EXCUBITORIDES (Swains.)
White-rumped Shrike. [B 238 part, C 135 a part, R 149 a part, C 188 part, U 622 a.]

VIREO OLIVACEUS (Linn.)
Red-eyed Vireo. [B 240, C 122, R 135, C 170, U 624.]

VIREO PHILAELPHICUS (Cass.)
Philadelphia Vireo. [B 244, C 124, R 138, C 173, U 626.]

VIREO GILVUS (Vieill.)
Warbling Vireo. [B 245, C 125, 125 a, R 139, 139 a, C 174, 175 U 627.]

VIREO FLAVIFRONS (Vieill.)
Yellow-throated Vireo. [B 252, C 126, R 140, C 176, U 628.]

VIREO SOLITARIUS (Wils.)
Blue-headed Vireo. [B 250 part, C 127 part, R 141 part, C 177 part, U 629.]

VIREO NOVEBORACENSIS (Gmel.)
White-eyed Vireo. [B 248, C 129, R 143, C 181, U 631.]

MNIOITILTA VARIA (Linn.)
Black and White Warbler. [B 167, C 57, R 74, 74 a, C 91, 92, U 636.]

PROTONOTARIA CITREA (Bodd.)
Prothonotary Warbler. [B 169, C 59, R 75, C 95, U 637.]

HELMITHERUS VERMICULUS (Gmel.)
Worm-eating Warbler. [B 178, C 60, R 77, C 96, U 639.]

HELMINTHOPHILA PINUS (Linn.)
Blue-winged Warbler. [B 180, C 62, R 79, C 98, U 641.]

HELMINTHOPHILA CHRYSOPTERA (Linn.)
Golden-winged Warbler. [B 181, C 63, R 81, C 102, U 642.]

HELMINTHOPHILA RUFICAPILLA (Wils.)
Nashville Warbler. [B 183 part, C 67 part, R 85 part, C 106 part, U 645.]

HELMINTHOPHILA CELATA (Say.)
Orange-crowned Warbler. (184 part, C 68, R 86, C 107, U 646.)

HELMINTHOPHILA PEREGRINA (Wils.)
Tennessee Warbler. (B 185, C 69, R 87, C 109, U 647.)

COMPSOTHYPS AMERICANA (Linn.)
Parula Warbler. (B 168, C 58, R 88, C 93, U 648.)

DENDROICA TIGRINA (Gmel.)
Cape May Warbler. (B 206, C 85, R 90, C 126, U 650.)
DENDROICA FESTIVA (Gmel.)  
Yellow Warbler.  (B 203 part, C 70 part, R 93 part, C 111 part, U 652.)

DENDROICA CÆRULESCENS (Gmel.)  
Black-throated Blue Warbler.  (B 193, C 76, R 94, C 117, U 654.)

DENDROICA CORONATA (Linn.)  
Myrtle Warbler.  (B 194, C 78, R 95, C 119, U 655.)

DENDROICA MACULOSA (Gmel.)  
Magnolia Warbler.  (B 204, C 84, R 97, C 125, U 657.)

DENDROICA CÆRULEA (Wils.)  
Cerulean Warbler.  (B 201, C 77, R 68, C 118, U 658.)

DENDROICA PENNSYLVANICA (Linn.)  
Chestnut-sided Warbler.  (B 200, C 83, R 99, C 124, U 659.)

DENDROICA CASTANEA (Wils.)  
Bay-breasted Warbler.  (B 197, C 82, R 100, C 123, U 660.)

DENDROICA STRIATA (Forst.)  
Black-poll Warbler.  (B 202, C 81, R 101, C 122, U 661.)

DENDROICA BLACKBURNI (Gmel.)  
Blackburnian Warbler.  (B 196, C 80, R 102, C 121, U 662.)

DENDROICA DOMIMICA (Linn.)  
Yellow-throated Warbler.  [B 209 part, C 88, R 103, C 129, U 663.]

DENDROICA VIRENS (Gmel.)  
Black-throated Green Warbler.  [B 189, C 71, R 107, C 112 U 667]

DENDROICA TOWNSENDI (Nutt.)  
Townsend's Warbler.  (B 191, C 73, R 108, C 114, U 668.)

DENDROICA KIRTLANDI (Baird.)  
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DENDROICA VIGORSI (Aud.)  
Pine Warbler.  (B 198, C 91, R 111, C 134, U 671.)

DENDROICA PALMARUM (Gmel.)  
Palm Warbler.  (B 208 part, C 90 part, R 113, C 132, U 672.)

DENDROICA PALMARUM HYPOCHRYSEA (Ridg.)  
Yellow Palm Warbler.  (B 208 part, C 90 part, R 113, C 133, U 672a.

DENDROICA DISCOLOR (Vieill.)  
Prairie Warbler.  (B 210, C 86, R 114, C 127, U 673.)

SEIURUS AUROCAPPILUS (Linn.)  
Oven-bird.  (B 186, C 92, R 115, C 135, U 674.)

SEIURUS NOVEBORACENSIS (Gmel.)  
Water-Thrush.  (B 187 part, C 93 part, R 116, C 136, U 675.)

SEIURUS MOTACILLA (Vieill.)  
Louisiana Water-Thrush.  (B 188, C 94, R 117, C 138, U 676.)

GEOTHLYPSIS FORMOSA (Wils.)  
Kentucky Warbler.  (B 175, C 96, R 119, C 140, U 667.)

GEOTHLYPSIS AGILIS (Wils.)  
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GEOTHLYPSIS PHILADELPHIA (Wils.)  
Mourning Warbler.  (B 172, C 98, R 120, C 142, U 679.)

GEOTHLYPSIS TRICHAS (Linn.)  
Maryland Yellow-throat.  (B 170 part, C 97 part, R 122 part, C 141 part, U 681.)

ICTERIA VIRENS (Linn.)  
Yellow-breasted Chat.  (B 176, C 103, R 123, C 144, U 683.)

SYLVANIA MITRATA (Gmel.)  
Hooded Warbler.  (B 211, C 101 R 124, C 146, U 684.)

SYLVANIA PUSILLA (Wils.)  
Wilson's Warbler.  (B 213 part, C 102, R 125, C 147, U 685.)

SYLVANIA CANADENSIS (Linn.)  
Canadian Warbler.  (B 214, C 103, R 127, C 149, U 686.)

SETOPIAGA RUTICILLA (Linn.)  
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ANTHUS PENNSYLVANICUS (Lath.)  
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MIMUS POLYGLOTTOS (Linn.).
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GALEOSCOPTES CAROLINENSIS (Linn.)
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HARPORHYNCHUS RUFUS (Linn.)
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THRYOTHORUS LUDOVICI ANUS (Lath.)
Carolina Wren. (B 265, C 47, R 60, C 68, U 718.)

THRYOTHORUS BEWICKII (Aud.)
Bewick's Wren. (B 267, C 48, R 61, C 71, U 719.)

TROGLODYTES AEDON Vieill.
House Wren. (B 270, 272, C 49, R 63, C 74, U 721.)

TROGLODYTES HIEMALIS Vieill.
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CISTOTHORUS STELLARIIS (Licht.)
Short-billed Marsh Wren. (B 269, C 52, R 68, C 81, U 724.)

CISTOTHORUS PALUSTRIS (Wills.)
Long-billed Marsh Wren. (B 268, C 51, R 67, C 79, 80, U 725.)

CERTHIA FAMILIARIS AMERICANA (Bonap.)
Brown Creeper. (B 275 part, C 42 part, R 55 part, C 62 part, U 726.)

SITTA CAROLINENSIS Lath.
White-breasted Nuthatch. (B 277, C 38, R 51, C 57, U 727.)

SITTA CANADENSIS Linn.
Red-breasted Nuthatch. (B 279, C 39, R 52, C 59, U 728.)

SITTA FUSILLA Lath.
Brown-headed Nuthatch. (B 280, C 40, R 53, C 60, U 729.)

PARUS BICOLOR (Linn.)
Tufted Titmouse. (B 285, C 27, R 36, C 40, U 731.)

PARUS TRICAPILLUS (Linn.)
Chickadee. (B 290, C 31, R. 41, C 44, U 735.)

PARUS CAROLINENSIS Aud.
Carolina Chickadee. (B 293, C 31b, R 42, C 47, U 736.)

REGULUS SATRAPA Licht.
Golden-crowned Kinglet. (B 162, part, C 22 part, R 33, C 34, U 748.)

REGULUS CALENDULA (Linn.)
Ruby-crowned Kinglet. (B 161, C 21, R 30, C 33, U 749.)

REGULUS CUVIERI (Aud.)
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POLIOPTILA CAERULEA (Linn.)
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TURDUS MUSTELINUS Gmel.
Wood Thrush. (B 148, C 3, R 1, C 6, U 755.)

TURDUS FUSCESCENS Steph.
Wilson's Thrush. (B 151, C 6, R 2, C 7, U 756.)

TURDUS ALICE Baird.
Gray-cheeked Thrush. (B 154, C 5a, R 3, C 12, U 757.)

TURDUS ALICE BICKNELLI (Ridg.)
Bicknell's Thrush. (B 154 part, C 5a part, R 3 part, C 12 part U 757 a.)

TURDUS USTULATUS SWAINSONII (Cab.)
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TURDUS AONALASCHKIÉ PALIASII (Cab.)
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MERULA MIGRATORIA (Linn.)
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SIALIA SIALIS (Linn.)
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REPORT

ON THE

BIRDS OF PENNSYLVANIA.

WITH SPECIAL REFERENCE TO THE FOOD-HABITS, BASED
ON OVER THREE THOUSAND STOMACH
EXAMINATIONS.

BY

B. H. WARREN, M. D.,
ORNITHOLOGIST OF THE STATE BOARD OF AGRICULTURE; ASSOCIATE MEMBER OF THE AMERICAN
ORNITHOLOGIST'S UNION; SECRETARY OF THE CHESTER COUNTY (PA.)
ACADEMY OF ARTS AND SCIENCES, ETC.

ILLUSTRATED WITH FIFTY PLATES.

HARRISBURG:
EDWIN K. MEYERS, STATE PRINTER.
1888.
Office of the Ornithologist of the
State Board of Agriculture,
West Chester, Pa., November 1, 1888.

To the Honorable Senate and House of Representatives of the General Assembly of Pennsylvania:

Gentlemen: I have the honor to transmit herewith the Report on the Birds of Pennsylvania, authorized by the act of May 12, 1887.

B. H. Warren,
State Ornithologist.
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INTRODUCTION.

In this present work I have given the Classification, Nomenclature and Habitat (Geographical limits) found in the A. O. U. Check List of North American Birds*, a publication representing the joint labors of a "Committee on Classification and Nomenclature" appointed by the Union at its first Congress, held in New York city, September 26–29, 1883. This Committee consisting of such eminent naturalists as Dr. Elliott Coues, J. A. Allen, Robert Ridgway, William Brewster, and H. W. Henshaw, assisted by Dr. Leonhard Stejneger, was most competent to recommend the many changes, etc., which were adopted and published by the American Ornithologists' Union.

The numbers (other than in the Appendix) preceding the scientific names correspond strictly with those of the A. O. U. Check List.

The descriptions (specific characters) have in some instances been taken from "Birds of North America," by my late lamented friend, Prof. S. F. Baird; others have been compiled, in part, from the works of Dr. Elliott Coues† and Robert Ridgway‡, which are recognized as the standard text books on North American Ornithology. Such descriptions as have been taken in their entirety or in part from other writers, have been used, as they are far better than those which I could give from the limited number of specimens in my possession.

†Key | to | North American Birds, | containing a concise account of every living and fossil bird at present known from the continent north of the Mexican and United States boundary, inclusive of Greenland and lower California, | with which are incorporated | General Ornithology. | An outline of the structure and classification of birds | and | Field Ornithology | a manual of collecting, preparing, and preserving birds | The third edition | exhibiting the new nomenclature of the American Ornithologists' Union, and including descriptions of additional species, etc. | By Elliott Coues, A. M., M. D., Ph. D., etc. | Profusely illustrated | (pp. i-x, i-xxx, 1-885) | Boston (Mass.) | Estes and Lauriat. | 1887. | [Price $7.50. | 
In order that the descriptions of birds on the succeeding pages may be clearly understood, the figures on Plate 1, with the following explanations are given:

1. Maxilla or upper mandible.
2. Lower mandible.
3. Forehead; also called front and frons.
4. Iris (Plural irides): Colored circle of the eye around the "dark spot" or pupil.
5. Upper part of throat including chin.
6. Lower part of throat or foreneck: Jugulum.
7. Breast or pectus, also spoken of as pectoral region.
8. Wing-coverts (Greater, Middle and Lesser).
9. Bastard or spurious wing or Alula composed of the feathers growing on the so-called thumb.
10. Occiput; back part of head.
11. Tertiaries, Tertials, or tertiary quills are the large inner quills that grow from the humerus (arm-bone) or elbow, and in the closed wing are generally concealed by the longer scapular feathers.
12. Scapulars or scapular feathers.
13. Abdomen or belly; under surface of body from breast-bone to vent.
14. Lower tail coverts; crissum.
15. Crown or top of head.

A. Culmen. The ridge of upper mandible.
B. Cere. The naked skin at base of bill, well shown in Hawks.
C. Lore or loral space between the bill and eye.
D. Gape or rictus.
S. Commissure; outlines of closed bill.

The additional technical terms—the definitions of some of which are compiled from "Ridgway's Nomenclature of Colors"—are also employed.

Ear-coverts or Auriculares. Feathers covering the ear-opening. Artilla. Arm-pit.
Alar extent. Measurement of outstretched wings. Axillaries or Artillas. The (generally) soft and lengthened feathers growing from the armpit: Adult. This term is applied to individuals which have attained full or mature plumage ("a bird may be adult as regards organization without being of adult plumage"): Bend of the Wing. Angle or prominence formed at the carpus.

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* A: Nomenclature of Colors | for naturalists | and | compendium of useful knowledge | for ornithologists, | by Robert Ridgway, | curator, Department of Birds, United States National Museum, | with ten colored plates and seven plates of outline illustrations. | Boston: | Little, Brown, and Company. | 1886. | Price $1.00,
or wrist joint, in the folded wing: Basal. Relating to the base, as basal portion of tail or quills, etc.: Chin. The space between the forks or rami of the lower mandible or jaw: Corpus. The wrist or space between the bend and hand-joint of the wing: Carpal. Pertaining to the corpus: Cervix. The hind-neck; from occiput to the beginning of back, including the nape and scruff: Cervical. Pertaining to the cervix: Cheek. "An arbitrary sub-division of the side of the head, differently employed by various writers, but usually corresponding to the forehead portion of the lower jaw": Compressed. Narrowed sideways; higher than wide: Crest. Lengthened feathers on top of the head: Decomposed. Separated or standing apart: Decumbent. Bending or hanging downward: Ear-tufts. Lengthened and erectile tufts of feathers springing from the sides of crown or forehead; well shown in certain owls, and the Horned Lark: Emarginated. Notched at the end; an "emarginate tail has the middle feather shortest, the rest successively a little longer; hence an emarginate tail is very slightly forked. An emarginate quill has the web suddenly narrowed by an abrupt cutting away of the edge: Erectile. Capable of being raised, as a crest: Falate. Sickle-shaped; scythe-shaped: Femoral. Pertaining to the thigh, or part of leg from knee to hip: Flabella. Most posterior feathers on sides of trunk: Form. "In a special sense, a sort of non-committal term frequently used by modern writers to designate what is of doubtful rank. The term 'form' is thus used for what may prove to be a species, or may be only a race, but as to the rank of which the author is in doubt:"

Fuscous. A dark brown color: Genus. "An assemblage of species which agree in the possession of certain characters distinguishing them from otherwise allied forms. (In taxonomic value a genus ranks next below a sub-family.)" Gorget. Throat-patch, distinguished by color or texture of the feathers; as the gorget of a Humming bird: Gousa. Keel or outline of bill from tip to point where the mandibular rami begin to diverge: Ground-color. The prevailing color of the general surface of the egg-shell: Guila. The throat: Gular. Pertaining to the throat or upper foreneck: Family. "A systematic group in scientific classification, embracing a greater or less number of genera which agree in certain characters not shared by other birds of the same order. In rank, a Family stands between Order and Genus, the former being composed of a greater or less number of nearly related families. In zoological nomenclature the name of a Family is taken from a typical Genus, the name of which is modified by the termination 'id.' Sub-families are distinguished by the termination 'ina.:" Hooded. A bird is said to be Hooded when the feathers of the head are markedly different in color from the rest of the plumage, as the Hooded Merganser and Warbler (Sylviria mitrata): Immature. This term is applied to a bird which has not attained the mature or adult plumage: Incubation. The act of sitting on eggs for the purpose of hatching young: Lancetolate. Shaped like a lancehead: Leg. Used generally as synonymous with tarsus often written "legs and feet" otherwise-tarsi and toes: Linear. Narrow with straight parallel edges or sides: Lower parts and Under parts. These terms refer to the whole under surface of a bird from the chin to the crissum: Malar Region. A well defined, and generally feathered space, extending from base of bill, to side of neck bound above by lores and auriculcs, and below by chin and throat: Nape or Nuchal. Upper part of hind-neck, next to the occiput: Nuchal. Pertaining to the Nucha: Oceliptal. Pertaining to the occiput: Orbil. The region around the eye: Order. "In natural history, a group of families possessing in common peculiar characteristics: Parasite. This term is applied to the Cow Blackbird (Mo1othrus ater) in this country, and also to the European Cuckoo (Cuculus canorus) which habitually make use of the nests birds to which are left the duties of incubation and rearing the young: Pyriform. Pear-shaped: Quadrate. Square: Ramus (plural rami) branch or fork of the lower mandible; the chin is bounded on the sides by the rami.Race. "A nascent species or a 'form' which on account of the existence of intermediate specimens cannot be considered a species, no matter how great a degree of differentiation may have been reached. Races are distinguished as 'Geographical' and 'Local' according as to whether they occupy extensive or limited areas of country. Geographic races are usually correlative with definite geographical areas, being in fact, the expression of geographical variation: ' Recurred. Bent or curved upward: Rufous. A brownish-red color: Scutellate. Having transverse scales on tarsus or toes: Semilatmate or Semilatmated. Half-webbed: having a membrane between the front toes, reaching about half-way to their ends: Shaft. The stem or middle part of a feather: Species. "The aggregate of individuals related by generic descent, and differing constantly in certain features whereby they are distinguished from all other beings: Speciun. A brightly colored area on the secondaries, particularly of ducks: Spurious. Bastard; imperfect; false; rudimentary: Spurious quill. Applied to the first primary when very short: Sub-orbital. Below the eye: Supra-orbital: Above the eye: Sub-order. "A group intermediate in taxonomic rank between an order and a family:" Supercilious. Refers to the region above the eye (eyebrow) as a streak of black, white, etc., over the eye: Totipalmate. Having all toes webbed: Variety. "Properly, an individual or unusual and irregular variation from the normal type of form or coloration, as the various breeds or 'strains' of domestic animals. But the term is often, though improperly applied to subspecies, or geographical races:"

To Mr. Benjamin M. Everhart, of West Chester, Pa., a gentleman
well known in scientific circles, as a botanist, I am greatly indebted for much valuable assistance in the preparation of this report.

In conclusion, it may be stated that the ornithologist has had no disposition to disregard the law limiting this report to a certain number of pages, but found it impracticable, in consequence of the fact that the avi-fauna of Pennsylvania embraces over three hundred species and sub-species, to give the required descriptions, etc., without exceeding the limit. While the report exceeds by a few pages the limit given in the act authorizing its publication, I would add that over two hundred and fifty pages of the manuscript originally intended for the publication, have been dropped with a view of keeping within the prescribed limit. Although obliged to eliminate much matter relating to the feathered tribes, I have endeavored to give a brief history of the birds which are most common and generally met with, and in the Appendix have given a list of all birds occurring (so far as can be ascertained from reliable sources) in the Keystone Commonwealth.

West Chester, Pa., Nov. 1, 1888.

B. H. Warren.
Horned Grebe.
1. Adult Male; 2. Female in Winter.
BIRDS OF PENNSYLVANIA.

ORDER PYGOPODES. DIVING BIRDS.

SUBORDER PODICIPEDES. GREBES.

FAMILY PODICIPIDÆ. GREBES.

GENUS COLYMBUS. LINNEUS.

3. Colymbus auritus (Linn.).

Horned Grebe.

Description. (Plate 2.)

Adult.—Upper part of the head, cheeks, throat, and ruff, glossy-black; a broad band running from the bill over the eyes, and the elongated occipital tufts behind them, yellowish-red, deepest in color adjoining the bill; upper surface brownish-black; the feathers margined with gray; primaries brownish-ash; secondaries mostly white, some of the outer ones dark-ash; the fore-neck and upper part of the breast bright chestnut-red, sides of the same color, intermixed with dusky; abdomen silky-white; bill bluish-black, yellow at the tip; loreal space bright-carmine; iris carmine, with an inner circle of white; tarsi and feet dusky-gray externally, dull-yellow internally, and on both edges of the tarsus.

Young.—The whole upper plumage grayish-black, darkest on the head, feathers of the back with gray margins; throat, sides of the head, a broad space on the sides of the neck, nearly meeting behind, breast, and abdomen, silvery-white; sides and lower part of abdomen dusky.

Length about 14 inches; wing, 5½; bill, 1; tarsi, 1½.

Habitat.—Northern Hemisphere. Breeds from Northern United States northward.

This species is recorded as quite a common winter resident throughout the United States, and although sometimes found nesting within our northern limits, it retires chiefly north of the United States during the breeding period. Audubon found nests in Ohio, near Lake Erie; Dr. Coues (Birds of the Northwest) mentions that he has found it breeding at various points in northern Dakota, and Mr. E. A. Samuels records it as nesting in more northern latitudes than New England. In Pennsylvania, the Horned Grebe is an irregular sojourner, from 1 Birds.
about the middle of October until early in April, and like other of the Grebes has a common habit, when apprehensive of danger, of sinking into the water and swimming off with nothing but its head above the surface. The stomach-contents of several of these birds which I have examined consisted mainly of sand, remains of fish and portions of green-colored aquatic plants. In the stomachs of two specimens I have found, in addition to other food-stuffs, small ball-like masses of feathers.

Genus **Podilymbus**. Lesson.

6. **Podilymbus podiceps** (Linn.).

**Pied-billed Grebe.**

**Description.**

*Adult.*—Upper plumage very dark brown; primaries dark-ash; secondaries ash on the outer webs, and white on the inner; bill pale-blue, dusky on the ridge of the upper mandible, both mandibles crossed with a broad black band, including the nostrils; chin and throat marked with a conspicuous black patch nearly two inches in extent; cheeks, and sides of the neck brownish-gray; lower part of the neck, upper part of the breast, and the sides, dull rusty-brown, spotted and rather indistinctly barred with brownish-black; lower part of breast and abdomen grayish-white, mottled with dusky spots; iris brown; tarsi and feet grayish-black.

*Young.*—The throat is white and the bill without the transverse black band, the under plumage more silvery-white; in other respects the same as the adult; some specimens, probably the birds of the year, have whitish lines on the sides of the head.

Length, 14 inches; wing, 5½; bill, ½; tarsus, 1½.

*Hab.*—British Provinces, southward to Brazil, Buenos Ayres and Chili, including the West Indies and the Bermudas, breeding nearly throughout its range.

The Pied-billed Grebe, although sometimes said to breed in Pennsylvania, is seldom found here during the breeding season. I have observed this bird only as a winter visitant, not uncommon, arriving usually about the middle of September and departing early in April. The food of this species is similar to that of the Horned Grebe.

**Note.**—In relation to the Grebes in general it may be stated that these paddle-toed birds unless flying are always to be seen in the water. They swim and dive with the utmost facility; when swimming beneath the water's surface it is said they use their wings in the same manner as when flying in the air. Their well-known habit of diving when alarmed, and particularly if shot at, has won for them the common name of "Hell-divers." The Grebes are found chiefly in this Commonwealth as winter visitants. During excessively cold weather they forsake our streams and ponds and migrate southward. Though not numerous, they are by no means rare about the larger streams and ponds. Although these birds generally occur singly, occasionally four or five individuals may be observed together.

Grebes feed chiefly on fish, aquatic insects, and, to a limited extent,
on various water plants. They confer no especial benefits, nor are they in any particular detrimental to agricultural interests. Their flesh is seldom eaten; the feathers, however, are considerably used by milliners, and for the manufacture of muffts, etc. For these purposes the beautiful silvery-white plumage of the breast and abdomen are mostly taken.

**Suborder CEPPHI. Loons, Etc.**

**Family URINATORIDÆ. Loons.**

**Genus URINATOR.** Cuvier.

7. *Urinator imber* (Gunn.).

**Loon: Great Northern Diver.**

**Description.**

Bill compressed, strong and tapering, outline or upper mandible nearly straight, very slightly curved; the lower mandible has a groove underneath, running from the junction of the crura towards the point; the tail consists of twenty feathers.

*Adult.*—The head and neck are dark bluish-green, the upper part and sides of the head glossed with purple; there is a small transverse mark on the throat, composed of white feathers of a quill-like form, distinct from each other, and placed longitudinally on each side of the neck; lower down are larger patches of white, of the same peculiar form, and running in the same direction; these almost meet behind, and in front are about one inch apart; the effect of these pure white feathers, relieved by the dark color of the neck, is very beautiful; the upper plumage and wing coverts are deep glossy-black, beautifully marked with pure-white spots placed in regular transverse rows, slightly curving downwards; these spots, on the upper part of the back, are small and nearly round, but, as they descend lower on the back, increase in size, and become quadrangular in form, being largest on the scapularies; on the lower part of the back, upper tail coverts, and sides (which are black), the spots are small and round; the sides of the neck, near the shoulder, are beautifully lineated with black and white; the primaries, secondaries, and tail, brownish-black; the under surface glossy-white, with a narrow band of dusky feathers crossing the lower part of the abdomen, and marked with small white spots; lower tail coverts blackish-brown, tipped with white; bill black; iris deep bright-red; tarsi and feet grayish-blue externally, tinged on the inside with pale-yellowish red; webs brownish-black; claws black.

*Young.*—The plumage above is grayish-black, the feathers of the back margined with grayish-white, the under plumage pure-white; bill yellowish, with the ridge of the upper mandible dusky; iris brown.

Length, 31 inches; wing, 14; tarsus, 3; bill, 3; height at base, 1 inch.

*Hab.*—Northern part of Northern Hemisphere. In North America breeds from the northern tier of States northward; ranges in winter south to the Gulf of Mexico.

This bird, the largest of all the Divers, is about as large as a medium-sized domestic goose. Loons are abundant on the Atlantic coast and about the lakes and large rivers in the interior; oftentimes solitary birds (mostly in immature plumage) are observed, during the winter season, frequenting our smaller streams and mill-ponds. The Loon,
ever cautious and vigilant, will dive at the flash of a gun and proceed under the water to a very considerable distance before reappearing. These birds, it is said, when endeavoring to elude their enemies, and also, at times, when in quest of food, swim under the water with greater rapidity than they fly through the air. "Far out at sea in winter, and in the great western lakes, particularly Huron and Michigan in summer, I have often heard, on a fine, calm morning, the sad and wolfish call of the solitary loon, which, like a dismal echo, seems slowly to invade the car. and rising as it proceeds, dies away in the air. This boding sound to mariners, supposed to be indicative of a storm, may be heard sometimes for two or three miles, when the bird itself is invisible, or reduced almost to a speck in the distance."—Nuttall.

The stomach-contents of five Loons, captured during the winter months in Chester and Delaware counties, Pa., consisted entirely of fish-bones and scales; two other specimens, purchased in the winter of 1881 from a game dealer in Philadelphia, were found to have fed on small seeds and portions of plants, apparently roots.

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**ORDER ANSERES LAMELLIROSTRAL SWIMMERS.**

**FAMILY ANATIDÆ. Ducks, Geese, Etc.**

**SUBFAMILY MERGINÆ. Mergansers.***

**GENUS MERGANSER. Brisson.**


**American Merganser; Goosander; Sheldrake; Fish Duck.**

**Description.**

Feathers of the forehead extending on the bill in an acute angle for half the distance between those on the sides and the nostril; outline of those on the sides nearly vertical, and reaching only a little beyond the beginning of lower edge of bill, but as far as those on the side of lower jaw; nostril large, far forward, its middle opposite the middle of the commissure.

*Male.*—Head without conspicuous crest; head and neck green; forepart of back black; beneath salmon-color; wings mostly white, crossed by one band of black; sides scarcely barred transversely; iris red or yellowish.

*Female.*—Head with a compressed occipital crest; head and neck chestnut, above ashy; beneath salmon-colored; white of greater coverts with a terminal bar of ashy (sometimes wanting); the black of base of secondaries entirely concealed; outer tertials ash.

*The Mergansers or Fishing Ducks are probably the most common of all "Wild Ducks" about our smaller streams and ponds during the winter season. Mergansers can easily be recognized by the bill, which is long (two inches or more in length), hooked, almost cylindrical, quite slender and furnished with saw-like teeth. Like the Loons and Grebes, these birds are most proficient divers; when swimming under the water they employ their wings in the same manner as in flying in the air. Mergansers subsist almost wholly on fish.*
Head without conspicuous crest, though one is visible in life. Head and most of neck all round very dark-green; rest of neck and the body generally, except the upper part, creamy-white, deepening to salmon-red beneath. Lower part of back, rump, and tail feathers, plumbeous; forepart of back, interscapular region, and inner scapulars, black.

Length, 26.50 inches; wing, 11; tarsus, 1.84; commissure, 2.90 inches.

Hab.—North America generally, breeding south to the northern United States.

Mr. E. A. Samuels (Our Northern and Eastern Birds) states that this species "is one of the most abundant summer residents in the lake region of northern Maine, and about the Umbagog lakes and Richardson lakes it is the most common Duck." In former years the Sheldrakes unquestionably bred in various sections of Pennsylvania; of late years, however, from all the information I can obtain, these birds rarely, if ever, occur here during the season of reproduction. Nuttall narrates the following interesting account of a brood of these birds which he found in this State:

"Early in the month of May (1832), while descending the Susquehanna near Dunnstown, a few miles below the gorge of the Alleghenies, through which that river meanders near the foot of Bald Eagle mountain, G. Lyman, Esq., and myself observed, near the head of a little bushy island, some wild Duck, as we thought, with her brood making off round a point which closed the view. On rowing to the spot, the wily parent had still continued her retreat, and we gave chase to the party, which, with all the exertions that could be made rowing, still kept at a respectable distance before us. We now perceived that these diminutive possessors of their natal island were a female Goosander, with a small but active little brood of eight young ones. On pushing the chase for near half an hour, the young, becoming somewhat fatigued, drew around their natural protector, who now and then bore them along crowding on her back. At length, stealing nearly from our sight, as the chase relaxed, the mother landed at a distance on the gravelly shore, which, being nearly of her own gray color and that of her family, served for some time as a complete concealment. When we approached again, however, they took to the water, and after a second attempt, in which the young strove to escape by repeated divings, we succeeded in cutting off the retreat of one of the family, which was at length taken from behind a flat-boat, under which it had finally retreated to hide. We now examined the little stranger, and found it to be a young Merganser of this species, not bigger than the egg of a goose, and yet already a most elegant epitome of its female parent, generally gray, with the rufous head and neck, and the rudiments of a growing crest. After suffering itself to be examined with great calmness and without any apparent fear, we restored it to its more natural element, and, at the first effort, this little diminutive of its species flew under the water like an arrow, and
coming out to the surface only at considerable distances we soon lost sight of it, making good its aquatic retreat in quest of the parent. On inquiry, we learned from the tavern-keeper that for several years past a nest or brood of these birds had annually been seen near this solitary and secluded island." This species has been found breeding in Perry* county, Pa.

Turnbull, in his "Birds of Eastern Pennsylvania and New Jersey," published in 1869, writing of this species, says: "Abundant from the beginning of November to April, but many breed in the interior and are resident."

This species, like all other of our "wild Ducks," is exceedingly shy and difficult to approach. According to Audubon, "the food of the Goosander consists chiefly of fish, but also of bivalve shells, snails, leeches, aquatic lizards, crays and frogs. Its voracity is great, so that it consumes an extraordinary quantity of fish. I have found fishes in its stomach seven inches in length, and of smaller kinds, so many as to weigh more than half a pound. Digestion takes place with great rapidity, insomuch that some which I have had in captivity devoured more than two dozen of fishes about four inches in length, four times daily, and yet always seemed to be desirous of more."

The stomachs of six of these birds, which I have examined, contained only the remains of fish.

130. **Merganser serrator** (Linn.).

*Red-breasted Merganser.*

**Description.**

Feathers of the forehead extending on the bill in a short obtuse angle, and falling far short of the end of those on the sides; the outline of the latter sloping rapidly forwards, and reaching half-way from the posterior end of the lower edge of bill to the nostrils, and far beyond those on the side of lower jaw; nostrils narrow, posterior; their posterior outline opposite the end of basal third of commissure.

**Male.**—Head with conspicuous pointed occipital crest; head and upper part of neck, all around, dark-green; under parts reddish-white; jugulum reddish-brown, streaked with black; sides conspicuously barred transversely with fine lines of black; feathers anterior to wing white, margined with black; white of wing crossed by two bars of black; bill, feet and eyes red; young male similar to female.

**Female.**—Head with compressed occipital crest; chestnut-brown; body above ash; beneath reddish-white; the black at base of secondaries exposed; outer tertials white, edged with black.

**Length,** 23.35 inches; **wing,** 8.60; **tarsus,** 1.80; **commissure,** 2.76.

**Hab.**—Northern portions of Northern Hemisphere; south in winter throughout the United States.

This Merganser, a summer resident chiefly of high northern latitudes, is found throughout different portions of the United States,

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* List of Birds found in the vicinity of Carlisle, Cumberland County, Pa., by William M. and Spencer F. Baird, published April, 1844; American Journal Sciences and Arts, Vol. XLVI. Hereafter whenever reference is made to the Baird List, it will apply to this publication.
Hooded Merganser
1. Male; 2. Female.
principally as a winter visitant. In Pennsylvania this bird is not an uncommon sojourner about our larger streams, etc., from late in October until early in April. The Messrs. Baird, in their list of 1844, mention this bird as a native of Perry county, Pennsylvania; Dr. Turnbull, writing in 1869, also says that a few breed in east Pennsylvania. The nest and eggs are described by Audubon, as follows: "In Labrador, as well as in several parts of the United States, where I have found the nests, they were placed within a very short distance of the margins of fresh-water ponds, among rank grasses and sedges or beneath low bushes. * * * The nest is made of dry weeds and mosses of various kinds, and is warmly lined with down from the breast of the female bird, for the male leaves her as soon as she has completed the laying of the eggs, the number of which I have never found to exceed ten, they being more frequently six or eight. It is a very remarkable fact that the eggs in this family of birds are usually even in number, whereas in most land birds they are odd. * * * The eggs resemble in form those of the domestic fowl, and are of a uniform plain, dull yellowish cream-color."

**Genus Lophodytes. Reichenbach.**

131. **Lophodytes cucullatus** (Linn.).

**Hooded Merganser.**

**Description.** (Plate 3.)

Head with an elongated, compressed, semicircular crest; anterior extremity of nostril reaching not quite as far as the middle of commissure; frontal feathers extending nearly as far as half the distance from lateral feathers to nostril; the latter much beyond the feathers on side of lower mandible; bill shorter than head.

**Male.**—Bill black; head, neck and back black; under parts and center of crest white; sides chestnut-brown, barred with black; white anterior to the wing, crossed by two black crescents; lesser coverts gray; white speculum with a basal and median black bar; black tertials streaked centrally with white; iris yellow.

**Female.**—With a shorter and more pointed crest; the head and neck reddish-brown; the back without pure-black; the sides without transverse bars; the white of wings less extended.

Length, 17.50 inches; wing, 7.90; tarsus, 1.20; commissure, 1.98 inches.

**Hab.**—North America generally, south to Mexico and Cuba, breeding nearly throughout its range.

This handsome bird, the smallest of all the Mergansers, is found generally throughout North America. Nuttall remarks that in winter it migrates as far south as Mexico. The Hooded Merganser breeds in various portions of the United States, and also far northward. Dr. Coues (Birds of the Northwest) states that it "breeds in northern Dakota and also on the Upper Missouri and Milk rivers." I have seen eggs of this bird which were labeled "Maine," and I am informed that young, but a few days old, have been taken in New York State.
Although I have only observed this Merganser as a winter visitant in Pennsylvania, I am inclined to think it may be found in this State as an occasional breeder. The Messrs. Baird record this Merganser as a native in Perry county. Mr. William Rambo, of West Chester, has in his collection a pair of adult birds which were taken two years ago, in midsummer, in Union county, Pennsylvania. "The Hooded Mergansers that remain with us nestle in the same kind of holes or hollows as the Wood Duck; at least I have found their nests in such situations seven or eight times, although I never saw one of them alight on the branch of a tree, as the birds just mentioned are wont to do. They dive as it were directly into their wooden burrows, where, on a few dried weeds and feathers of different kinds, with a small quantity of down from the breast of the female, the eggs, five to eight in number, are deposited. The young, like those of the Wood Duck, are conveyed to the water by their mother, who carries them gently in her bill; for the male takes no part in providing for his offspring, but abandons his mate as soon as incubation has commenced. The affectionate mother leads her young among the tall, rank grasses which fill the shallow pools or the borders of creeks, and teaches them to procure snails, tadpoles and insects."—Audubon.

I have noticed that the Hooded Mergansers are frequently, in fact generally, to be found about mill-ponds and other small bodies of water, while the other two species are mostly found frequenting the shallow borders of the larger streams.

Food.

During the summer months these birds are said to feed on fishes and various forms of aquatic insects.

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>November 23, 1881</td>
<td>Chester county, Pa.,</td>
<td>Remains of fish.</td>
</tr>
<tr>
<td>2</td>
<td>December 24, 1882</td>
<td>Philadelphia Market, Pa.,</td>
<td>Remains of fish.</td>
</tr>
<tr>
<td>3</td>
<td>January —, 1883</td>
<td>Philadelphia Market, Pa.,</td>
<td>Remains of fish.</td>
</tr>
<tr>
<td>4</td>
<td>January —, 1883</td>
<td>Philadelphia Market, Pa.,</td>
<td>Remains of fish.</td>
</tr>
<tr>
<td>5</td>
<td>February 20, 1884</td>
<td>Delaware county, Pa.,</td>
<td>Remains of fish.</td>
</tr>
<tr>
<td>6</td>
<td>April 3, 1884</td>
<td>Chester county, Pa.,</td>
<td>Remains of fish.</td>
</tr>
<tr>
<td>7</td>
<td>March 26, 1887</td>
<td>Chester county, Pa.,</td>
<td>Remains of fish.</td>
</tr>
<tr>
<td>8</td>
<td>March 26, 1887</td>
<td>Chester county, Pa.,</td>
<td>Remains of fish.</td>
</tr>
</tbody>
</table>
Wood Duck—Summer Duck.

1. Male; 2. Female.
Subfamily ANATINÆ. River Ducks.

Genus AIX. Boie.

144. Aix sponsa (Linn.).

Summer Duck; Wood Duck; Acorn Duck.

Description. (Plate 4.)

Head and crest metallic-green to below the eyes; the cheeks, and a stripe from behind the eye, purplish; a narrow, short line from the upper angle of the bill along the side of the crown and through the crest, another on the upper eyelid, a stripe starting behind and below the eye, and running into the crest parallel with the one first mentioned, the chin and upper part of the throat sending a well-defined branch up towards the eye, and another towards the mape, snowy-white; lower neck and jugulum, and sides of the base of tail, rich-purple; the jugulum with triangular spots of white and a chestnut shade; remaining under parts white, as is a crescent in front of the wing bordered behind by black; sides yellow-gray, finely lined with black; the long feathers of the flanks broadly black at the end, with a sub-terminal bar, and sometimes a tip of white; back and neck above nearly uniform bronzed-green and purple; scapulars and innermost tertials velvet-black, glossed on the inner webs with violet; the latter with a white bar at the end; greater coverts violet, succeeded by a greenish speculum, tipped with white; primaries silvery-white externally towards the end; the tips internally violet and purple; iris red or grayish.

Female with the wings quite similar; the back more purplish; the sides of the head and neck ashy; the region round the base of the bill, a patch through the eyes, and the chin, white; the purple of the jugulum replaced by brownish; the waved feathers on the sides wanting.

Length, 19 inches; wing, 9.50; tarsus, 1.40; commissure, 1.54 inches.

Hab.—Temperate North America, breeding throughout its range.

The Wood Duck is a resident, and breeds in various sections of this Commonwealth. During the breeding season it generally is found about streams and ponds in heavily-wooded and thinly-populated districts. In Pennsylvania this species is rare in winter and most plentiful in autumn. The Wood Duck is an abundant winter resident in Florida, where it also breeds. I have seen downy young of this bird which were captured late in March, 1885, in Orange county, Florida.

“The Wood Duck breeds in the Middle States about the beginning of April, in Massachusetts a month later, and in Nova Scotia, or on our northern lakes, seldom before the first days of June. In Louisiana and Kentucky, where I have had better opportunities of studying their habits in this respect, they generally pair about the first of March, sometimes a fortnight earlier. I never knew one of these birds to form a nest on the ground or on the branches of a tree. They appear at all times to prefer the hollow, broken portion of some large branch, the hole of our large Woodpecker, or the deserted retreat of the fox squirrel; and I have frequently been surprised to see them go in and out of a hole of any one of these, when their bodies, while on the wing, seemed to be nearly half as large again as the aperture within which they had deposited their eggs. Once only I found a
nest (with ten eggs) in the fissure of a rock, on the Kentucky river, a few miles below Frankfort. Generally, however, the holes to which they betake themselves are either over deep swamps, above cane brakes, or on broken branches of high sycamores, seldom more than forty or fifty feet from the water. They are much attached to their breeding-places, and for three successive years I found a pair near Henderson, in Kentucky, with the eggs, in the beginning of April, in the abandoned nest of the Ivory-billed Woodpecker. The eggs, which are from six to fifteen, according to the age of the bird, are placed on dry plants, feathers, and a scanty portion of down, which I believe is mostly plucked from the breast of the female. They are perfectly smooth, nearly elliptical, of a light color, between buff and pale green, two inches in length by one and a half in diameter. "No sooner has the female completed her set of eggs than she is abandoned by her mate, who now joins others, which form themselves into considerable flocks, and thus remain apart till the young are able to fly, when old and young of both sexes come together, and so remain until the commencement of the next breeding season. In all the nests I have examined, I have been rather surprised to find a quantity of feathers belonging to birds of other species, even those of the domestic fowls, and particularly those of the Wild Goose and Wild Turkey. On coming on a nest with eggs when the bird was absent in search of food, I have always found the eggs covered over with feathers and down, although quite out of sight, in the depth of a Woodpecker's or squirrel's hole. On the contrary, when the nest was placed on the broken branch of a tree, it could easily be observed from the ground, on account of the feathers, dead sticks and withered branches about it. If the nest is placed immediately over the water, the young, the moment they are hatched, scramble to the mouth of the hole, launch into the air with their little wings and feet spread out, and drop into their favorite element; but whenever their birth-place is some distance from it, the mother carries them to it, one by one, in her bill, holding them so as not to injure their yet tender frame. On several occasions, however, when the hole was thirty, forty, or more yards from a bayou or other piece of water, I observed that the mother suffered the young to fall on the grasses and dried leaves beneath the tree, and afterwards led them directly to the nearest edge of the next pool or creek."—Audubon.

Food.

According to Nuttall, the food "consists principally of acorns, the seeds of aquatic plants, such as those of the wild oat (Zizania aquatica), Ruppia, etc., and insects, which inhabit in or near waters; and I have seen a fine male whose stomach was wholly filled with a mass
of the small coleopters, called *Donatias*, which are seen so nimbly flying over or resting on the leaves of the Pond lily (*Nymphaea*); they are therefore very alert in quest of their prey, or they could never capture the wary insects.

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>September 1</td>
<td>Chester county, Pa.</td>
<td>Acorns</td>
</tr>
<tr>
<td>2</td>
<td>September 1</td>
<td>Chester county, Pa.</td>
<td>Acorns</td>
</tr>
<tr>
<td>3</td>
<td>September 1</td>
<td>Chester county, Pa.</td>
<td>Acorns and small seeds.</td>
</tr>
<tr>
<td>4</td>
<td>September 1</td>
<td>Chester county, Pa.</td>
<td>Small seeds.</td>
</tr>
<tr>
<td>5</td>
<td>October 1</td>
<td>Philadelphia Market, Pa.</td>
<td>Acorns</td>
</tr>
<tr>
<td>6</td>
<td>October 1</td>
<td>Philadelphia Market, Pa.</td>
<td>Small seeds and other vegetable matter.</td>
</tr>
</tbody>
</table>

In some twenty odd examinations that I have made of these birds, which were killed in Florida in March and April, 1885, I found only vegetable substances, consisting chiefly of various small seeds, had been fed upon.

**Genus AYTHYA.** Boie.

146. *Aythya americana* (Eyt).

**Red-head.**

**Description.**

Bill as long as the head, broad, blue, the end black; the region anterior to the nostrils dusky; head, and neck for more than half its length, brownish-red, glossed above and behind with violaceous-red; rest of neck and body anterior to the shoulders, lower part of back and tail coverts, black; beneath white, sprinkled with gray and black anterior to the crissum; the sides, interscapulars and scapulars finely lined with undulating black and white in nearly equal proportions, imparting a general gray tint; wing coverts bluish-gray, finely sprinkled with whitish; the speculum, consisting of the ends of the secondaries, hoary grayish-blue, lightest externally, and the innermost narrowly edged with black; basal portion of inner primaries somewhat similar to the speculum; tail of fourteen feathers; iris orange-yellow.

This species, with a strong resemblance to the Canvas-back, is readily distinguished by the shorter, broader bill, absence of brown on the head, and a greater predominance of black in the waved lines; this being equal in amount to the white instead of much less. Female with the head, neck and forepart of body brownish; the region round the base of the bill whitish.

Length of male, 20.50 inches; wing 9.50; tarsus, 1.60; commissure, 2.30 inches.

**Hab.**—North America; breeding from California and Maine northward.

This handsome bird, frequently confounded by sportsmen and others with the Canvas-back, is oftentimes to be found about our larger streams during the winter season. The Canvas-back, on the other hand, I have observed in this region only as a casual visitant on migrations.

Some few years ago, while hunting along the Brandywine creek, near West Chester, Pa., I suddenly came upon a party of thirteen
Red-heads which were busily engaged in feeding. As the ducks arose from the water I succeeded in killing two of them. Assisted by my honored friend, Benjamin M. Everhart, I made an examination of the stomachs of these two specimens, and found that both had fed exclusively on "wild celery,"* a somewhat common, though not abundant aquatic plant in this vicinity.

**Food.**

Wilson says the Red-head is a common associate of the Canvas-back, frequenting the same places and feeding on the stems of the wild celery.

Audubon, writing of the Red-heads, states: "I have found their stomachs crammed with young tadpoles and small water-lizards, as well as blades of the grasses growing around the bank. Nay, on several occasions, I have found pretty large acorns and beech-nuts in their throats, as well as snails, entire or broken, and fragments of the shells of various small unios, together with much gravel."

I have examined the stomach-contents of twenty-one Red-heads, both sexes, which have been killed during the shooting season at Havre-de-Grace, Maryland, and found only gravel and vegetable matter, the latter consisting mainly of the so-called "wild celery" (Vallisneria spiralis).

147. *Aythya vallisneria* (Wils.).

**Canvas-Back.**

**Description.**

Bill long, slender and tapering; head all round and neck chestnut; the top of the head and region around the base of the bill dusky-brown; rest of neck, body anterior to the shoulders, back behind, rump and tail coverts, black; under parts white; the region anterior to the maxas, the sides, the interscapulars and scapulars, white, finely dotted, in transverse line, with black, the white greatly predominating; spee-

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*"This plant, like many others, has a variety of local names. Some of the most common which I now call to mind are tape grass, from the tape-like appearance of the long leaves; channel-weed, as it frequently grows in channels where the water flows, not swiftly; cel-grass; this name arises, it is said by Dr. Darlington (Flora Cestrion), "from the habit which cels have of hiding under the leaves which are usually procumbently floating under the water's surface." The appellation 'wild celery'—a local term applied, I think, chiefly by gunners and watermen at Havre-de-Grace and vicinity—is, I consider, like many vulgar synonyms, a misnomer, as this plant is in no particular related to celery, which by botanists is known as Apium. 'Wild celery,' or as it is more generally known in this vicinity (Chester county, Pa.), as 'cel-grass,' is found in the Brandywine creek growing in slow running water.

The scientific name of the plant is Vallisneria spiralis (Linn.), the generic name being given in honor of Antonio Vallisneri, an Italian botanist; the specific spiralis is applied in consequence of the fact that the fertile stalk in its development assumes a spiral form. It is a remarkable dioecious, herbaceous plant on account of its mode of fertilization. It grows entirely under water, has long, radical grass-like leaves, from one to three feet long and from one-fourth to three-fourths inches wide. The female flowers float on the surface at the end of long, thread-like spiral scapes, which curiously contract and lengthen with the rise and fall of the water. The male flowers have very short stems or scapes, from which the flowers break off and rise to the surface, to fertilize with their pollen the attached, floating female flowers."—B. M. Everhart's *Botanical Publications*, November, 1886.
ulm bluish-gray, lighter externally; the innermost secondaries of the speculum edged externally with black; iris red; feet grayish-blue.  
Female with the black and chestnut replaced by brown, the cheeks and chin lighter, and some tinged with dull- rufous.  
Length, 20.10 inches; wing, 9.30; tarsus, 1.70; commissure, 2.65 inches.  

Hab.—Nearly all of North America, breeding from the north-western States northward to Alaska.

Wilson, in describing the habits of the Canvas-back, says: "The Canvas-back Duck arrives in the United States from the north about the middle of October: a few descend to the Hudson and Delaware; but the great body of these birds resort to the numerous rivers belonging to and in the neighborhood of the Chesapeake Bay, particularly the Susquehanna, the Patapsco, Potomac and James rivers, which appear to be their general winter rendezvous. Beyond this, to the south, I can find no certain accounts of them. At the Susquehanna, they are called Canvas-backs; on the Potomac, White-backs; and on James river, Sheldrakes. They are seldom found at a great distance up any of these rivers, or even in the salt-water bay, but in that particular part of tide-water where a certain grass-like plant grows, on the roots of which they feed. This plant, which is said to be a species of Vallisneria, grows on fresh-water shoals of from seven to nine feet (but never where these are occasionally dry), in long, narrow, grass-like blades, of four or five feet in length; the root is white, and has some resemblance to small celery. This grass is in many places so thick that a boat can with difficulty be rowed through it, it so impedes the oars. The shores are lined with large quantities of it, torn up by the Ducks, and drifted up by the winds, lying, like hay, in windrows. Wherever this plant grows in abundance, the Canvas-backs may be expected either to pay occasional visits or to make it their regular residence during the winter. It occurs in some parts of the Hudson; in the Delaware, near Gloucester, a few miles below Philadelphia; and in most of the rivers that fall into the Chesapeake, to each of which particular places these Ducks resort; while, in waters unprovided with this nutritious plant, they are altogether unknown.

"On the first arrival of these birds in the Susquehanna, near Havre-de-Grace, they are generally lean; but such is the abundance of their favorite food that, towards the beginning of November, they are in pretty good order. They are excellent divers, and swim with great speed and agility. They sometimes assemble in such multitudes as to cover several acres of the river, and, when they rise suddenly, produce a noise resembling thunder. They float about these shoals, diving, and tearing up the grass by the roots, which is the only part they eat. They are extremely shy, and can rarely be approached, unless by stratagem. When wounded in the wing, they dive to such prodigious distances, and with such rapidity, continuing it so persever-
ingly and with such cunning and active vigor as almost always to render the pursuit hopeless. From the great demand for these Ducks, and the high price they uniformly bring in market, various modes are practiced to get within gunshot of them. The most successful way is said to be decoying them to the shore by means of a dog, while the gunner lies closely concealed in a proper situation. The dog, if properly trained, plays backwards and forwards along the margin of the water, and the Ducks, observing his manoeuvres, enticed perhaps by curiosity, gradually approach the shore, until they are sometimes within twenty or thirty yards of the spot where the gunner lies concealed, and from which he rakes them, first on the water and then as they rise. This method is called tolling them in. If the Ducks seem difficult to decoy, any glaring object, such as a red handkerchief, is fixed round the dog's middle or to his tail, and this rarely fails to attract them. Sometimes, by moonlight, the sportsman directs his skill towards a flock whose position he had previously ascertained, keeping within the projecting shadow of some wood, bank or headland, and paddles along so silently and imperceptibly as often to approach within fifteen or twenty yards of a flock of as many thousands, among whom he generally makes great slaughter. Many other stratagems* are practiced, and, indeed, every plan that the ingenuity of the experienced sportsman can suggest, to approach within gunshot of these birds; but of all the modes pursued, none intimidate them so much as shooting them at night, and they soon abandon the place where they have been thus repeatedly shot at.

"During the day they are dispersed about, but towards evening collect in large flocks and come into the mouths of creeks, where they often ride as at anchor, with their heads under their wings, asleep, there being always sentinels awake, ready to raise an alarm on the least appearance of danger. Even when feeding and diving in small parties the whole never go down at one time, but some are still left above on the lookout. When the winter sets in severely, and the river is frozen, the Canvas-backs retreat to its confluence with the bay, occasionally frequenting air holes in the ice, which are sometimes made for the purpose, immediately above their favorite grass, to entice them within gunshot of the hut or bush, which is usually fixed at a proper distance, and where the gunner lies concealed ready to take advantage of their distress. A Mr. Hill, who lives near James river, at a place called Herring creek, informs me that one severe winter he and another person broke a hole in the ice, about twenty

*The favorite method now employed by sportsmen at the well-known ducking grounds at Havre-de-Grace, Maryland, is the sink-box, a coffin-like structure, furnished with canvas "wings," in which the gunner conceals himself after the box has been anchored amidst two hundred or three hundred decoy ducks, on the feeding-grounds where the Red-heads and Canvas-backs backs daily resort.—Warren.
by forty feet, immediately over a shoal of grass, and took their stand on the shore in a hut of brush, each having three guns well loaded with large shot. The Ducks, which were flying up and down the river in great extremity, soon crowded to this place, so that the whole open space was not only covered with them, but vast numbers stood on the ice around it. They had three rounds, firing both at once, and picked up eighty-eight Canvas-backs, and might have collected more, had they been able to get to the extremity of the ice after the wounded ones. In the severe winter of 1779-80, the grass on the roots of which these birds feed was almost wholly destroyed in James river. In the month of January, the wind continued to blow from W.N.W. for twenty-one days, which caused such low tides in the river that the grass froze to the ice everywhere, and a thaw coming on suddenly, the whole was raised by the roots and carried off by the freshet. The next winter a few of these Ducks were seen, but they soon went away again, and for many years after they continued to be scarce; and even to the present day, in the opinion of my informant, have never been so plenty as before.”

Food.

Audubon, writing of the food of the Canvas-back, says: “It varies according to the season and locality. The plant Vallisneria, on which it is said to feed when on the head-waters of the Chesapeake, is not found equally abundant in other parts, and even there is at times so reduced in quantity that this Duck, and several other species which are equally fond of it, are obliged to have recourse to fishes, tadpoles, water-lizards, leeches, snails and mollusca, as well as such seeds as they can meet with, all of which have been in greater or less quantity found in their stomachs.”

My examinations of four of these Ducks, which were killed at Havre-de-Grace, showed only vegetable substances, which I judged to be remains of Vallisneria.

Wilson asserts that the Canvas-backs when feeding on the Vallisneria eat only the roots, and, on the other hand, the Red-heads feed on the stems of this plant.

Genus CHARITONETTA. Stejneger.

153. Charitonetta albeola (Linn.).

Buffle-head.

Description.

Male.—Bill blue; head and neck anteriorly dark colored; the region in front of the eye and on the sides of the collar behind rich green; this color shading into purplish on the upper and under surfaces of the head; a broad patch on each side of the head from the posterior border of the eye, and meeting its fellow on the nape, the lower neck all round, under parts generally, wing coverts (except the lesser),
and most of the secondaries and the scapulars, white; the latter narrowly edged externally with black. Rest of upper parts, except as described, black; passing gradually on the upper tail coverts into pale gray, axillars and under wing coverts sooty brown, more or less tipped with white; iris brown.

Female with the entire head, neck, and upper parts almost black. An elongated patch behind and below the eye (not reaching it). The outer webs of some secondaries, and the under parts white; the jugulum, sides, and anal region, plumbeous-gray.

Length. 15 inches; wing, 6.65; tarsus, 1.25; commissure, 1.44. Female smaller than male; young males very similar to females.

Hub.—North America; south in winter to Cuba and Mexico. Breeds from Maine northward; through the fur countries and Alaska.

This beautiful little Duck, commonly called Butter-ball, is frequently met with during migrations about our rivers and mill-ponds. This species is, however, much more common in autumn than during the winter and spring. The Buffle-head, like the Grebe and Loon, will dive at the flash of a gun and swim, it is said, under the water with only its bill above the surface. Audubon says: “Their food is much varied, according to situation. On the sea-coast, or in estuaries, they dive after shrimps, small fry, and bivalve shells, and in fresh water they feed on small cray-fish. leeches and snails, and even grasses.” In the stomachs of five of these Ducks, which I have examined, were found small shells and coleopterous insects.

**Subfamily ANSERINÆ. Geese.**

**Genus BRANTA. Scopoli.**

172. Branta canadensis (Linn.).

**Canada Goose.**

**Description.**

Tail of eighteen feathers; head, neck, bill and feet, deep-black; a large triangular patch of white on the cheeks behind the eye; the two of opposite sides broadly confluent beneath, but not extending to the ramus of lower jaw; a few whitish feathers on lower eyelid; upper parts brown, edged with paler; under parts light, with a tinge of purple-gray, sometimes a shade of smoky-brown; the edges of the feathers paler; the color of the body of the feathers, though similar, becoming deeper on the sides, tibia, axillars, and inside of wings; the gray of the belly passes gradually into white on the anal region and under coverts; the upper tail coverts are pure-white; the primary quills and rump are very dark blackish-brown; the tail feathers are black; iris brown.

Length, 35 inches; wing, 18; tarsus, 3.10; commissure, 2.10 inches.

**Hub.**—Temperate North America, breeding in the northern United States and British Provinces; south in winter to Mexico.

This well-known bird, usually called Wild Goose, is a common spring and fall migrant in Pennsylvania. In this locality Wild Geese are rarely observed resting either on land or water, but are almost always seen or heard flying.

In referring to this species, Wilson says: “The flight of the Wild Geese is heavy and laborious, generally in a straight line, or in two
lines, approximating to a point thus, >: in both cases the van is led by an old gander, who, every now and then, pipes his well known *honk*, as if to ask how they come on; and the honk of 'All's well' is generally returned by some of the party. Their course is in a straight line, with the exception of the undulations of their flight. When bewildered in foggy weather, they appear sometimes to be in great distress, flying about in an irregular manner, and for a considerable time over the same quarter, making a great clamor. On these occasions, should they approach the earth and alight—which they sometimes do to rest and recollect themselves—the only hospitality they meet with is death and destruction from a whole neighborhood already in arms for their ruin.'

The food of this species consists chiefly of vegetable materials, such as cereals, the seeds, roots and other portions of plants.

ORDER HERODIONES. HERONS, ETC.

SUBORDER HERODII. HERONS, EGrets, BITTERNs.

FAMILY ARDEIDÆ. Herons, Bitterns.

SUBFAMILY BOTAURINÆ. Bitterns.

GENUS BOTAURUS. Hermann.

190. Botaurus lentiginosus (Montag).

American Bittern.

Description. (Plate 5.)

Brownish-yellow, finely mottled and varied with dark-brown and brownish-red; a broad black stripe on each side the neck, starting behind the ear; iris yellow.

Length, 26.50 inches; wing, 11; tarsus, 3.90; bill, above, 2.75 inches.

Hab.—Temperate North America, south to Guatemala and the West Indies.

The Bittern or Green-legged Crane, as this species is locally denominated, is readily distinguished from other birds of the family by its brownish-yellow plumage, greenish-colored legs and large size. Although this bird is given by certain writers as a summer resident in eastern Pennsylvania, I have observed it as a spring and fall migrant, moderately abundant. In this locality these birds are never found in flocks; commonly only solitary individuals are seen frequenting chiefly the thick swampy districts about meadows and rivers. During the daylight Bitterns conceal themselves in the long grasses, weeds, bushes, etc., growing about swamps. They migrate and feed during the night.

2 Birds.
According to Dr. Coues, "the food of this bird consists of various kinds of small aquatic animals. In its stomach may be found different mollusces, craw-fish, frogs, lizards, small snakes and fishes, as well as insects. Such prey is captured with great address, by spearing, as the bird walks or wades stealthily along. The thrust of the bill is marvelously quick and skillful—more action is displayed on such occasions than probably under any other circumstance."—*Birds of the Northwest.*

Although Bitterns frequently devour fish, I believe they prefer other kinds of animal food, especially snakes, frogs and insects.

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>April 11, 1880</td>
<td>Chester county, Pa.</td>
<td>Beetles and scales of fish.</td>
</tr>
<tr>
<td>3</td>
<td>April 29, 1881</td>
<td>Delaware county, Pa.</td>
<td>Cray-fish and frogs.</td>
</tr>
<tr>
<td>5</td>
<td>April 2, 1882</td>
<td>Chester county, Pa.</td>
<td>Two snakes, each about eighteen inches in length.</td>
</tr>
<tr>
<td>6</td>
<td>April 2, 1882</td>
<td>Chester county, Pa.</td>
<td>Grasshoppers and beetles.</td>
</tr>
<tr>
<td>8</td>
<td>April 2, 1885</td>
<td>Orange county, Fla.</td>
<td>Cray-fish and remains of fishes.</td>
</tr>
<tr>
<td>9</td>
<td>April 2, 1885</td>
<td>Orange county, Fla.</td>
<td></td>
</tr>
</tbody>
</table>

191. *Botaurus exilis* (Gmel.).

*Least Bittern.*

**Description.**

Head above and the back dark glossy-green; upper part of neck, shoulders, greater coverts, and outer webs of some tertials, purplish-cinnamon; a brownish-yellow scapular stripe (broadest in female).

*Female* and young with the green of head and back replaced by purplish-chestnut. Iris yellow.

Length, 13 inches; extent, about 17; wing, 4.75; tarsus, 1.60; bill above, 1.75.

*Hab.*—Temperate North America, from British Provinces to the West Indies and Brazil.

The Least Bittern, the smallest of all the herons, I have found in this region only as a rare visitant during the spring and fall migrations. These birds, it is stated, sometimes breed in Pennsylvania. When alarmed, they fly generally but a few yards, and take shelter among the reeds or long grass. Least Bitterns are scarcely ever seen exposed, but skulk during the day, and, like the preceding species, feed chiefly in the night. Wilson says: "In the meadows of Schuylkill and Delaware, below Philadelphia, a few of these birds breed every year, making their nests in the thick tussocks of grass in swampy places." According to Audubon, the nest "is sometimes placed on the ground, amid the rankest grasses, but more frequently it is at-
tached to the stems several inches above it. It is flat, composed of dried or rotten weeds, and in shape resembles that of the Louisiana Heron, though this latter employs nothing but sticks. The eggs are three or four, seldom more, of a dull greenish-white, without spots, an inch and a quarter in length, almost equal at both ends. * * *

In two instances, I found the nests of the Least Bittern about three feet above the ground in a thick cluster of smilax and other briary plants. In the first, two nests were placed in the same bush, within a few yards of each other. In the other instance, there was only one nest of this bird, but several of the Boat-tailed Grackle, and one of the Green Heron, the occupants of all of which seemed to be on friendly terms. When started from the nest, the old birds emit a few notes resembling the syllable quā, alight a few yards off and watch all your movements. If you go towards them, you may sometimes take the female with the hand, but rarely the male, who generally flies off or makes his way through the woods."

Food.

According to Nuttall, this species subsists chiefly on small fish and aquatic insects. Audubon states that "the food of this bird consists of snails, slugs, tadpoles, or young frogs and water-lizards. In several instances, however, I have found small shrews and field-mice in their stomachs."

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>April 29, 1879</td>
<td>Lancaster county, Pa.,</td>
<td>Hair of small mammal.</td>
</tr>
<tr>
<td>2</td>
<td>Sept. —, 1880</td>
<td>Delaware county, Pa.,</td>
<td>Beetles.</td>
</tr>
<tr>
<td>3</td>
<td>Sept. —, 1880</td>
<td>Delaware county, Pa.,</td>
<td>Insects and remains of fish.</td>
</tr>
<tr>
<td>5</td>
<td>Aug. 25, 1883</td>
<td>Delaware county, Pa.,</td>
<td>Beetles and &quot;worms.&quot;</td>
</tr>
<tr>
<td>6</td>
<td>May 20, 1884</td>
<td>Chester county, Pa.,</td>
<td>Vegetable-matter.</td>
</tr>
</tbody>
</table>

Subfamily ARDEINÆ. Herons and Egrets.

Genus ARDEA. LINN.EUS.

194. Ardea herodias. LINN.

Great Blue Heron; "Big Crane."

Description.

Lower third of tibia bare; above bluish-ash; edges of wing and the tibia Rufous; neck cinnamon-brown; head black, with a white frontal patch; body beneath black, broadly streaked on the belly with white; crissum white; middle line of throat white, streaked with black and Rufous.

Adult.—Bill yellow, dusky at the base and greenish above; the forehead and central part of the crown are white, edged laterally and behind by black, of which color is the occipital crest and its two elongated feathers; the neck is of a light smoky
Birds of Pennsylvania.

cinnamon-brown, with perhaps a tinge of purple; the chin and throat whitish; the feathers along the central line of the throat to the breast white, streaked with black, and also with reddish-brown, except on the elongated feathers of the breast; the body may be described as bluish-ash above and on the sides; the under parts, including the tuft of feathers on each side the breast and the belly to the white crus- sum, are sooty black, much varied along the middle line with white; the tibia and the edge of the wing are rufous; the quills are black, becoming more plumbeous internally until the innermost secondaries are ashly, like the back; the elongated tips of the scapular feathers have a whitish shade; the tail is of a bluish-slate color; according to Mr. Audubon, the bill in life is yellow; dusky-green above; orbital and orbital spaces light-green; iris yellow; feet olivaceous, paler above the tibio-tarsal joint; claws black.

Young.—The upper mandible is blackish; the lower yellow, except along the commissure; the head above is entirely dusky, without the much elongated occipital feathers; the breast is grayish, streaked with white and light-brown, but without any pure-black patches; the back is without the elongated scapular feathers; in still younger specimens, the coverts are all margined with rufous, which becomes lighter at the tip; the rufous of the tibia is much lighter.

Length. 42 inches; wing, 18.50; tarsus, about 6.50; bill, about 5.50 inches.

Hab.—North America, from the Arctic regions southward to the West Indies and northern South America.

This bird, the largest of our Herons, is a summer resident in various localities in this State. During the last few years, however, several favorite breeding resorts in eastern Pennsylvania, which were annually visited by this and other species, have been broken up by boys and men, who destroyed the birds, old and young, simply because their feathers would bring a few dollars, and, as they remarked, "there's no law to stop it."

I have no doubt that the time will soon come when this beautiful Heron will be known in this Commonwealth only as a rare straggling visitant. The nest is made of large sticks and twigs, and placed on the larger limbs of trees, generally near the water. The eggs vary in number from three to five, are light-blue in color, and about the size of those of our common domestic fowl. This bird, and the same is true of other Herons, when wounded and unable to escape, is one which can not be handled with too much caution, as it frequently, with its sharp and powerful bill, inflicts severe, dangerous, and, it is said, sometimes fatal wounds. In Florida I met a hunter who had an eye destroyed by one of these birds which he had winged and carelessly attempted to pick up. By some, particularly residents of certain of the Southern States, the flesh of the Great Blue Heron is considered quite a delicious morsel. Some few winters ago, when camping in the Cypress swamps of Florida, I, more from necessity than choice, eat the breast-meat of this Heron and also that of the Water Turkey, (Anhinga anhinga), a bird which preys exclusively on fish, and although I did not especially relish the dish, I must admit that to a hungry man it was in no way disagreeable.
The following interesting observations on the food-habits are given by Nuttall: "Fish is the principal food of the Great Heron, and for this purpose, like an experienced angler, he often waits for that condition of the tide which best suits his experience and instinct. At such times they are seen slowly sailing out from their inland breeding haunts, during the most silent and cool period of the summer's day, selecting usually such shallow inlets as the ebbing tide leaves bare or accessible to his watchful and patient mode of prowling; here wading to the knees, he stands motionless amidst the timorous fry, till some victim coming within the compass of his wily range is instantly seized by the powerful bill of the Heron. * * * If large, the fish is beaten to death, and commonly swallowed with the head descending, as if to avoid any obstacle arising from the reversion of the fins or any hard external processes. On land our Heron has also his fare, as he is no less a successful angler than a mouser, and renders an important service to the farmer in the destruction he makes among most of the reptiles and meadow shrews. Grasshoppers, other large insects, and particularly dragon-flies, he is very expert in striking, and occasionally feeds upon the seeds of pond lilies, contiguous to his usual haunts. Our species, in all probability, as well as the European Heron, at times preys upon young birds which may be accidentally straggling near their solitary retreats."

In the months of March and April, 1885, I examined the stomachs of twenty-three of these birds which had been killed by plume-hunters in Orange and Volusia counties, Florida. Twelve birds had fed entirely on fish; three had taken fish and cray-fish; two, small snakes; one, frogs and fish; one, fish and a few feathers; one, traces of beetles. Three birds were destitute of all food-materials.

From my investigations made in Florida, as well as the records in the following table, I would say this Heron is mainly piscivorous in habit.

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>June 3, 1879</td>
<td>Brigantine, N. J.</td>
<td>Remains of fish.</td>
</tr>
<tr>
<td>3</td>
<td>June 7, 1880</td>
<td>Delaware county, Pa.</td>
<td>Remains of fish.</td>
</tr>
<tr>
<td>4</td>
<td>June 12, 1880</td>
<td>Berks county, Pa.</td>
<td>Remains of fish.</td>
</tr>
<tr>
<td>8</td>
<td>April 20, 1884</td>
<td>Delaware county, Pa.</td>
<td>Remains of fish.</td>
</tr>
</tbody>
</table>
196. **Ardea egretta.** Gmel.

**American Egret; Large White Crane.**

**Description.**

The plumage of this bird is entirely white; in the breeding season the adults have the backs ornamented with long hair-like plumes, frequently so long that they touch the ground when the bird stands erect; legs and feet black; eyes bright yellow; bill yellow, and about five inches long; point of upper mandible black; measures, from tip to tip of wings, about five feet.

*Hab.*—Temperate and tropical America, from New Jersey, Minnesota and Oregon south to Patagonia; casually on the Atlantic coast to Nova Scotia.

This beautiful bird, now chiefly found in the Southern States, where it is rapidly being exterminated by the heartless and money-loving plume-hunters, is a rare migrant along our rivers. It occurs in this State, according to my observation, only in the late summer and autumn, when straggling individuals are sometimes taken. In former years, this species is said to have reared its young in Pennsylvania.

**Food.**

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>August, 1879</td>
<td>Lancaster county, Pa.,</td>
<td>Fishes and insects.</td>
</tr>
<tr>
<td>2</td>
<td>July, 1881</td>
<td>Chester county, Pa.,</td>
<td>Field-mouse and cray-fish.</td>
</tr>
<tr>
<td>3</td>
<td>July, 1884</td>
<td>Delaware county, Pa.,</td>
<td>Fishes and frogs (Rana).</td>
</tr>
<tr>
<td>4</td>
<td>April, 1885</td>
<td>Orange county, Fla.,</td>
<td>Cray-fish.</td>
</tr>
<tr>
<td>5</td>
<td>April, 1885</td>
<td>Orange county, Fla.,</td>
<td>Fish-scales and bones.</td>
</tr>
<tr>
<td>6</td>
<td>April, 1885</td>
<td>Orange county, Fla.,</td>
<td>Fishes.</td>
</tr>
<tr>
<td>7</td>
<td>April, 1885</td>
<td>Orange county, Fla.,</td>
<td>Insects.</td>
</tr>
<tr>
<td>8</td>
<td>April, 1885</td>
<td>Orange county, Fla.,</td>
<td>Feathers, apparently of a sparrow (?).</td>
</tr>
<tr>
<td>9</td>
<td>April, 1885</td>
<td>Orange county, Fla.,</td>
<td>Cray-fish and small snake.</td>
</tr>
<tr>
<td>10</td>
<td>April, 1885</td>
<td>Orange county, Fla.,</td>
<td>Fish-scales and bones.</td>
</tr>
<tr>
<td>11</td>
<td>April, 1885</td>
<td>Orange county, Fla.,</td>
<td>Cray-fish and fish-scales.</td>
</tr>
<tr>
<td>12</td>
<td>May, 1885</td>
<td>Volusia county, Fla.,</td>
<td>Stomach empty.</td>
</tr>
<tr>
<td>13</td>
<td>May, 1885</td>
<td>Volusia county, Fla.,</td>
<td>Beetles and dipterous insects.</td>
</tr>
</tbody>
</table>

197. **Ardea candidissima.** Gmel.

**Snowy Heron.**

**Description.**

Ocipient much crested; scapular plumes reaching to the end of the tail; lower neck furnished with long plumes; plumage pure white; bill black, yellow at base; legs black; toes and lower posterior part of tarsus yellow; iris yellow.

Length, 24 inches; extent, about 38 inches; wing, 10.20; tarsus, 3.80; bill above 3.15 inches.

*Hab.*—Temperate and tropical America, from Long Island and Oregon south to Buenos Ayres; casual on the Atlantic coast to Nova Scotia.

This beautiful Heron is found most plentifully in the Southern States, where it breeds in company with other species. Solitary individuals are sometimes found in this locality during the late summer or early autumn. Nuttall says: "Its food, as usual, consists of small crabs, worms, snails, frogs and lizards, to which fare it also adds at
times the seeds of the pond lilies and other aquatic plants.” In April, 1885, I visited an island in a small lake in Orange county, Florida, where this species, also the Louisiana, Little Blue and Green Herons, were breeding on low bushes. I shot seven Snowy Herons, and found in the viscera of all only the remains of fish.

201. **Ardea virescens.** **Linn.**

**Green Heron.**

**Description.**

“The Green Bittern is eighteen inches long, and twenty-five inches in extent; bill black, lighter below, and yellow at the base; chin, and narrow streak down the throat, yellowish-white; neck dark vinaceous-red; back covered with very long, tapering, pointed feathers, of a hoary green, shafted with white, on a dark-green ground; the hind part of the neck is destitute of plumage, that it may be the more conveniently drawn in over the breast, but is covered with the long feathers of the throat and sides of the neck that enclose it behind; wings and tail dark glossy green, tipped and bordered with yellowish-white; legs and feet yellow, tinged before with green, the skin of these thick and movable; belly ashy-brown; irides bright-orange; head crested and very dark glossy green.

“The female, as I have particularly observed in numerous instances, differs in nothing, as to color, from the male; neither of them receive the long feathers on the back during the first season.”—**Wilson.**

**Hab.**—Canada and Oregon, southward to northern South America and the West Indies; rare or absent in the middle province.

The Green Heron is known by a variety of local names, some of which are much more expressive than elegant. This bird, the most common and abundant of all our Herons, is found throughout the State, frequenting rivers, streams and ponds. It arrives in this section occasionally as early as the first week in April, from the Southern States, where it resides when the chilling blasts of winter have frozen over our streams and marshes. This species sometimes breeds in small companies; generally, however, but two or three pairs are found nesting together. The nests, built of sticks and twigs, are placed in low bushes or small trees adjacent to a stream or pond. The nests frequently are built in apple orchards. Indeed, the largest number of nests that I ever found in one locality was in an apple-orchard along the Brandywine, where for several years some twenty-five or thirty of these birds annually resorted. While it is true that I have found these Herons breeding in small numbers with the Night and Great Blue Herons in Pennsylvania, and also in Florida in company with the Little Blue, Louisiana and Snowy Herons, and even sometimes in the colonies of Water Turkeys and Cormorants. I think, as a rule, they usually prefer to remain by themselves during the season of reproduction as well as at other times. Various writers state that the eggs are four in number. I have examined many nests, and consider the usual complement to be not less than five; frequently six
eggs are laid. The eggs are pale-blue and larger than those of our common pigeon.

Food.

This species feeds much more frequently on insects than other of the Herons that reside with us. Nuttall writes of the Green Heron in the following language: "He is also particularly attracted by artificial ponds for fish, not refraining even to visit gardens and domestic premises which any prospect of fare may offer. He is, at the same time, perhaps as much in quest of the natural enemy of the fish, the frog, as of the legitimate tenants of the pond. These bold and intrusive visits are commonly made early in the morning, or towards twilight, and he not unfrequently, when pressed by hunger, or after ill-success, turns out to hunt his fare by day as well as dusk, and, at such times, collects various larvae, particularly those of the dragon-fly, with grasshoppers and different kinds of insects. At other times he preys upon small fish, crabs and frogs, for which he often lies patiently in wait till they reappear from their hiding places in the water or mud, and on being transfixed and caught, which is effected with great dexterity, they are commonly beaten to death, if large, and afterwards swallowed at leisure."

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>June 17, 1879</td>
<td>Barnegat, N. J.</td>
<td>Beetles and other insects.</td>
</tr>
<tr>
<td>2</td>
<td>Oct. 10, 1879</td>
<td>Chester county, Pa.</td>
<td>&quot;Fall-fish.&quot;</td>
</tr>
<tr>
<td>3</td>
<td>April 29, 1880</td>
<td>Chester county, Pa.</td>
<td>Frog and minnows.</td>
</tr>
<tr>
<td>4</td>
<td>April 29, 1880</td>
<td>Chester county, Pa.</td>
<td>Fragments of insects and small</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>quantity of hair, probably</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>that of a field-mouse.</td>
</tr>
<tr>
<td>5</td>
<td>May 12, 1880</td>
<td>Chester county, Pa.</td>
<td>Beetles.</td>
</tr>
<tr>
<td>6</td>
<td>July 3, 1880</td>
<td>Delaware county, Pa.</td>
<td>Frog.</td>
</tr>
<tr>
<td>7</td>
<td>June 30, 1881</td>
<td>Chester county, Pa.</td>
<td>Remains of small fishes.</td>
</tr>
<tr>
<td>9</td>
<td>May 14, 1882</td>
<td>Lancaster county, Pa.</td>
<td>Fishes and frogs.</td>
</tr>
<tr>
<td>10</td>
<td>July 29, 1882</td>
<td>Chester county, Pa.</td>
<td>Remains of small fishes.*</td>
</tr>
</tbody>
</table>

*Four young birds taken from the nest.

**Genus** **Nycticorax.** Stephens.

202. Nycticorax nycticorax nævius (Bodd).

Black-crowned Night Heron.

Description. (Plate 6.)

Head above and middle of back steel-green; wings and tail ashy-blue; under parts, forehead, and long occipital feathers white; sides tinged with lilac.

Bill very thick at the base, and tapering all the way to the tip. Cuneum nearly straight for half its length, then considerably curved; lower outline of bill nearly
Birds of Pennsylvania.

25

straight; legs short, but stout; the tarsus equal to the middle toe; covered throughout with hexagonal scales, the anterior largest, but those on the upper portion much larger, and going entirely across; tibia bare for about one-sixth; lateral toes nearly equal; the outer rather longest; claws small; considerably curved; tail short, of twelve broad, rather stiff feathers.

Head with the occipital feathers elongated, and with two or three very long, straight feathers (as long as the bill and head) springing from the occiput. These are rolled up so as to appear like a single cylindrical feather; back of the neck covered with down, but not provided with long feathers; interscapular feathers and scapulars elongated and lanceolate, the webs scarcely decomposed.

The upper part of the head, including the upper eyelids, the occipital crest, and the interscapular region and scapulars, dark lustrous steel-green; the wings and tail are ashy-blue; the under parts, the forehead, and the long occipital feathers, are white, passing into pale ashy-lilac on the sides and on the neck above; this color, in fact, tinging nearly the whole under parts. The region along the base of the bill, however, is nearly pure, as are the tibia. The bill is black; the loral space green; the iris red; the feet yellow; the claws brown.

Length, about 23 inches; wing, 12.50; tarsus, 3.15; bill, above, 3.10.

Hab.—America, from the British possessions southward to the Falkland Islands, including part of the West Indies.

Next to the Green Heron the Night Heron is unquestionably the most abundant of the family in this State. The adult birds are easily distinguished from other Herons by the black feathers on top of head and back, red eyes, and frequently three long, fine, white feathers, which grow from the base of the head. The plumage of the young birds is grayish-brown above, with numerous spots or stripes of white; lower parts lighter; eyes light yellow.

The appellation, Night Heron, is highly appropriate, as this bird is strictly nocturnal in its habits. During the daytime the Night Heron is inactive, and generally is found perched on a log or the limb of a tree in a quiet nook about the swamps and streams. As twilight approaches this drowsy wader becomes, as it were, a new being—impelled, no doubt, by the pangs of hunger—he stands erect, the loose and shaggy plumage, which before seemed ill-adapted to his body, now fits neat and closely as he carefully walks to the extremity of the dead and decorticated limb on which he has been dozing, and suddenly with a loud squawk launches himself into the air, uttering at short intervals his harsh note, and, rising above the trees of the forest, he speedily visits some favorite mill-dam. These birds arrive in Pennsylvania about the 25th of April and remain until the latter part of September. They seem to repair at once on their arrival in spring to localities where they are accustomed to breed. After the breeding, i. e., about the middle of August, when the young are amply able to provide for themselves these birds forsake their nesting-places and become quite plentiful along the rivers, streams and bushy marshes. The Night Heron rarely, if ever, breeds singly, but always in large companies. I have visited, on different occasions, two of these breeding resorts and found from twenty-five to seventy-five nests, which,
like those of the other species, were built of sticks and placed usually in high trees. In Berks county, near Blue Rock, for many years this species annually reared their young in the edge of a large woods along the margin of which was a good-sized stream of clear running water. In this place many of the nests were built in a bunch of saplings, some fifteen or twenty feet high and so small in diameter that it was impossible to climb them. Wilson has very properly said that the noise of the old and young in one of these breeding-places would induce one to suppose that two or three hundred Indians were choking or throttling each other. The same writer, in referring to examinations which he made, states that the teeth of the pectinated claw were thirty-five or forty in number, and, as they contained particles of the down of the bird, showed evidently from this circumstance that they act the part of a comb, to rid the bird of vermin in those parts which it cannot reach with its bill.

Food.

The late Isaac G. Darlington, of West Chester, some years ago, had large numbers of gold-fishes in a pond near his residence. One day Mr. Darlington caught twenty-five of these fish and placed them in a small pool, intending to remove them the following morning. About bedtime, Mr. D. said, I heard a loud squawking, and on going out saw two Night Herons actively engaged in catching these fish. I shot one of the robbers, which you there see mounted, on the book-case, and on making an investigation found only one of the fish remaining. "An incident may illustrate the habits of the Night Heron, and perhaps of the whole family. A Night Heron had been noticed for several days sitting on a tree near a branch of White Clay creek. It was at length shot and brought to me, with the tail of a large fish projecting four inches beyond its bill. On removing the fish (a sucker Catostoma, which must have been twelve inches long), its head and shoulders—except the bony portions—were eaten away by the gastric liquor of the stomach. This case affords evidence of the facts:

"1. Of the great strength and dexterity of the bird to capture so large a fish.

"2. Of the instinctive sagacity to swallow the fish head foremost.

"3. Of the great length of time required to digest so large an object as it slowly entered the stomach.

"4. Of the stolid endurance of the bird under circumstances apparently so uncomfortable."—Michener.

I have examined the stomachs of twenty odd of these Herons, adult and young; which have been shot in June at the breeding-grounds, and found in all only the remains of fishes. In two or three immature birds, taken in August and September, I have discovered a few grasshoppers and portions of insects.
ORDER PALUDICOLÆ. RAILS, ETC.

SUBORDER RALLI. RAILS, COOTS, ETC.

FAMILY RALLIDÆ. RAILS, GALLINULES, ETC.

SUBFAMILY RALLINÆ. RAILS.

GENUS RALLUS. LINNÆUS.

212. Rallus virginianus LINN.

Virginia Rail.

Description.

Much smaller than either the Clapper or King Rails, but resembling them in form, and resembling also R. elegans in colors; upper parts olive-brown, with longitudinal stripes of brownish-black; line from base of bill over the eye reddish-white; throat white; neck before and breast bright-rufous; abdomen and under tail coverts with transverse bands of black and white, the former being the wider; upper wing coverts bright rufous-chestnut; under wing coverts black, with transverse lines of white; iris red.

Total length (from tip of bill to end of tail), about 7½ inches; wing, 4; tail, 1½ inches.

Hab.—North America, from British provinces south to Guatemala and Cuba.

Notwithstanding the fact that the plumage of the Virginia and King Rails is similar, the species can readily be distinguished by the great difference in size, the Virginia Rail being only about one-third as large as the King Rail. This species arrives in Pennsylvania by the first of May and remains with us until the middle of October—specimens have been killed during the first week in November. These birds, although only occasionally observed, are, I am certain, much more plentiful about our large swamps and marshy river borders than it is usually supposed. Frequenting, as they do at all times, however, marshy districts, which are thickly covered with various grasses, bushes, reeds, &c., it is rather exceptional to see them. Like all the Rails, they are shy and timid. If approached they seldom fly, but run rapidly and quickly conceal themselves among the thick tussocks or other suitable cover. They are seemingly in no way impeded in making their retreat even across large-sized spaces of water on which are floating a few blades of grass, leaves or twigs, over which they run with the same celerity as when on the ground. The nest, a frail structure consisting mainly of grass, is built commonly in a tussock located generally in the most inaccessible portion of the swamp. The eggs, it is said, vary in number from six to ten and are dirty white, with numerous spots and different shades of brown. Nuttall writes: "The female is so much attached to her eggs, after sitting, as sometimes to allow of being taken up by the hand rather than desert
the premises, which affection appears the more necessary as the male seems to desert his mate and leave her in the sole charge of her little family."

Food.

According to several writers, the food of this bird is made up almost entirely of various forms of aquatic insects, larvæ and worms.

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sept. 3, 1879</td>
<td>Delaware county, Pa.,</td>
<td>Beetles</td>
</tr>
<tr>
<td>2</td>
<td>Sept. 15, 1879</td>
<td>Phila. Market, Pa.,</td>
<td>Insects and small seeds.</td>
</tr>
<tr>
<td>4</td>
<td>May 15, 1880</td>
<td>Chester county, Pa.,</td>
<td>Earth-worms</td>
</tr>
<tr>
<td>5</td>
<td>May 30, 1880</td>
<td>Chester county, Pa.,</td>
<td>Beetles and vegetable matter.</td>
</tr>
<tr>
<td>6</td>
<td>July 20, 1882</td>
<td>Chester county, Pa.,</td>
<td>Beetles</td>
</tr>
<tr>
<td>7</td>
<td>Oct. 5, 1882</td>
<td>Delaware county, Pa.,</td>
<td>Insects and small seeds.</td>
</tr>
<tr>
<td>8</td>
<td>Aug. 14, 1883</td>
<td>Wilmington, Del.,</td>
<td>Beetles</td>
</tr>
<tr>
<td>9</td>
<td>Sept. 2, 1884</td>
<td>Delaware county, Pa.,</td>
<td>Beetles</td>
</tr>
<tr>
<td>10</td>
<td>Sept. 2, 1884</td>
<td>Delaware county, Pa.,</td>
<td>Small &quot;worms.&quot;</td>
</tr>
<tr>
<td>11</td>
<td>Sept. 2, 1884</td>
<td>Delaware county, Pa.,</td>
<td>Beetles and seeds.</td>
</tr>
</tbody>
</table>

Genus Porzana. Vieillot.

214. Porzana Carolina (Linn.).

Sora; Carolina Rail; Rail-bird, Etc.

Description. (Plate 7.)

Space around the base of the bill, extending downwards on the neck before and over the top of the head, black.

Male.—Upper parts greenish-brown, with longitudinal bands of black, and many feathers having narrow stripes of white on their edges; behind the eye, sides of the neck, and the breast, fine bluish-ashy, with circular spots and transverse bands of white on the breast; middle of the abdomen and under tail coverts white; sides and flanks with transverse bands of brownish-black and white; bill greenish-yellow; legs dark-green.

Female.—Similar, but duller in colors; iris light-brown in both sexes.

Young.—Without black at the base of the bill or on the neck; throat dull-white; breast dull yellowish-ashy; upper parts tinged with dull-yellow.

Length, about 8½ inches; extent, about 13 inches; wing, 4½; tail, about 2 inches.

Hab.—Temperate North America, but most common in the eastern province, breeding chiefly northward. South in winter to the West Indies and northern South America.

The Carolina Rail and Virginia Rail resemble each other in size and form, but otherwise are greatly different. First, they differ in plumage: secondly, the bill of the Carolina Rail is about three-fourths of an inch long, while in the Virginia Rail this organ is often over one and one-half inches in length; again, the legs of the Carolina Rail are greenish-yellow, those of the Virginia Rail are dull reddish-brown. This species and the preceding may be said to be the only Rails which are regularly found in Pennsylvania. The Carolina Rail
Birds of Pennsylvania. 29

arrives in this region about the first week in May. During the latter part of August and early in September, it is not uncommon to find this species in parties numbering from half a dozen to twenty individuals in the swamps and wet grassy meadows. The Messrs. Baird mention this species among the natives of Cumberland county. Although I have never discovered their nests, I am fully convinced that they oftentimes breed with us. Prof. E. A. Samuels, of Boston, Mass., in his interesting and instructive work entitled "Our Northern and Eastern Birds," gives the following account of nests and eggs: "Early in May the season of incubation commences. The nest is constructed of pieces of straw and weeds, arranged in a large pile, and hollowed to the depth of an inch or more: it is usually placed in a tussock of grass or beneath a piece of turf. A specimen, which I found in Dedham meadows, was built beneath some thick cranberry-vines, and I have known of others being placed in small brier patches; but generally the fabric is built in an open meadow, usually on an elevated tussock in a boggy tract of ground. The eggs vary from five to eight or ten in number; their form is almost always an exact ovoidal. Their color is a yellow-drab, with a faint-olivaceous tint, different from the color of any of our other Rail's eggs. They vary in dimensions from 1.35 by 1 inch (Quincy, Mass.) to 1.15 by .85 inch (Albion, Wis.). The average size is about 1.26 by 1.92 (Cambridge and Needham, Mass.)."

Food.

During fall migrations, when this species is shot in great numbers about the reedy shores of the large rivers, their diet is principally of a vegetal character; when breeding it is said they subsist chiefly on insects and their larvæ.

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sept. 8, 1880</td>
<td>Near Chester city, Pa.</td>
<td>Green-colored vegetable matter.</td>
</tr>
<tr>
<td>2</td>
<td>Sept. 8, 1880</td>
<td>Near Chester city, Pa.</td>
<td>Brown-colored seeds, large and small.</td>
</tr>
<tr>
<td>5</td>
<td>Sept. 8, 1880</td>
<td>Near Chester city, Pa.</td>
<td>Yellow seeds and particles of shells.</td>
</tr>
<tr>
<td>7</td>
<td>Sept. 8, 1880</td>
<td>Near Chester city, Pa.</td>
<td>Seeds and other vegetable matter.</td>
</tr>
<tr>
<td>8</td>
<td>Sept. 8, 1880</td>
<td>Near Chester city, Pa.</td>
<td>Yellow-colored seeds.</td>
</tr>
<tr>
<td>9</td>
<td>Sept. 8, 1880</td>
<td>Near Chester city, Pa.</td>
<td>Yellow and brown-colored seeds.</td>
</tr>
<tr>
<td>10</td>
<td>Sept. 8, 1880</td>
<td>Near Chester city, Pa.</td>
<td>Seeds and other vegetable matter.</td>
</tr>
<tr>
<td>12</td>
<td>Sept. 8, 1880</td>
<td>Near Chester city, Pa.</td>
<td>Seeds and other vegetable matter.</td>
</tr>
<tr>
<td>14</td>
<td>May 3, 1882</td>
<td>Chester county, Pa.</td>
<td>Small &quot;worms.&quot;</td>
</tr>
<tr>
<td>15</td>
<td>July 20, 1884</td>
<td>Chester county, Pa.</td>
<td>Small green seeds.</td>
</tr>
<tr>
<td>16</td>
<td>Aug. 12, 1884</td>
<td>Chester county, Pa.</td>
<td>Beetles and vegetable matter.</td>
</tr>
</tbody>
</table>
215. Porzana noveboracensis (Gmel.).

**Yellow Rail.**

**Description.**

Entire upper parts ochre-yellow, with longitudinal wide stripes of brownish-black and transverse narrow stripes of white; neck and breast reddish ochre-yellow; many feathers tipped with brown; middle of abdomen white; flanks and ventral region with transverse bands of dark reddish-brown and narrow bands of white; under tail coverts rufous with small spots of white and black; under wing coverts white.

Length, (from tip of bill to end of tail) about 6 inches; extent, about 13; wing, 3½; tail, 1⅓; bill, ½ inch.

*Hab.*—Eastern North America, from Nova Scotia and Hudson's Bay west to Utah and Nevada. No extralimital record except Cuba and the Bermudas.

Birds of this species are occasionally taken about our rivers and meadows during the spring and fall migrations. I have seen two specimens which were captured in the early part of July, 1882, in Delaware county, near Chester city. It is possible that this little Rail sometimes breeds in Pennsylvania, yet I have no positive information to this effect. According to Audubon the nest is usually placed on the ground, in the center of a thick tuft of grass. It is composed of different kinds of weeds, and is occasionally covered over in the same manner as that of the Meadow Lark. The eggs, according to different writers, vary from six to ten, and are described as yellowish-brown, marked at the larger end with reddish spots, and measure about 1.13 by .82 inches.

**Subfamily GALLINULINÆ.** Gallinules.

**Genus GALLINULA.** Brisson.

219. Gallinula galeata (Licht.).

**Florida Gallinule; Blue Rail.**

**Description.**

Frontal plate large, obovate, terminating square on the top of the head; bill shorter than the head, rather thick, compressed; wing rather long; tail short; legs moderate; toes and claws long, robust. Head, neck, and entire under parts dark bluish-cinereous, frequently nearly black on the head and neck, and generally lighter on the abdomen; a few feathers on the flanks widely edged with white; edge of wing at the shoulder and outer edge of first primary quill white; shorter under tail coverts black, longer white. Upper parts brownish-olive; darker on the rump; quills dark-brown; tail, brownish-black; frontal plate and bill bright-red, tipped with yellow; tibia with bright-red space on the portion next to the feathers; (the red color on frontal plate and tibiae is oftentimes hardly noticeable in specimens taken in autumn;) lower portion of tibia, tarsus, and toes yellowish-green; iris brown.

Total length, about 12½ inches; extent, about 21; wing, 6⅞; tail, 3; bill, 1½; tarsus, 1⅓.

*Hab.*—Temperate and tropical America, from Canada to Brazil and Chili.

The Blue Rail, as the Florida Gallinule is usually called by sportsmen, is a regular, though rare, spring and fall migrant in this locality.
The Messrs. Baird mention this species as a rare native in Cumberland county. Their food, according to Audubon, "consists of grasses, seeds, water insects, worms and snails, along with which they swallow a good deal of sand or gravel."

<table>
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<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>May 11, 1879</td>
<td>Chester county, Pa.,</td>
<td>Vegetable matter (green-colored).</td>
</tr>
<tr>
<td>2</td>
<td>Sept. 8, 1880</td>
<td>Near Chester city, Pa.,</td>
<td>Seeds.</td>
</tr>
<tr>
<td>3</td>
<td>Sept. 15, 1880</td>
<td>Near Chester city, Pa.,</td>
<td>Seeds and green-colored vegetable matter.</td>
</tr>
</tbody>
</table>

In addition to the examinations given in the above table, I found in the gizzards of five of these birds, which were killed in Florida, in March, 1885, numerous small yellow and brown seeds; also the stems and leaves of different kinds of aquatic plants.

**Subfamily FULICINÆ. Coots.**

**Genus FULICA. LINN.EUS.**

221. *Fulica americana* Gmel.

**American Coot.**

*(Plate 8.)*

*Hab.*—North America, from Greenland and Alaska, southward to the West Indies and Central America.

To recognize a Coot, remember it is about the size of a Pheasant, bill short, thick and white, or nearly so, dark at base of frontal plate, and a brownish spot near the end of each mandible. Head and neck black; body lead-gray color; white on edge of wing and a white patch under its tail; toes furnished with broad lobes. The American Coot, commonly known in eastern Pennsylvania as Mud-hen,* breeds in various localities throughout its extensive range. In the British provinces it is said to be quite a common summer resident. Mr. Samuels remarks that it breeds probably in all the New England States. Dr. Coues has found it breeding in northern Montana and Dakota. Mr. H. W. Henshaw found them to be very numerous at the Alkali lakes, southern Colorado, where, according to this eminent authority, "they breed in colonies among the rushes, the nests often being but a few feet apart. These are very bulky structures, composed of weeds and

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*The vernacular name of Mud-hen is also given to the Clapper Rail (*Rallus longirostris crepitans*—Gmel.) which breeds so abundantly in the extensive marshes about Atlantic City and elsewhere on the Atlantic coast in New Jersey and southward.*
Birds at line legs tarsus, large upper occiput no quills tail entire upper bill iris eyes legs they tail.

32. Mud may stems water, rushes like thousand introduces during and Nuttall grasses, I Coots obtained all stances, black small longer 228. ries alternating inserted space segregated on the black, to the black, sides under wing coverts; quills ashy-brown; tail feathers brownish-black, tipped with ashy, darker on the upper surface, paler and frequently white on the under; bill light-brown, paler and yellowish at base; legs pale-reddish; iris brown.

Total length, about 11 inches; wing, 5½; tail 2½; tarsus, 1½ inches.

Hub.—Eastern province of North America, north to the British provinces, west to Dakota, Kansas, etc., breeding throughout its range; no extralimital records.
This bird, well known to sportsmen, is frequently confounded by the casual observer with the Gray or Wilson's Snipe. This error, however, can readily be avoided if you bear in mind that the Woodcock has entire lower parts, including lining of wings, uniformly red dish-brown; on the other hand, the snipe has abdomen white, throat and upper parts of the breast speckled and the lining of the wings barred with white and black. Bill in both species measures two and one half inches or more in length. The Woodcock arrives in Pennsylvania about the middle of March, sometimes earlier, and occasionally a few are found during the "warm-spells" of winter lingering about the spring-heads. This bird, strictly speaking, is an inhabitant of the lowlands and boggy districts of our woods and dense thickets. Oftentimes during the fall migrations it is found along the muddy shores of streams, &c., or in the late summer when its usual feeding-grounds have become dry and hard through the continued summer's heat, it resorts to corn-fields where it probes the humid soil in search of food. I am not positive that the "Wood-hen, as some aesthetic market-women prefer to call her," makes any attempt to build a nest. In April, on three occasions, I have found eggs, and once (May 10) took four young, but a few days old, all of which were on the ground in the woods. The eggs were deposited in slight depressions in the earth, in and about which were dried leaves; the young birds were discovered on a lot of dead oak-leaves, and from the appearance of their bed I judge they had been there only a short time. It is stated by Dr. Coues "that the young are sometimes removed from danger by the parent carrying them with the feet." The Woodcock is principally nocturnal in its habits, and during the fall migrations is gregarious. I shot one of these birds in Florida, in March, 1885, and was informed by Mr. Richard L. Dade that the species breeds in that State.

Food.

Nuttall writes: "According to their usual habits, they keep secluded in the woods and thickets till the approach of evening, when they sally forth to seek out springs, paths and broken soil, in quest of worms and other insects, on which they feed. They now disperse themselves over the country to breed, and indicate their presence in all directions by the marks of their boring bills, which are seen in such soft and boggy places as are usually sheltered by thickets and woods. They also turn over the fallen leaves from side to side with their bills in quest of lurking insects, but never scratch with their feet, though so robust in appearance. The sensibility possessed by the extremity of the bill, as in the Snipe, is of such an exquisite nature that they are enabled to collect their food by the mere touch,
without using their eyes,* which are set at such a distance and elevation in the back part of the head as to give the bird a remarkable aspect of stupidity."

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>May 10, 1879</td>
<td>Willistown, Pa.</td>
<td>Small fragments of &quot;worms&quot;.</td>
</tr>
<tr>
<td>2</td>
<td>May 10, 1879</td>
<td>Willistown, Pa.</td>
<td>Small fragments of &quot;worms&quot;.</td>
</tr>
<tr>
<td>3</td>
<td>May 10, 1879</td>
<td>Willistown, Pa.</td>
<td>Small fragments of &quot;worms&quot;.</td>
</tr>
<tr>
<td>4</td>
<td>May 10, 1879</td>
<td>Willistown, Pa.</td>
<td>Earth-worms and fragments of beetles.</td>
</tr>
<tr>
<td>6</td>
<td>July 20, 1882</td>
<td>Chester county, Pa.</td>
<td>Insects and larvae.</td>
</tr>
<tr>
<td>8</td>
<td>Oct. 20, 1882</td>
<td>Schuylkill county, Pa,</td>
<td>Small seeds.</td>
</tr>
</tbody>
</table>

*All young birds. 
†Parent of above.

**Genus GALLINAGO.** Leach.

230. *Gallinago delicata* (Ord.).

Wilson’s Snipe; Gray Snipe.

(*Plate 9.*

**Dimensions.**—Length, about 11 inches; extent, about 18 inches; wing, about 5 inches; tarsus, 1.25; tail, 2.25 inches. Female somewhat smaller than the male.

**Hab.**—North and middle America, breeding from the northern United States northward; south in winter to the West Indies and northern South America.

This bird, usually, though improperly, called \"English Snipe,\" arrives in Pennsylvania about the last week in March. After the first of May, these birds are rarely seen again until the fall migrations, at which time you seldom find them in small flocks or \"wisps,\" but generally see them singly in the meadows, where but a few months before they were plentiful. The Gray Snipe is not found in the woods or dense thickets, but at times when sojourning in this region is seen about the marshes or meadows, and in the early spring he shows a special preference for spring-heads, about which, at this time, the tender blades of grasses grow in abundance. Audubon says: \"I never had the good fortune to meet with a nest in Pennsylvania, although I have known several instances of a pair breeding not far from Mill Grove, on the Perkioming.\" While I do not dispute the fact that a few nests of this species have, at times, been taken in Pennsylvania, I am quite certain that the Snipe does not commonly breed in this

*The eyes being situated high up and far back in both the Snipe and Woodcock (well shown in plate No. 9) is a wise provision of nature, as these birds by this peculiarity escape many of their enemies. It can easily be understood by this arrangement that the field of vision is greatly increased. Obtaining their sustenance, as they do, chiefly by probing with their long bills, so amply supplied with nerves, they have comparatively little use for their eyes when feeding, unless it is to keep a watch for their numerous foes.—Warren.*
State. Individuals of this species have been shot in summer near West Chester, also in Delaware county, but on examining them I found that, although able to fly a short distance, they were so crippled from wounds received during the spring shooting season that they were unable to perform any extended migrations. Should these cripples remain in a locality during the summer months, I have no doubt some of them might reproduce.

Food.

According to Audubon, "the food of our common Snipe consists principally of ground-worms, insects, and the juicy slender roots of different vegetables, all of which tend to give its flesh that richness of flavor and juicy tenderness for which it is so deservedly renowned, it being equal to that of the Woodcock. Many epicures eat up both Snipe and Woodcock with all their visceræ, worms and insects to boot, the intestines, in fact, being considered the most savory parts. On opening some newly-killed Snipe, I have more than once found fine large and well-fed ground-worms, and at times a leech, which I must acknowledge I never conceived suitable articles of food for man, and for this reason I have always taken good care to have both Snipes and Woodcocks well cleaned, as all game ought to be."

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td>April 1, 1879</td>
<td>West Chester, Pa.</td>
<td>Earth-worms and fragments of beetles.</td>
</tr>
<tr>
<td>12</td>
<td>April 7, 1879</td>
<td>West Chester, Pa.</td>
<td>Beetles and two seeds of smart-weed.</td>
</tr>
<tr>
<td>13</td>
<td>April 12, 1879</td>
<td>Chester county, Pa.</td>
<td>Vegetable matter, apparently roots of small plant.</td>
</tr>
<tr>
<td>16</td>
<td>April 22, 1879</td>
<td>East Bradford, Pa.</td>
<td>Portions of grass blades and roots.</td>
</tr>
<tr>
<td>17</td>
<td>April 1, 1884</td>
<td>West Goshen, Pa.</td>
<td>Small seeds and earth-worms.</td>
</tr>
<tr>
<td>22</td>
<td>April 17, 1883</td>
<td>Chester county, Pa.</td>
<td>Various insects and vegetable matter.</td>
</tr>
<tr>
<td>23</td>
<td>April 17, 1883</td>
<td>Chester county, Pa.</td>
<td>Small seeds.</td>
</tr>
<tr>
<td>24</td>
<td>April 17, 1883</td>
<td>Chester county, Pa.</td>
<td>Small seeds and earth-worms.</td>
</tr>
<tr>
<td>25</td>
<td>April 17, 1883</td>
<td>Chester county, Pa.</td>
<td>Vegetable matter.</td>
</tr>
</tbody>
</table>

*Polygonum.*
Genus Tringa. Linnaeus.

242. Tringa minitilla Vieill.
Least Sandpiper.

Description.

The smallest of all known species of this group found in North America; bill about as long as the head, slightly curved towards the end, which is very slightly expanded: grooves in both mandibles near the tip; wing long; tertaries nearly as long as the primaries; tail short; middle feathers longest; outer feathers frequently longer than the intermediate; legs long; lower third of the tibia naked; toes long, slender, margined, and flattened beneath; hind toe small; upper parts with nearly every feather having a large central spot of brownish-black, and widely margined with ashy and bright brownish-red; rump and middle of the upper tail coverts black; outer coverts white, spotted with black; stripe over the eye, throat, and breast, pale ashy-white, with numerous small longitudinal spots of ashy-brown; abdomen and under tail coverts white; quills dark-brown, with the shafts of the primaries white; tertaries edged with reddish; middle feathers of the tail brownish-black; outer feathers light ashy-white; under surface of wing light brownish-ashy, with a large spot of white near the shoulder; axillary feathers white; bill black; tarsus brownish-green; iris brown.

Total length, from tip of bill to end of tail, about 5 1/2 to 6 inches; extent, about 1 1/2 inches; wing, 3 1/4 to 3 3/4; tail 1 1/2; bill to gape, 1/2; tarsus, 3/4 inch.

Hab.—The whole of North and South America, breeding north of the United States. Accidental in Europe.

This, the smallest of our Sandpipers, occurs in Pennsylvania only as a transitory visitor in the spring and fall migrations. According to my experience, it is rare in spring, but quite frequently found in the autumn, at which time it is often seen in company with other species of its family. Sometimes these birds are found about our rivers and ponds in good sized flocks. Near West Chester, about six years ago, in the latter part of August, an acquaintance of mine found a flock of probably one hundred feeding on the muddy bottom of a mill-dam from which the water had been allowed to escape.

Food.

In my notes I find that no records appear of food-materials of these birds, although I have obtained several in Pennsylvania and killed many along the Atlantic coast and elsewhere. Nuttall tells us that "for the discovery of their food their flexible and sensitive awl-like bills are probed into the mire, marshy soil, or wet sand, in the manner of the Snipe and Woodcock, and in this way they discover and rout from their hidden retreats the larvae and soft worms which form a principal part of their fare. At other times they also give chase to insects, and pursue their calling with amusing alacrity."
Genus TOTANUS. Bechstein.

255. Totanus flavipes (Gmel.).

Yellow-legs. Description.

Bill rather longer than the head, straight, slender, compressed; wing long-pointed; tail short; legs long, lower half of the tibia naked; toes moderate, slender, margined, the outer and middle united at base; rump and upper tail coverts white, the latter transversely barred with ashy-brown; other upper parts ash, many feathers having large arrowheads and irregular spots of brownish-black, and edged with ashy-white; under parts white, with numerous longitudinal lines on the neck before, and arrowheads on the sides, of dark ashy-brown; axillaries and under wing coverts white, with bands of ashy-brown, very indistinct in many specimens, but generally well defined; quills brownish-black; tail ashy-white with transverse bands of dark-brown, middle feathers darker; bill greenish-black; legs yellow; iris brown.

Young.—Entire upper plumage tinged with reddish-brown; neck before with lines much less distinct and pale-ashy.

Total length, about 10 to 10½ inches; wing, 6 to 6½; tail, 2½; bill, 1½; tarsus, 2 inches. Bill in this species is always less than 2 inches long.

Hab.—America in general, breeding in the cold temperate and sub-arctic districts, and migrating south in winter to southern South America. Less common in the western than the eastern province of North America.

This bird is a miniature representative of the Greater Yellow-legs* (Totanus melanoleucus). Both species are easily recognized by their long yellow legs and white markings on rump.

The Yellow-legs, commonly known along the sea-shore as "Little Yellow-leg-Tell-tale," is quite frequently found in Pennsylvania during migrations. Although often seen in spring, it is most numerous during the last of August and in September. It is generally found in the interior, singly or in pairs, and sometimes, though not often, in parties of five or six. I have often found them about ponds, pools, and muddy flats, never along streams of running water, unless the borders of such streams were muddy and destitute of grasses and other vegetation. Dr. Ezra Michener, in a list of the Chester county birds, published in 1863, says this species is a "frequent summer resident." I have never known this bird to occur in Chester county as a summer resident, and I am satisfied that it is now found in Chester county and throughout Pennsylvania only as a spring and autumnal migrant.

Food.

Referring to the food of this bird, Nuttall says: "It resides chiefly in the salt marshes, and frequents low flats and estuaries at the ebb of the tide, wading in the mud in quest of worms, insects and other small marine and fluvial animals." I have been informed that these birds sometimes prey on small fishes.

*The Greater Tell-tale, as this bird is usually denominated by gunners, measures 14 inches in length by about 25 inches in extent. The bill is about 2½ inches long; never under two inches in length.
### 256. Totonus solitarius (Wils.).

**Solitary Sandpiper.**

**Description.** (Plate 10.)

Bill rather longer than the head, straight, slender, compressed; both mandibles with narrow grooves; wing long, pointed; tail medium or rather short, rounded; legs rather long, slender; lower half of the tibia naked; toes long, the outer united to the middle by a small membrane, flattened underneath, margined; upper parts greenish-brown, with numerous small circular and irregular spots of ashy-white; upper tail coverts darker; under parts white; breast and neck before with numerous longitudinal lines of greenish-brown; sides, axillaries, and under wing coverts white, with numerous transverse narrow bands of dark greenish-brown; under tail coverts white, with a few transverse bands of dark-brown; quills brownish-black, with a slight bronzed or reddish lustre on the primaries; two middle feathers of the tail greenish-brown; other feathers of the tail pure-white, with about five transverse bands of brownish-black; bill and legs dark greenish-brown; iris brown.

Total length, about 8 to 8½ inches: wing, 5; tail, 2½; bill, 1½; tarsus, 1¼ inches.

*Hab.*—North America, breeding occasionally in the northern United States, more commonly northward, and migrating southward as far as Brazil and Peru.

The Solitary Sandpiper, unlike other of the Sandpipers occurring in this region, appears to have a special fondness for stagnant pools in and about the woods. During its spring and fall passage through Pennsylvania it is common, frequenting at all times muddy borders of ponds, pools and sloughs. This species seldom arrives in this State before April 25. About the first week in May you find them singly, in pairs, and occasionally in flocks, numbering sometimes as many as eight or even twelve individuals. After the 20th of May you rarely see a Solitary Sandpiper until the last week in September. In Wilson's Ornithology, the following mention is made of the species: “I have made many long and close searches for the nest of this bird without success. They regularly breed on Pocono mountain, between Easton and Wilkes-Barre, in Pennsylvania, arriving there early in May and departing in September.” In Cumberland county the Messrs. Baird record it as a native species. Wilson also says that these birds inhabit the watery solitudes of our highest mountains during the
summer from Kentucky to New York, but are nowhere numerous, seldom more than one or two being seen together. Dr. Cones has found "young birds in July in northern Dakota, about the pools of Turtle mountain." The same writer also states that "in Maryland and Virginia, and in nearly correspondent latitudes in the west, I have shot birds in August so young as to leave no doubt in my mind that they were bred in the vicinity." Nuttall says: "A pair, but oftener a single individual, have frequented, very familiarly, the small fishpond in the Botanic Garden in Cambridge. Attracted by the numerous Donatias and their larvae, which feed upon the water-lily (*Nymphaea odorata*), I observed one of them tripping along upon the sinking leaves with great agility, expanding its wings and gently flitting over the treacherous element in the manner of the Rail. At another time, probably the same individual (who at first was accompanied by a mate) was seen day after day collecting insects, and contentedly resting in the interval on the border of the pond. The water having been recently let off, the lily leaves and insects were covered with mud. As soon as our little familiar and cleanly visitor had swallowed a few of these insects, he washed them down with a drink of water, and at the same time took the precaution to cleanse his bill and throat. Indeed, it is remarkable that however dirty the employment of these shore birds may be, so neat are they in all their habits that not a stain or a soil is allowed for a moment to remain upon their limbs or plumage. * * According to the observations of Mr. Ives (of Salem), the Solitary Sandpiper swims and dives with great facility, when disabled from flying by a wound; it even proceeds under the water, like the Divers or Grebes, and is only overtaken by a close pursuit."

According to Audubon, the Solitary Sandpiper is expert in catching insects on the wing, "especially the smaller kinds of dragon-flies, which it chases from the sticks on which they alight, and generally seizes before they have flown across the little ponds which are the favorite places of resort of this species. I have found their stomachs filled with aquatic insects, caterpillars of various kinds, and black spiders of considerable size."

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>May 6, 1880</td>
<td>Chester county, Pa.</td>
<td>Vegetable matter.</td>
</tr>
<tr>
<td>3</td>
<td>May 9, 1880</td>
<td>Chester county, Pa.</td>
<td>Small &quot;worms.&quot;</td>
</tr>
<tr>
<td>4</td>
<td>May 7, 1882</td>
<td>Chester county, Pa.</td>
<td>&quot;Worms&quot; and beetles.</td>
</tr>
<tr>
<td>5</td>
<td>May 7, 1882</td>
<td>Chester county, Pa.</td>
<td>&quot;Worms&quot; and beetles.</td>
</tr>
</tbody>
</table>
Genus Bartramia. Lesson.

261. Bartramia longicauda (Bechst.).

Bartramian Sandpiper.

Description.

Bill about as long as the head, rather wide and flattened at base, curved at the tip; nostril with a large membrane; nasal groove long; wing long; tail long for this group; legs moderate or rather long; lower half of the tibia naked; toes moderate, the outer and middle toe united by a membrane, inner and middle free to the base, hind toe small; general color of the upper parts brownish-black, with a greenish lustre, and with the feathers edged with ashly-white and yellowish, the latter especially on the wing coverts; lower part of the back, rump, and upper tail coverts, brownish-black; lateral coverts of the tail yellowish-white, with arrow-heads and irregular spots of black; wide stripe over the eye, and entire under parts very pale yellowish-white, nearly pure-white on the abdomen; neck before with numerous longitudinal lines of brownish-black; breast and sides with waved and pointed transverse narrow band of the same; axillary feathers and under wing coverts pure-white, with numerous nearly regular transverse narrow bands of black; quills brownish-black, with numerous transverse bands of white on their inner webs, very conspicuous on the under surface of the wing; shaft of first primary white; middle feathers of the tail same greenish-brown as the back, with irregular and imperfect transverse bands of black; outer feathers pale reddish-yellow, edged and tipped with white, and with several irregular transverse bands and a large sub-terminal arrow-head of black; bill greenish-yellow, with the under mandible more clear yellow towards its base, tip and rudge brownish-black; legs light-yellow; toes darker; iris brown.

Total length, about 12 inches; wing, 6½; tail, 3¼ inches.

Hab.—Eastern North America, north to Nova Scotia and Alaska, breeding throughout its North American range; migrating in winter southward, as far even as southern South America. Occasional in Europe.

This bird, known to sportsmen as Field or Grass Plover, is a common native in Pennsylvania. It arrives here usually about April 20. This species resides during the breeding period in grass-fields and highlands. In this particular it differs from other birds of its family. Nests on the ground; eggs, three to four and spotted. In August, when the young are amply able to fly, the Plovers collect in flocks and frequent the fields and meadows. By the last of September, but few of the species are found in the interior, as they appear to soon leave the breeding-grounds and migrate towards the sea-coast and large tide rivers.

Food.

<table>
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<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>July</td>
<td>Willistown, Pa.</td>
<td>Beetles.*</td>
</tr>
<tr>
<td>2</td>
<td>July</td>
<td>Willistown, Pa.</td>
<td>Various insects.*</td>
</tr>
<tr>
<td>3</td>
<td>July</td>
<td>Willistown, Pa.</td>
<td>Grasshoppers.*</td>
</tr>
</tbody>
</table>

* Young birds.
Genus ACTITIS. ILLIGER.

263. Actitis macularia (Linn.).

Spotted Sandpiper.

Description.
Small; bill rather longer than the head, straight, slender; long grooves in both mandibles; wing rather long, pointed; tail medium, rounded; legs rather long; lower third of the tibia naked; toes long, margined, and flattened underneath; outer connected with the middle toe by a large membrane; inner very slightly connected to the middle toe; upper parts brownish olive-green, with a somewhat metallic or bronzed lustre, and with numerous longitudinal lines, and sagittate, lanceolate, and irregular spots of brownish-black, having the same lustre; line over the eye, and entire under parts white, with numerous circular and oval spots of brownish-black, smaller on the throat, largest on the abdomen; quills brown, with a green lustre; primaries slightly tipped with white, and having a white spot on their inner edges; secondaries white at their bases, and tipped with white; middle feathers of the tail same green as other upper parts; outer tipped with white, and with irregular bars of brownish-black; bill flesh-color, tipped with brown; feet reddish-yellow; iris brown.

Young less bronzed above, and under parts white, without spots.
Total length, 7½ to 8 inches; wing, 4½; tail, 2; bill, 1; tarsus, rather less than 1 inch.

Hab.—North and South America, south to Brazil. Breeds throughout temperate North America. Occasional in Europe.

The Tilt-up, as this Sandpiper is universally known in this section, arrives in Pennsylvania about the middle of April, sometimes even earlier. It is common and indigenous. The nest is placed on the ground in a grass field, sometimes in a grain-field, or on the sandy bank near streams and ponds, along which these birds are commonly found industriously seeking their hidden prey. Wilson very properly says: "This species is as remarkable for perpetually wagging the tail as some others are for nodding the head; for, whether running on the ground, or on fences, along the rails, or in the water, this motion seems continual; even the young, soon after they are freed from the shell, run about constantly wagging the tail." When you approach the eggs or young the old birds manifest great concern. They flutter along the ground as if injured, and should you follow and attempt to catch them they will lead you to a considerable distance from their treasures before flying off. Wilson mentions the following instance, which shows the great solicitude which the female has for her young:
My venerable friend, Mr. William Bartram, informs me that he saw one of these birds defend her young for a considerable time from the repeated attacks of a ground-squirrel. The scene of action was on the river shore. The parent had thrown herself, with her two young behind her, between them and the land, and at every attempt of the squirrel to seize them by a circuitous sweep, raised both her wings in an almost perpendicular position, assuming the most formidable appearance she was capable of, and rushed forwards on the squirrel, who, intimidated by her boldness and manner, instantly retreated; but presently returning, was met, as before, in front and on flank by the daring and affectionate bird, who, with her wings and whole plumage bristling up, seemed swelled to twice her usual size. The young crowded together behind her, apparently sensible of their perilous situation, moving backwards and forwards as she advanced or retreated. This interesting scene lasted for at least ten minutes; the strength of the poor parent began evidently to flag, and the attacks of the squirrel became more daring and frequent, when my good friend, like one of those celestial agents who, in Homer’s time, so often decided the palm of victory, stepped forward from his retreat, drove the assailant back to his hole, and rescued the innocent from destruction.”

To escape capture when wounded the Tilt-up will resort to many devices. One day when out shooting along Beaver creek, a tributary of the Brandywine, about two miles from West Chester, I crippled one of these birds; it fell to the ground and ran rapidly to the edge of the stream, which at this point was probably ten feet wide. The water was about a foot deep, perfectly clear, and, except on one side for about eighteen inches, was dammed back and remained quite motionless. I approached the bird, when, to my great surprise, it plunged into the water and went down to the sandy bottom like a stone. It ran on the bottom seemingly without any difficulty, and even through the swiftly running water along the edge, came up on the opposite side of the stream and thrust its head into some long grass, but kept its body submerged. The bird repeated this performance three times before I secured it. The Tilt-up is not gregarious.

**Food.**

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>June 3, 1879</td>
<td>Barnegat, N. J., . .</td>
<td>Dipterous insects,</td>
</tr>
<tr>
<td>2</td>
<td>July 12, 1879</td>
<td>Chester county, Pa., .</td>
<td>Coleoptera and grasshoppers,</td>
</tr>
<tr>
<td>3</td>
<td>May 4, 1880</td>
<td>Chester county, Pa., .</td>
<td>Dipterous insects,</td>
</tr>
<tr>
<td>4</td>
<td>May 6, 1880</td>
<td>Chester county, Pa., .</td>
<td>beetles,</td>
</tr>
<tr>
<td>5</td>
<td>May 10, 1880</td>
<td>Chester county, Pa., .</td>
<td>Small “worms” and beetles,</td>
</tr>
<tr>
<td>6</td>
<td>Aug. 11, 1882</td>
<td>Chester county, Pa., .</td>
<td>Beetles and worms,</td>
</tr>
<tr>
<td>7</td>
<td>Sept. 3, 1882</td>
<td>Chester county, Pa., .</td>
<td>Worms,</td>
</tr>
</tbody>
</table>
Family Charadriidae. Plovers.

Genus Charadrius. Linnaeus.

270. Charadrius squatarola (Linn.).

Black-bellied Plover.

Description.

Bill and legs strong; wings long; a very small rudimentary hind toe; around the base of the bill to the eyes, neck before and under parts of body, black; upper white, nearly pure and unspotted on the forehead; sides of the neck and rump tinged with ashy, and having irregular transverse bars of brownish-black on the back, scapulars, and wing coverts; the brownish-black frequently predominating on those parts, and the rump also frequently with transverse bars of the same; lower part of the abdomen, tibia, and under tail coverts, white; quills brownish-black, lighter on their inner webs, with a middle portion of their shafts white and a narrow longitudinal stripe of white frequently on the shorter primaries and secondaries; tail white, with transverse imperfect narrow bands of black; bill and legs black; the black color of the under parts generally with a bronzed or coppery lustre, and presenting a scale-like appearance; the brownish-black of the upper parts with a greenish lustre; iris black.

Younger and winter plumage.—Entire upper parts dark-brown, with circular and irregular small spots of white, and frequently of yellow, most numerous on the wing coverts; upper tail coverts white; under parts white, with short longitudinal lines and spots dark brownish-cinereous on the neck and breast; quills brownish-black, with large longitudinal spots of white on their inner webs, and also on the outer webs of the shorter primaries.

Young.—Upper parts lighter, and with the white spots more irregular or scarcely assuming a circular shape; narrow lines on the neck and breast more numerous.

Total length, about 11½; wings, 7½; tail, 3 inches.

Hab.—Nearly cosmopolitan, but chiefly in the Northern Hemisphere, breeding far northward, and migrating south in winter; in America to the West Indies, Brazil and New Grenada.

This bird, according to my observation, occurs in Pennsylvania only as a rare migrant: when found is mostly seen in autumn. In former years, it seems that these birds were found as natives. If this species now breeds in Pennsylvania it certainly is confined to the mountainous regions. Audubon, speaking of its breeding, says: “Individuals of this species spend the summer months in the mountainous parts of Maryland, Pennsylvania and Connecticut, where they breed. I have found their nests near the waters of the Delaware and the Perkiominy creek * * in the same localities as those of the Field Plover (B. longicauda), as well as in plowed fields. The nest is merely a slight hollow with a few blades of grass. The eggs are four, an inch and seven and a half eighths in length, an inch and three-eighths in their greatest breadth; their ground-color yellowish-white, tinged with olivaceous, and pretty generally covered with blotches and dots of light-brown and pale-purple, the markings being more abundant toward the small end.”

Wilson, writing of the species in this Commonwealth, says: “This
Bird is known in some parts of the country by the name of the Large Whistling Field Plover. It generally makes its first appearance in Pennsylvania late in April; frequents the countries towards the mountains; seems particularly attached to newly plowed fields, where it forms its nest of a few slight materials, as slightly put together. The female lays four eggs, large for the size of the bird, of a light olive color, dashed with black, and has frequently two broods in the same season. It is an extremely shy and watchful bird, though clamorous during breeding-time."

Dr. Ezra Michener, in his catalogue (1863), mentions the Black-bellied Plover as a "rare summer resident" in Chester county.

"During winter, or as long as they frequent the seashore, they feed on marine insects, worms and small shell-fish, and when they are in the interior, on grasshoppers and other insects, as well as berries of various kinds."—Audubon.


American Golden Plover.

Description.

Bill rather short; legs moderate; wings long; no kind toe; tarsus covered before and behind with small circular or hexagonal scales; upper parts brownish-black, with numerous small circular and irregular spots of golden-yellow, most numerous on the back and rump, and on the upper tail coverts, assuming the form of transverse bands generally; also with some spots of ashy-white; entire under parts black, with a brownish or bronzed lustre, under tail coverts mixed or barred with white; forehead, border of the black of the neck, under tail coverts, and tibial, white; axillary feathers cinereous; quills, dark-brown; middle portion of the shafts white, frequently extending slightly to the webs, and forming longitudinal stripes on the shorter quills; tail dark-brown, with numerous irregular bands of ashy-white, and frequently tinged with golden-yellow; bill black; legs dark bluish-brown; iris dark-brown.

Younger.—Under parts dull-ashy, spotted with brownish on the neck and breast, frequently more or less mixed with black; many spots of the upper parts dull ashy-white; other spots, especially on the rump, golden-yellow.

Total length, about 9½ inches; wing, 7; tail, 2½ inches.

Hab.—Arctic America, migrating southward through North and South America to Patagonia.

I have never seen the Golden Plover in this State during the spring migrations, and as an autumnal visitant it is uncertain. For several consecutive seasons none will be observed in certain districts; the following season, however, the birds will be found abundantly in these same districts. The largest flight of Golden Plovers that I ever saw in this section (Chester county) was in the fall of 1880, when flocks of from fifty to one hundred were quite plentiful about the plowed grounds and grass-fields in the neighborhood of West Chester. Mr. Francis Jacobs, of West Chester, informs me that about the year 1860
Bull-head* Plovers were abundant in the Great Valley and in the vicinity of West Chester, where, in September, they came in flocks of hundreds and literally covered the fields where wheat had been sown. In those days the wheat was sown, as but few farmers had drills. Mr. J. states that he has often killed fifteen or twenty at one shot, and, in company with his brother, has shot two hundred or more in one day. These birds would remain about two weeks, or until the wheat had sprouted. They subsisted almost exclusively on wheat. My informant states that prior to 1860, for at least fifteen years, these birds annually, in the fall, made these visits, and that he had always been told, when a boy, that “Bull-heads” were abundant every year.

Food.

Audubon furnishes the following information of this species: “While searching for food on the sand or mud bars of the seashore they move in a direct manner, often look sideways toward the ground, and pick up the object of their search by a peculiar bending movement of the body. They are frequently observed to pat the moist earth with their feet to force worms from their burrows. In autumn they betake themselves to the higher grounds, where berries as well as insects are to be met with, and where they find abundance of grasshoppers.”

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sept. —, 1880</td>
<td>West Goshen, Pa.,</td>
<td>Beetles and few seeds.</td>
</tr>
<tr>
<td>2</td>
<td>Sept. —, 1880</td>
<td>West Goshen, Pa.,</td>
<td>Grasshoppers.</td>
</tr>
<tr>
<td>3</td>
<td>Sept. —, 1880</td>
<td>West Goshen, Pa.,</td>
<td>Grasshoppers.</td>
</tr>
<tr>
<td>4</td>
<td>Sept. —, 1880</td>
<td>West Goshen, Pa.,</td>
<td>Beetles and grasshoppers.</td>
</tr>
<tr>
<td>5</td>
<td>Oct. 3, 1880</td>
<td>Birmingham, Pa.,</td>
<td>Grasshoppers and worms.</td>
</tr>
</tbody>
</table>

Genus *Ægialitis*. Boie.

273. *Ægialitis vocifera* (Linn.).

Kildeer.

Description. (Plate II.)

Wings long, reaching to the end of the tail, which is also rather long; head above and upper parts of body light-brown with a greenish tinge; rump and upper tail coverts rufous, lighter on the latter; front and lines over and under the eye white; another band of black in front above the white band; stripe from the base of the bill towards the occiput, brownish-black; ring encircling the neck and wide band on the breast, black; throat white, which color extends upwards around the neck; other under parts white; quills brownish-black with about half of their inner webs white, shorter primaries, with a large spot of white on their outer webs, secondaries widely tipped or edged with white; tail feathers pale-rufous at base; the four middle light olive-brown tipped with white, and with a wide subterminal band of black; lateral feathers widely tipped with white; entire upper plumage frequently edged and tipped with rufous; very young have upper parts light-gray, with a longitudinal band on the head and back black; under parts white; irises, dark brown.

* The name Bull-head is given to both the Golden and Black-belted Plovers. I suppose the birds mentioned by my friend Mr. Jacobs to have been Golden Plovers (Charadrius dominicus).
Total length, about 9½ inches; wing, 6½; tail, 8½ inches.

_Hab._—Temperate North America, migrating in winter to the West Indies and central and northern South America.

Reader I am sure you can always distinguish this bird by the well-known cry which gives rise to its common name. Should you, however, have the lifeless body of one of these birds, you can without any difficulty distinguish it from other of its numerous relatives by the red eye-lids and long legs. In addition you will also see a white line, with black margin, extending over the bill, between the eyes. The white feathers of the throat are continuous, with a conspicuous and immaculate collar, below which is a ring of black, separated by a streak of white from a band of black across the breast.

During the spring, summer and autumn the Killdeer is common, and in winter is quite frequently observed. The spotted pyriform eggs, usually four in number, are placed in a slight hollow in the ground, oftentimes near a hill of corn.

**Food.**

"The food of this species consists of earth-worms, grasshoppers, crickets and coleopterous insects, as well as small crustacea, whether of salt or fresh water, and snails. Now and then they may be seen thrusting their bills into the mud in search of some other food. During autumn they run about the old fields and catch an insect which the Blue-bird has been watching with anxious care from the top of a withering mullein stalk. They run briskly after the plowman, to pick up the worms that have been turned out of their burrows. Now standing on the grassy meadow, after a shower, you see them patting the moist ground, to force out its inhabitants. During winter, you meet with them on elevated ground, or along the margins of the rivers; but wherever you observe one about to pick up its food, you clearly see its body moving in a see-saw manner on the joints of the legs, until the former being so placed that the bill can reach the ground, the object is seized, and the usual horizontal position is resumed."—Audubon.

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>April 10, 1879</td>
<td>Chester county, Pa.,</td>
<td>Snails and beetles.</td>
</tr>
<tr>
<td>2</td>
<td>April 30, 1879</td>
<td>Chester county, Pa.,</td>
<td>Earth-worms.</td>
</tr>
<tr>
<td>3</td>
<td>June 15, 1879</td>
<td>Chester county, Pa.,</td>
<td>Beetles.</td>
</tr>
<tr>
<td>4</td>
<td>Nov. 11, 1879</td>
<td>Lancaster county, Pa.</td>
<td>Fragments of fresh water shells.</td>
</tr>
<tr>
<td>5</td>
<td>May 15, 1880</td>
<td>Chester county, Pa.,</td>
<td>Earth-worms.</td>
</tr>
<tr>
<td>6</td>
<td>May 15, 1880</td>
<td>Chester county, Pa.,</td>
<td>Earth-worms and larvae.</td>
</tr>
<tr>
<td>7</td>
<td>Aug. 21, 1880</td>
<td>Delaware county, Pa.,</td>
<td>Grasshoppers and small seeds.</td>
</tr>
<tr>
<td>8</td>
<td>Dec. 13, 1881</td>
<td>Chester county, Pa.,</td>
<td>Grasshoppers.</td>
</tr>
<tr>
<td>9</td>
<td>July 31, 1883</td>
<td>Chester county, Pa.,</td>
<td>Beetles and larvae.</td>
</tr>
<tr>
<td>10</td>
<td>July 31, 1883</td>
<td>Chester county, Pa.,</td>
<td>Beetles.</td>
</tr>
<tr>
<td>11</td>
<td>Sept. 20, 1884</td>
<td>Chester county, Pa.,</td>
<td>Grasshoppers and seeds.</td>
</tr>
</tbody>
</table>
ORDER GALLINÆ. GALLINACEOUS BIRDS.

SUBORDER PHASIANI. PHEASANTS, QUAIL, ETC

FAMILY TETRAONIDÆ. GROUSE, ETC

SUBFAMILY PERDICINÆ. PARTRIDGES.

GENUS COLINUS. LESSON.

289. Colinus virginianus (Linnaeus).

Bob-white.

Description. (Plate 12.)

Forehead, and line through the eye and along the side of the neck, with chin and throat, white; a band of black across the vertex, and extending backwards on the sides, within the white, and another from the maxilla beneath the eye, and crossing on the lower part of the throat; the under parts are white, tinged with brown anteriorly, each feather with several narrow, obtusely V-shaped bands of black; the forepart of back, the side of the breast and in front just below the black collar, of a dull pinkish-red; the sides of body and wing cover with brownish-red; the latter almost uniform, without indications of mottling; scapulars and upper tertials coarsely blotched with black, and edged internally with brownish-yellow; top of head reddish; the lower part of neck, except anteriorly, streaked with white and black; primary quills, unspotted brown; tail, ash; iris, brown.

Female with the white markings of the head and throat replaced by brownish-yellow; the black wanting.

Length, about 10 inches; extent, about 15; wing, about 4.70; tail, 2.75 inches. This species is subject to considerable variation, both in size and color.

Hab.—Eastern United States and southern Canada from southern Maine to the South Atlantic and Gulf States; west to Dakota, eastern Kansas and eastern Texas.

This species is found in Pennsylvania at all seasons, yet I am fully convinced that the great majority of those that breed here migrate in the autumn southward. During the fall and particularly in the month of October, I have observed flocks, consisting of several families and numbering from sixty to a hundred or more individuals engaged in such migrations. Partridges at all seasons other than when breeding are gregarious. When not migrating we find them, in flocks of twelve to fifteen each, frequenting fields and swamps usually near the borders of woods or thickets, to which they speedily repair when disturbed. Early in April these birds pair and about the first of May commence nesting. The nest is always placed on the ground, generally in a slight hollow, and is constructed chiefly of small twigs and grass. The nest is usually placed in a grass field, concealed by a high tuft of grass or protected by a thick overhanging bush. The eggs are white, pear-shaped, and although variable, generally number about fifteen. The birds are mainly terrestrial in habits. In the autumn and winter when continually pursued by sportmen and dogs, they oftentimes when flushed seek refuge in trees; they usually alight
on a large limb close to the main trunk and crouch so close that not unfrequently they escape the notice of the eager hunter. A gentleman of my acquaintance some years ago while out hunting Pheasants noticed a slight movement among some dead leaves in the top of an oak tree, he raised his gun quickly and fired into the leaves when to his astonishment down came fourteen Partridges dead and wounded. Partridges breed readily in confinement, and occasionally, though rarely, become quite tame. Wilson says: "Two young Partridges that were brought up by a hen, when abandoned by her associated with the cows, which they regularly followed to the fields, returned with them when they came home in the evening, stood by them while they were milked, and again accompanied them to the pasture. They remained during the winter, lodging in the stable, but as soon as spring came they disappeared."

Food.

The food of this species consists principally of cereals, various small seeds, berries, and in the breeding season insects, chiefly beetles, are taken in limited numbers. B. M. Everhart, the well-known naturalist and botanist, informs me that four or five years ago he examined the stomach-contents of twenty odd partridges which his brother had shot when on a gunning excursion in Delaware, and found that all the birds had fed exclusively on the seeds of skunk-cabbage (*Sympplocarpus foetidus*).

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<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>July 21, 1879</td>
<td>Chester County, Pa.</td>
<td>Small seeds.</td>
</tr>
<tr>
<td>2</td>
<td>July 21, 1879</td>
<td>Chester County, Pa.</td>
<td>Wheat and berries.</td>
</tr>
<tr>
<td>3</td>
<td>Aug. 1, 1880</td>
<td>Chester County, Pa.</td>
<td>Small seeds and remains of beetles.</td>
</tr>
<tr>
<td>8</td>
<td>Nov. 20, 1880</td>
<td>York County, Pa.</td>
<td>Wheat.</td>
</tr>
<tr>
<td>9</td>
<td>Nov. 20, 1880</td>
<td>York County, Pa.</td>
<td>Rag-weed seeds and corn.</td>
</tr>
<tr>
<td>10</td>
<td>Nov. 20, 1880</td>
<td>York County, Pa.</td>
<td>Corn.</td>
</tr>
<tr>
<td>11</td>
<td>Nov. 30, 1880</td>
<td>Newark, Del.</td>
<td>Small seeds.</td>
</tr>
<tr>
<td>12</td>
<td>Dec. —, 1882</td>
<td>Newark, Del.</td>
<td>Corn.</td>
</tr>
<tr>
<td>13</td>
<td>Dec. —, 1882</td>
<td>Newark, Del.</td>
<td>Green vegetable material.</td>
</tr>
<tr>
<td>14</td>
<td>Dec. —, 1882</td>
<td>Newark, Del.</td>
<td>Green vegetable material and small seeds.</td>
</tr>
<tr>
<td>15</td>
<td>May 20, 1884</td>
<td>Chester County, Pa.</td>
<td>Small seeds.</td>
</tr>
<tr>
<td>16</td>
<td>May 20, 1884</td>
<td>Chester County, Pa.</td>
<td>Small seeds and insects.</td>
</tr>
</tbody>
</table>
SUBFAMILY TETRAONINAE. Grouse.

Genus BONASA. Stephens.

300. Bonasa umbellus (Linn.).

Ruffed Grouse; Pheasant.

Description.

Tail of eighteen feathers, reddish-brown or gray above; the back with cordate spots of lighter; beneath whitish, transversely barred with dull brown; tail tipped with gray, and with a subterminal bar of black; broad feathers of the ruff black.

Tail lengthened, nearly as long as the wing; very broad, and moderately rounded; the feathers very broad and truncate, the tip slightly convex, eighteen in number; upper half of tarsus only feathered; bare behind and below, with two rows of hexagonal scutellae anteriorly; a naked space on the side of the neck, concealed by an overhanging tuft of broad, truncate feathers; there are no pectinated processes above the eye, where the skin instead is clothed with short feathers; iris, brown.

Length, 18 inches; wing, 7.20; tail, 7 inches.

Hab.—Eastern United States, south to North Carolina, Georgia, Mississippi and Arkansas.

This well-known game bird is quite plentiful in various sections of Pennsylvania. The species is most numerous in the mountainous regions, heavily-wooded and thinly-settled districts. Dr. Cones says: "The 'drumming' sound for which this bird is noted, is not vocal, as many suppose, but is produced by rapidly beating the wings." During the breeding season and at other times, if not continually harassed by sportsmen, the Grouse are tame and unsuspicous. The nest is made on the ground, and consists principally of leaves; it is always placed in the interior of a woods, and is usually concealed by a log or thick bushes. The eggs are a yellowish-white color and number about fifteen. I once found a nest with nine eggs, in which incubation was well advanced. E. A. Samuels, in his entertaining work, "Our Northern and Eastern Birds," says: "From several instances which have come to my knowledge, I am inclined to think that the female Ruffed Grouse, if persistently molested when nesting on the ground, avails herself of the abandoned nest of a crow, or the shelter afforded in the top of some tall broken trunk of a tree, in which she deposits her eggs. Two of my collectors in Northern Maine have sent me eggs which they positively declared were found in a crow's nest in a high pine, but which are undoubtedly of this species; and recently I have heard of another occurrence from my friend L. E. Ricksecker, of Pennsylvania. The only satisfactory theory that I can advance to account for these departures from the usual habits of the Grouse, is that the birds had been much disturbed, their eggs or young perhaps destroyed; and as they are often in the trees, and are expert climbers, they laid their eggs in these lofty situations to secure protection from their numerous foes below.
Birds of Pennsylvania.

Food.

By Nuttall we are advised that their food consists commonly in the spring and fall, of the buds of trees, the catkins of the hazel and alder, even fern buds, acorns and seeds of various kinds. At times I have seen the crop almost entirely filled with the buds of the apple tree, each connected with a portion of the twig, the wood of which appears to remain a good while undigested: cinquefoil and strawberry leaves, buds of the Azalea, and of the broad-leaved Kallonia, with the favorite Partridge berries, ivy berries (Cissus hederacea) and gravel pebbles are also some of the many articles which form the winter fare. In summer, they seem often to prefer berries of various kinds, particularly dewberries, strawberries, grapes and whortleberries.

Wilson writes: "They are exceedingly fond of the seeds of grapes; occasionally eat ants, chestnuts, blackberries and various vegetables. It has been confidently asserted that, after having fed for some time on the laurel buds, their flesh becomes highly dangerous to eat of, partaking of the poisonous qualities of the plant. Though I have myself ate freely of the flesh of the Pheasant, after emptying it of large quantities of laurel buds, without experiencing any bad consequences, yet, from the respectability of those, some of them eminent physicians, who have particularized cases in which it has proved deleterious, and even fatal, I am inclined to believe that, in certain cases, where this kind of food has been long continued, and the birds allowed to remain undrawn for several days, until the contents of the crop and stomach have had time to diffuse themselves through the flesh, as is too often the case, it may be unwholesome and even dangerous."

My knowledge of the food-materials of the Grouse is limited to some thirty examinations which I have made, during the months of October, November and December, of birds which have been killed in Schuylkill, Chester and Dauphin counties, Pennsylvania. I found the greater part of these birds had fed chiefly on Partridge-berries (Gaultheria procumbens), others had in their crops and gizzards chestnuts, small seeds and other vegetable matter. Ten of this lot were shot when the snow was deep and they all were gorged with buds of laurel.

†Prof. John H. Brinton, M.D., of the Jefferson Medical College, Philadelphia, Pa., informed me that he had known of several cases of Glaucoma (inflammation of the tongue) to have been caused by eating Pheasants which had fed on laurel.—Warren.
Family **PHASIANIDÆ.** Turkeys, Etc.

Subfamily **MELEAGRINÆ.** Turkeys.

Genus **MELEAGRIS.** Linneus.

310. *Meleagris gallopavo.* Linn.

**Wild Turkey.**

*Hab.*—United States, from southern Canada to the Gulf coast, and west to the plains, along the timbered river valleys; formerly along the Atlantic coast to southern Maine.

This noble game bird, although rapidly becoming extirpated, is still found in small numbers in the wooded, thinly-populated and uncultivated districts of this Commonwealth. Nests on the ground; eggs very similar to those of our domestic turkeys. The food consists chiefly of cereals, berries, acorns, chestnuts and other vegetal materials.

Order **COLUMBÆ.** Pigeons.

Family **COLUMBIDÆ.** Pigeons.

Genus **ECTOPISTES.** Swainson.

315. *Ectopistes migratorius* (Linn.).

**Passenger Pigeon; Wild Pigeon.**

**Description.**

Tail with twelve feathers; upper parts generally, including sides of body, head and neck, and the chin, blue, beneath, purple brownish-red, fading behind with a violet tint; anal region and under tail coverts, white; scapulars, inner tertials and middle of back, with an olive-brown tinge; the wing coverts, scapulars and inner tertials, with large oval spots of blue-black on the outer webs, mostly concealed, except on the latter; primaries blackish, with a border of pale-bluish tinged internally with red; middle tail feathers brown; the rest pale-blue on the outer web, white internally; each with a patch of reddish-brown at the base of the inner web, followed by another of black; sides and back of neck richly glossed with metallic golden-violet; tibia, bluish-violet; bill, black; feet, purplish-red; iris, red.

The female is smaller; much duller in color; more olivaceous above; beneath, pale-blue instead of red, except a tinge on the neck; the jugulum tinged with olive; the throat whitish.

The blue of the side of the head extends to the throat and chin; the upper part of the back and lesser coverts are of a darker blue than the head and rump; the inner primaries are more broadly margined with light-blue, which tapers off to the end; the axillars and under surface of the wing are light-blue; the longest scapulars have the black on both webs; there is no blue on the outer web of the first tail feather, which is white, and the inferior surface of the tail generally is white.

In some specimens the entire head all round is blue.
Immature birds very similar to female but each duller in color; the wing-coverts and scapular feathers, also most of the feathers of head and neck being margined with whitish, have a spotted appearance.

Length, about 17 inches; extent, about 21; wing, 8.50; tail, 8.40; tarsus, 1 inch.

Hab.—Eastern North America, from Hudson's Bay southward, and west to the Great Plains, straggling westward to Nevada and Washington Territory.

The Wild Pigeon and Turtle Dove are the only representatives of the Pigeon family occurring in Pennsylvania. Both species are highly esteemed as articles of food, and in the autumn are eagerly sought after by gunners. Wild Pigeons, during the fall especially, are frequently found in this State. They are seen usually in small parties; a few remain during the summer season and rear their young, in different sections of this Commonwealth.

"We do not have the *millions* that the earlier writers speak of in the eastern United States now; * * * the greatest roosts and flights we now hear of are in the upper Mississippi Valley. Nest in trees and bushes, a slight, frail platform of twigs, so open as to leave the egg visible from below. Eggs, white 1 or 2, equal-ended, 1.45 by 1.05."—Coues. The following interesting description of a flight and roosting place are taken from Audubon's Birds of America:

"In the autumn of 1813, I left my house at Henderson, on the banks of the Ohio, on my way to Louisville. In passing over the Barrens, a few miles beyond Hardensburg, I observed the pigeons flying from north-east to south-west, in greater numbers than I thought I had ever seen them before, and feeling an inclination to count the flocks that might pass within the reach of my eye in one hour, I dismounted, seated myself on an eminence, and began to mark with my pencil, making a dot for every flock that passed. In a short time, finding the task which I had undertaken impracticable, as the birds poured in in countless multitudes, I rose, and counting the dots then put down, found that 163 had been made in twenty-one minutes. I traveled on, and still met more the farther I proceeded. The air was literally filled with pigeons; the light of noonday was obscured as by an eclipse; the dung fell in spots, not unlike melting flakes of snow. Whilst waiting for dinner at an inn at the confluence of Salt river with the Ohio, I saw, at my leisure, immense legions still going by, with a front reaching far beyond the Ohio on the west, and the beech-wood forests directly on the east of me. Not a single bird alighted; for not a nut or acorn was that year to be seen in the neighborhood. They consequently flew so high that different trials to reach them with a capital rifle proved ineffectual. Before sunset I reached Louisville, distant from Hardensburg fifty-five miles. The Pigeons were still passing in undiminished numbers, and continued to do so for three days in succession. The people were all in arms. The banks of the Ohio were crowded with men and boys, incessantly shooting at the pilgrims, which
there flew lower as they passed the river. Multitudes were thus destroyed. For a week or more, the population fed on no other flesh than that of Pigeons, and talked of nothing but Pigeons. One of these curious roosting places, on the banks of the Green river in Kentucky, I repeatedly visited. It was, as is always the case, in a portion of the forest where the trees were of great magnitude, and where there was little underwood. I rode through it upwards of forty miles, and crossing it in different parts, found its average breadth to be rather more than three miles. My first view of it was about a fortnight subsequent to the period when they had made choice of it, and I arrived there nearly two hours before sunset. Few Pigeons were then to be seen, but a great number of persons, with horses and wagons, guns and ammunition, had already established encampments on the borders. Two farmers from the vicinity of Russellville, distant more than a hundred miles, had driven upwards of 300 hogs to be fattened on Pigeons which were to be slaughtered. Here and there, the people employed in plucking and salting what had already been procured, were seen sitting in the midst of large piles of these birds. The dung lay several inches deep, covering the whole extent of the roosting-place. Many trees two feet in diameter, I observed, were broken off at no great distance from the ground; and the branches of many of the largest and tallest had given way, as if the forest had been swept by a tornado. Every thing proved to me that the number of birds resorting to this part of the forest must be immense beyond conception. As the period of their arrival approached, their foes anxiously prepared to receive them. Some were furnished with iron pots, containing sulphur, others with torches of pine knots, many with poles, and the rest with guns. The sun was lost to our view, yet not a Pigeon had arrived. Every thing was ready, and all eyes were gazing on the clear sky, which appeared in glimpses amidst the tall trees. Suddenly there burst forth a general cry of 'Here they come!' The noise which they made, though yet distant, reminded me of a hard gale at sea, passing through the rigging of a close-reefed vessel. As the birds arrived and passed over me, I felt a current of air that surprised me. Thousands were knocked down by the pole-men. The birds continued to pour in. The fires were lighted, and a magnificent, as well as wonderful and almost terrifying, sight presented itself. The Pigeons, arriving by thousands, alighted everywhere, one above another, until solid masses were formed on the branches all around. Here and there the perches gave way under the weight with a crash, and, falling to the ground, destroyed hundreds of the birds beneath, forcing down the dense groups with which every stick was loaded. It was a scene of uproar and confusion. No one dared venture within the line of devastation. The hogs had been penned up in due
time, the picking up of the dead and wounded being left for the next morning's employment. The pigeons were constantly coming, and it was past midnight before I perceived a decrease in the number of those that arrived. The uproar continued the whole night, and as I was anxious to know to what distance the sound reached, I sent off a man, accustomed to perambulate the forest, who, returning two hours afterward, informed me he had heard it distinctly when three miles distant from the spot. Towards the approach of day, the noise in some measure subsided; long before objects were distinguishable, the Pigeons' began to move off in a direction quite different from that in which they had arrived the evening before, and at sunrise all that were able to fly had disappeared. The howlings of the wolves now reached our ears, and the foxes, lynxes, cougars, bears, raccoons, opossums and polecats were seen sneaking off, whilst eagles and hawks of different species, accompanied by a crowd of vultures, came to supplant them, and enjoy their share of the spoil. It was then that the authors of all this devastation began their entry amongst the dead, the dying and the mangled. The Pigeons were picked up and piled in heaps, until each had as many as he could possibly dispose of, when the hogs were let loose to feed on the remainder."

Genus ZENAI DURA. Bonaparte.

316. Zenaidura macroura (Linn.).

Mourning Dove: Turtle Dove.

Description.

Tail feathers, 14. Above bluish, although this is overlaid with light brownish olive, leaving the blue pure only on the top of the head, the exterior of the wings, and upper surface of the tail, which is even slightly tinged with this color; the entire head, except the vertex, the sides of the neck, and the under parts generally, light brownish-red, strongly tinged with purple on the breast, becoming lighter behind, and passing into brownish-yellow on the anal region, tibia and under tail coverts; sides of the neck with a patch of metallic purplish-red; sides of body and inside of wings clear light-blue; wing coverts and scapulars spotted with black, mostly concealed, and an oblong patch of the same below the ear; tail feathers seen from below blackish, the outer web of outermost white, the others tipped with the same, the color becoming more and more bluish to the innermost, which is brown; seen from above, there is the same graduation from white to light-blue in the tips; the rest of the feather, however, is blue, with a bar of black anterior to the light tip, which runs a little forward along the margin and shaft of the feather; in the sixth feather the color is uniform bluish, with this bar; the seventh is without bar; bill, black; feet, purplish-red. Female somewhat smaller, with less red beneath; metallic purplish-red of neck less distinct; black spot below the ear smaller, and of a brownish hue. Young very similar to female, but duller in color and lack the metallic markings on sides of neck.

Length of male, 12.85 inches; extent, about 18; wing, 5.75; tail, 6.70 inches.

Hab.—North America, from southern Maine, southern Canada and Oregon south to Panama and the West Indies.
The only species with which the Mourning Dove, so called from its note, can possibly be confounded is the Wild Pigeon, from which it can readily be distinguished if the following facts are remembered. The Dove measures about thirteen inches in length and eighteen inches in alar extent; the Pigeon about seventeen by twenty-five inches. So, first we find a marked difference in size. Secondly, the Dove has fourteen tail feathers; the Pigeon has but twelve; again, the eyes of the Dove are brown, while those of the Pigeon are red. This bird is found in Pennsylvania during all seasons of the year, and at times other than when breeding is gregarious. In March, the flocks which have been observed during the winter about the fields and orchards, separate and begin their love-making. The nest, a carelessly constructed affair, is made up entirely of small sticks, and is generally found placed on a large limb of a tree in an apple orchard. On the barren ridge, in eastern Pennsylvania, I have on several occasions found these birds nesting in pine trees; the eggs are two in number, white and unspotted. Sometimes these birds will occupy nests which have been deserted by other species. I once, some few years ago, found a pair breeding in the nest of a Green Heron, which had been deserted by the original possessors. On another occasion, a nest was found built in that of a Crow Blackbird.

Food.

Doves rarely feed on insects, but subsist almost exclusively on cereals, small seeds, and, occasionally, it is said, on various wild berries.

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<tr>
<th>No.</th>
<th>Date</th>
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<th>Food-Materials</th>
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<td>East Bradford, Pa.</td>
<td>Grass-seeds.</td>
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<td>4</td>
<td>March 6, 1880</td>
<td>Chester county, Pa.</td>
<td>Seeds of Amaranthaceae.</td>
</tr>
<tr>
<td>5</td>
<td>March 20, 1882</td>
<td>Chester county, Pa.</td>
<td>Wheat and small black seeds.</td>
</tr>
<tr>
<td>6</td>
<td>April 5, 1882</td>
<td>Chester county, Pa.</td>
<td>Corn and small seeds.</td>
</tr>
<tr>
<td>7</td>
<td>May 7, 1883</td>
<td>West Goshen, Pa.</td>
<td>Wheat and corn.</td>
</tr>
<tr>
<td>10</td>
<td>Nov. 29, 1886</td>
<td>North Brook, Pa.</td>
<td>Apple seeds and seeds of grasses.</td>
</tr>
<tr>
<td>11</td>
<td>Nov. 29, 1886</td>
<td>North Brook, Pa.</td>
<td>Apple seeds and seeds of grasses.</td>
</tr>
</tbody>
</table>


In an agricultural district, the preservation of the hawk and owl tribe is a matter of great importance. These birds, with few exceptions, subsist mainly on mice, other small quadrupeds and various
insects, which are so destructive in the fields, orchards, gardens and about buildings. Until within a quite recent period, Pennsylvania has been burdened with an act of Assembly awarding premiums for the destruction of these well-known feathered friends of the farmer. The members of "The West Chester Microscopical Society," recognizing the great wrong and injury which was being accomplished by the enforcement of this odious "Scalp Act," as it was universally called, took an active part in endeavoring to secure its repeal. From * reports issued by their Committee on Protection of Birds of Prey, the following extracts are taken:

"The committee appointed at the last meeting of the Microscopical Society to take into consideration the act of Assembly passed the 23d day of June, A. D. 1885, entitled 'An act for the destruction of wolves, wild cats, foxes, minks, hawks, weasels and owls in this Commonwealth,' beg leave to report that the chairman of the committee, Dr. B. H. Warren, Ornithologist of the Pennsylvania State Board of Agriculture, has devoted several years of his life to the collection, dissection and examination of birds, and that all of the committee from observation and experience have believed that all of the birds denounced in the law with rare exceptions, have been found to be the best friends of the farmer. Lest, however, any of the committee might be mistaken they have corresponded with the best ornithologists in the country, men who have made ornithology a study and are connected with that department in the Smithsonian Institution, asking their opinion as to the benefits or injury likely to arise from the execution of the law against the birds therein named.

"They have received answers from Dr. C. Hart Merriam, Ornithologist of the United States Department of Agriculture; Dr. Elliott Cones, Vice President American Ornithologists' Union; Robert Ridgway, Curator of Department of Birds United States National Museum; Dr. Leonard Stejneger, Assistant Curator of the same department; H. W. Henshaw, of the Bureau of Ethnology, also a collector of birds for the Smithsonian Institution, and connected with the late Wheeler Survey of the Territories, and Lucien M. Turner, a collector of birds, etc., for the Smithsonian Institution for the last twelve years. These answers, which are annexed to this report, all bear testimony that the hawks and owls are of great benefit to the farmer, and render him far greater service than injury, and that it is unwise to select any of them for destruction.

"The committee regrets to say that there have been ninety odd hawks and a dozen or more owls killed since the law was passed. June

* Reports of the Microscopical Society of West Chester, Pa., on the act of Assembly of said State awarding a premium for the destruction of Hawks, Owls, Minks, Weasels, etc., etc., enacted June 23, 1885; published January, 1887.
23, 1885, at a cost to this county of about $75, and that the slaughter is still going on.

"Believing, therefore, that the killing of these birds is detrimental to the interests of the agriculturists, they believe that instead of being destroyed they should be protected, and they, therefore, recommend the passage of the following resolution:

"Resolved by the Microscopical Society of West Chester, that in the opinion of the Society the act of June 23, 1885, offering a premium for the destruction of hawks and owls, is unwise and prejudicial to the interest of agriculture, and so far as those birds are concerned, ought to be repealed.

"Resolved, That the President and Secretary of the Society be instructed to forward a copy of the above resolution to our members of the Legislature at its next session and request their aid towards the repeal of the act so far as is above stated.

"All of which is respectfully submitted.

"B. H. Warren,
W. Townsend,
Thos. D. Dunn,
James C. Sellers,
Committee.

"March 4, 1886.

"U. S. Department of Agriculture,
Washington, D. C., March 2, 1886.

"Dr. B. H. Warren, Ornithologist of the Pennsylvania State Board of Agriculture:

"Dear Sir: Your letter of the 18th inst. has just come to hand. I have read with surprise and indignation the copy sent of section 1, page 141, of the laws of Pennsylvania for 1885, in which a bounty is offered for the destruction of weasels, hawks and owls. The clause purports to have been enacted 'for the benefit of agriculture,' etc.

"The possibility of the passage of such an act by any legislative body is a melancholy comment on the widespread ignorance that prevails even among intelligent persons, concerning the food of our common birds and mammals, and is an evidence of the urgent need of just such systematic and comprehensive investigations as this department is now making on the subject of the relation of food habits to agriculture.

"There are two kinds of weasels in the Eastern States. The smaller kind feeds chiefly on mice and insects, and is not known to kill poultry. The larger also preys mainly upon mice and rats, but in addition sometimes kills rabbits and poultry. Both species are friends of the
farmer, for the occasional loss of a few chickens is of trifling consequence compared with the good that these animals are constantly doing in checking the increase of mice.

"You ask my opinion in regard to the beneficial and injurious qualities of the Hawks and Owls which inhabit Pennsylvania. This question seems almost superfluous in view of the fact that your own investigations, more than those of any other one person, have led to a better knowledge of the food-habits of these birds, and what you have done in the East Prof. Aughey, of Nebraska, has done in the West. Many others have added their 'mites,' till at the present time a sufficient array of facts has been accumulated to enable us to state, without fear of contradiction, that our Hawks and Owls must be ranked among the best friends of the farmer. With very few exceptions, their food consists of mice and insects, meadow-mice and grasshoppers predominating. The exceptions are the fierce Goshawk from the North, and two smaller resident Hawks, Cooper's and the Sharp-shinned, which really destroy many wild birds and some poultry. These three Hawks have long tails and short wings, which serve, among other characters, to distinguish them from the beneficial kinds.

"Strange as it may appear to the average farmer, the largest Hawks are the ones that do the most good. Foremost among these are the Rough-legged and Marsh Hawks, which do not meddle with poultry and rarely prey upon wild birds.

"Of Hawks and Owls collectively, it may safely be said that, except in rare instances, the loss they occasion by the destruction of poultry is insignificant in comparison with the benefits derived by the farmer and fruit grower from their constant vigilance; for when unmolested the one guards his crop by day and the other by night.

"It is earnestly to be hoped that you will succeed not only in causing the repeal of the ill-advised act which provides a bounty for the killing of Hawks and Owls, but that you will go farther, and secure the enactment of a law which will impose a fine for the slaughter of these useful birds.

"Very truly yours,

"C. HART MERRIAM.

"Ornithologist of the Department of Agriculture.

"UNITED STATES NATIONAL MUSEUM,

"Under Direction of the Smithsonian Institution,

"WASHINGTON. March 3, 1886.

"DR. B. H. WARREN, West Chester, Pa.:

"DEAR DR. WARREN: I am just in receipt of your letter of the 1st instant, and therefore fear that my reply cannot reach you in time for use at the meeting to-morrow evening. It affords me much pleasure,
however, to comply with your request for my views concerning the food-habits of Hawks and Owls and their relation to man.

"Of all the species which you name there are only two which, according to my best judgment, are at all seriously destructive to game or poultry, these being Cooper's Hawk and the Great-horned Owl. The rest, with the possible exception of the Sharp-shinned Hawk, which certainly is destructive to the smaller birds, my experience leads me to regard as very decidedly beneficial to man, their food consisting very largely, if not chiefly, of the smaller rodents, field mice especially. The Red-shouldered and Red-tailed Hawks occasionally pick up a young chicken or rabbit, but I feel quite sure that their service to man far outweighs the injury which they thus do. The little Sparrow Hawk and other smaller species destroy large numbers of grasshoppers, locusts and other large insects.

"Very truly yours,

"Robert Ridgway,
"Curator, Dept. Birds.

"Smithsonian Institution,

"Dr. B. H. Warren, West Chester, Pa.:
"Dear Doctor: In reply to your letter of the 3d inst., asking for my opinion in regard to the food, etc., of certain Hawks and Owls specified, I would state that I have read Mr. Robert Ridgway's answer to a similar request from you and that I agree with him in every particular. The idea of persecuting the majority of Hawks and Owls systematically is simply preposterous, and any law which has for its object their indiscriminate destruction should be immediately repealed, since most of the birds alluded to are among the very best friends of the farmer. In regard to a few species it is well worth while to suspend judgment until a thorough investigation as to their habits and food in your State can be carried out, for, as you are well aware, a species which in some parts of the country and at some seasons may be injurious, in other regions and under altered circumstances may be chiefly beneficial.

"I remain, yours sincerely,

"Leonard Stejneger,
"Assistant Curator, Dept. of Birds, U. S. Nat. Mus.


"B. H. Warren, M. D., West Chester, Pa.:
"Dear Sir: In reply to your favor of the 1st inst., asking for my opinion with regard to the economic utility of the birds of prey, I
take pleasure in responding as follows: To the ornithologist, whose business it is to study the habits of birds, the widespread ignorance of the habits of the Hawk and Owl tribe, and the mistaken idea as to the amount of injury they do are almost inconceivable.

"So common, however, are these erroneous ideas respecting the birds of prey and their relations to the farmer and agriculturist that it is not at all surprising that laws similar to the one now in force in Pennsylvania should be enacted.

"Your own investigations into the nature of the food of the birds of prey of your county might be cited in support of the statement that such enactments are based upon erroneous conceptions. I may add that wherever such investigations have been systematically conducted they have resulted in a verdict favorable to the birds of prey. In almost every portion of the country I have found the opinions of all field ornithologists to be in favor of the preservation of the Hawk and Owl tribe on account of the good they do. I believe the time will come when the farmers as a class will carefully protect the Hawks and Owls on the ground of their beneficent services.

"Following is the list of species most numerous in your State:

"1. Marsh Hawk. Circus hudsonius.
"2. Sparrow Hawk. Falco sparverius.
"5. Cooper's Hawk. Accipiter cooperi.

"Of this list the Marsh Hawk, Red-shouldered Hawk, Red-tailed Hawk, Broad-winged Hawk, Rough-legged Hawk, Short and Long-eared Owls, Screech Owl, Barred Owl and Horned Owl are of very great value to the agriculturist because of the immense numbers of meadow mice and other small rodents they annually destroy. The mice, when unchecked, increase with amazing rapidity, and the Hawks and Owls above named are among the chief natural means for their destruction. mice and other rodents forming a large percentage of their food. The harm the Hawks do in the destruction of small birds is inconsiderable compared to the benefits derived by the farmers from the destruction of the four-footed pests. The Owls par-
particularly work by night and hence the benefits they confer are easily overlooked.

"The Sparrow Hawk is one of the most harmless of birds and one of the most beneficial to man. He lives almost exclusively upon grasshoppers and crickets, and the number of the former destroyed by these birds is incalculable.

"I mention the Cooper's and Sharp-shinned Hawks last because they unquestionably kill many small birds, and they also commit depredations upon the poultry yard. I believe, however, they can safely be left to be dealt with by the class they injure, chiefly poultrymen. To place all the Hawks and Owls under ban, and to attempt their extermination simply because one or two species are injurious is certainly not good policy.

"After more than twenty years study of birds I am decidedly of the opinion that the Hawks and Owls as a class are of great economic value, and that no State in which agriculture is pursued to any extent can afford to dispense with their services. They not only ought not to be exterminated, but they should be placed upon the list of birds protected by law.

"I am, very truly yours,

"H. W. Henshaw.

"WASHINGTON, D. C., March 31, 1886.

" Dr. B. H. Warren:

"Dear Sir: Responding to your request for my opinion respecting the usefulness of Hawks and Owls, regarded from an agricultural or other economic standpoint, I beg to say that I consider these birds highly beneficial and worthy of protective legislation.

"The number of poultry and of useful insectivorous birds which Hawks and Owls destroy is insignificant in comparison with the quantity of noxious rodents which they consume. Owls are particularly serviceable in this respect, and next after them come the Buzzards. Most birds of prey likewise consume enormous numbers of insects, among which is a large proportion of noxious kinds.

"Very truly yours,

"Elliott Coues,

"V. P. A. O. U., etc.

"Smithsonian Institution,

"WASHINGTON, D. C., March 3, 1886.

"B. H. Warren, M. D., Ornithologist Pennsylvania State Board of Agriculture, West Chester, Pa.:

"Dear Sir: Your letter of recent date requesting my opinion of the act (No. 109) of the Commonwealth of Pennsylvania relative to
the premiums paid for the destruction of certain species of birds and mammals, alleged to be injurious and classed as noxious within the meaning of that act, is at hand.

"I must confess a surprise at the truly lamentable ignorance of the framer of that act in regard to the supposed noxious character of the Hawks and Owls, upon whose lives a premium has been set for their destruction.

"It is well known that no more beneficial bird exists than the Owl, whose nocturnal habits render it specially fitted to pursue the smaller rodents, such as mice, whose ravages upon the field, grain, root and orchard are so well known that all farmers have from time immemorial exclaimed against the destructiveness of those quadrupeds whose annual devastation causes the money value of the losses sustained through their ravages to swell into countless thousands of dollars.

"The tender growths of the orchard are decorticated by the mice and rabbits, which are in turn devoured by the Owls sought to be destroyed simply because some one desires to become notorious as a law-maker, and through utter ignorance of the subject endeavors to deprive the farmer of his best nocturnal friends, which guard the growing crop with zealous care while the owner sleeps to regain a strength to enable him to continue the daily toil of protecting his crops from the devastation of his sleek-furred enemies, most insidious at night. There is not a species of Owl but that amply repays for the few incursions made at irregular periods upon isolated hen roosts. Where a single fowl is thus lost, a thousand mice pay the penalty of their lives to the same Owl.

"The nocturnal habits of the Owls render their services far more beneficial than may be accurately ascertained.

"In regard to the Hawks their reputation is much exaggerated so far as their injurious propensity is concerned, yet when truthful evidence is placed in the scales the beneficial services of the Hawks will preponderate in a most satisfactory manner.

"Certain species of the diurnal birds of prey are well known to feed almost exclusively upon small rodents, and in fact differing but little from the Owls in regard to their food. Two or three species of Hawks (those belonging to the genus Archibuteo) are notoriously the best diurnal mouse-catchers of all birds. Their habits to soar over the level tracts devoted to grasses and search for their food are so well known that further consideration of them is but repetition of established facts. The bolder species of hawks so rarely commit depredations upon the farm-yard fowls that these instances are, without doubt, the result of an individual predilection for which the entire family should not be branded. The number of rabbits and mice which the
Hawks annually destroy is simply incredible, as any really observant person will admit.

"In my own opinion, the destruction of the Hawks and Owls within the State of Pennsylvania will, ere many years, result in an incalculable injury to the farmer, who will be overrun with hordes of mice, which he will be powerless to limit, as their reproductiveness, when undisturbed, progresses with astonishing rapidity.

"It would, in my opinion, be a wise measure to have the act relating to the alleged noxious birds totally repealed.

"Very truly yours,

"Lucien M. Turner.

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"American Ornithologists Union,
"Committee on the Protection of North American Birds,
"New York, March 12, 1886.

"Dr. B. H. Warren:
"Dear Sir: The A. O. U. Committee on the Protection of Birds, recognizing the great importance of the report of your Committee on the Usefulness of Hawks and Owls to the Farmer, has instructed me to purchase, if possible, one hundred copies of the paper containing your report, and to ask if we may have the privilege of reprinting it, either in whole or in part, in the interest of the cause, if at any time we should find it convenient to do so. Your report is directly in the line of our work and could not fail to be a telling influence for good if well circulated.

Very truly yours,

Eugene P. Bicknell,
Secretary.

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"Dr. A. K. Fisher, Assistant Ornithologist U. S. Department of Agriculture, Washington, D. C., in a letter dated January 15, 1887, addressed to Dr. B. H. Warren, says: 'Wednesday I received eight adult Red-tails and two Red-shouldered Hawks from a man in Maryland. * * * I find nothing but mice and shrews in their crops and stomachs (from two to five in each). I found two specimens of Sorex and the following specimens of mice: Mus musculus, Hesperomys leucopus, Arvicola riparius and Arvicola pinetorum. The Hawks had been killed because they had "killed" chickens and "quails."

"The committee also made inquiries of the commissioners of the different counties as to the numbers of birds and mammals that have been killed and for which bounties had been paid, and received answers up to July 1, 1886, from thirty-four counties. The number of Hawks killed and reported up to that date was 9,237, at an expense of $7,385.10, and of Owls 2,499, at an expense of $1,303.90.
“In many cases, however, the fees of the magistrates were not included, but merely the bounties paid on the birds. The bounties paid for minks, weasels, foxes and wildcats, raised the sums reported to $15,165.95.

“As the time included in the returns does not come down to date, and as only thirty-four out of sixty-seven counties made reports, it is believed by the committee that the counties pay annually not less than $60,000 under the law of 1885, of which the largest part is paid for the destruction of Hawks and Owls. That they are the best friends of the farmer, and that their destruction is to him a great disadvantage, the committee thinks that it has already shown, by the letters of eminent ornithologists in its report of March 4 last.”

The State Board, through its efficient Secretary, Thomas J. Edge, Esq., labored most industriously to show the economic value of the raptorial birds, and secure the repeal of that part of the “Bounty Act” relating to the Hawks and Owls.

The subjoined report, entitled the "Bounty or 'Scalp' Act of 1885," by Thomas J. Edge, Esq., will give a very clear idea of the efforts made by the State Board through its energetic Secretary:

"The Bounty or 'Scalp' Act of 1885.

"During its session of 1885, the Legislature enacted the following act for the destruction of wolves, wildcats, foxes, minks, hawks, weasels and owls in this Commonwealth:

"Section 1. Be it enacted, &c. That for the benefit of agriculture and for the protection of game, within this Commonwealth, there is hereby established the following premiums for the destruction of certain noxious animals and birds, to be paid by the respective counties in which the same are slain, namely, for every wildcat two dollars, for every red or gray fox one dollar, for every mink fifty cents, for every weasel fifty cents, for every hawk fifty cents, and for every owl, except the Arcadian, screech or barn owl, which is hereby exempted from the provisions of this act, fifty cents.

"Section 2. It shall be the duty of any person, having killed any animal or bird mentioned in the first section of this act, and who is desirous of availing himself of the premiums therein provided, to produce such slain animal or bird before any magistrate, alderman or justice of the peace of the county, in which the same was killed, and make affidavit of the time and place of killing the same: Provided, That the pelt, if entire from the tip of the nose of any such animal, may be produced in lieu of the same, when so preferred; and upon the reception of any such animal, or pelt, or bird, it shall be the duty of such magistrate, alderman or justice of the peace, in the presence of said person killing such animal or bird, and one elector of the county, to cut off the ears of such animal or the head of such bird, and in the presence of said persons, burn the same.

"Section 3. Upon the destruction of the ears or heads as aforesaid,
the magistrate, alderman or justice of the peace shall give to the person producing such animal or bird, a certificate of compliance with the provisions of this act directed to the commissioners of the county in which such animal or bird was slain, which certificate shall contain the following facts, the kind of animal or bird killed, when, where and by whom killed, and the date by whom and in the presence of what elector the ears of said animal or head of said bird was destroyed, and upon the production of such certificate, the said commissioners shall give an order upon the county treasurer for the payment of the premium or premiums provided by this act; and it shall be the further duty of the magistrate, alderman or justice of the peace taking the affidavit, provided in the second section of this act, to file the same forthwith, or cause the same to be filed in the office of the commissioners of the county, and upon filing the same, the said magistrate, alderman or justice of the peace shall receive from the county stock, the sum of twenty cents, in full compensation for all services under this act.

"Quite early in 1886, the correspondence of the Board developed the fact that there existed among farmers, taxpayers and the several county officers of the State, a widespread dissatisfaction at the workings and effect of the law. It also was evident that in some one of its many forms, this act would be brought to the notice of the present Legislature, and the Secretary of the Board deemed it advisable to collect all possible data on either side of the question, and place it in such a form as would be readily available when wanted. As a step in this direction, a circular was prepared and sent to every board of county officers in the State, asking for information upon the following points, viz:

"1. The total amount of bounty actually paid from each county treasury up to November 1, 1886.

"2. The effect (in the opinion of the officers) of the repeal of the law so far as it affects Hawks and Owls.

"3. The effect of the repeal of the whole law.

"Answers to the first question gives us the following data, which show the amount paid by each county from November 1, 1885, to November 1, 1886. A number of the replies stated that the existence of the act did not become generally known until January 1, 1886, and that it would have been more in accordance with their experience to have fixed the time covered from January 1, 1886, to January 1, 1887. A number state that had this latter date been fixed, they would have increased the amounts paid fully twenty per cent., and in many cases more was paid in the two months ending December 31, 1886, than in any six preceding months. From this we are inclined to suppose that it will be perfectly safe to increase the amounts given below fully twenty per cent., in order to cover the total amount paid by each county. The reports give the following as the amounts actually paid between the dates given in the circular, viz., from November 1, 1885, to November 1, 1886:

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<tr>
<th>County</th>
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<tr>
<td>Adams</td>
<td>$3,800 00</td>
<td>Blair</td>
<td>$800 00</td>
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<tr>
<td>Allegheny</td>
<td>53 00</td>
<td>Bradford</td>
<td>1,666 55</td>
</tr>
<tr>
<td>Armstrong</td>
<td>1,255 30</td>
<td>Bucks</td>
<td>444 30</td>
</tr>
<tr>
<td>Beaver</td>
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<td>Berks</td>
<td>607 90</td>
<td>Cambria</td>
<td>1,181 10</td>
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5 Birds.
Birds of Pennsylvania.

Cameron, $130 00  Lehigh, $202 20
Centre, 1,827 05  Luzerne, 267 50
Chester, 944 50  Lycoming, 625 00
Clearfield, 1,500 00  McKean, 1,039 00
Clinton, 325 00  Mercer, 2,319 70
Columbia, 900 00  Miller, 450 10
Crawford, 8,022 90  Montour, 357 60
Cumberland, 500 00  Montgomery, 55 20
Dauphin, 450 00  Northampton, 381 60
Elk, 350 00  Northumberland, 566 70
Erie, 2,746 00  Perry, 1,140 25
Fayette, 650 00  Schuylkill, 450 00
Forest, 350 00  Somerset, 1,600 00
Franklin, 967 00  Sullivan, 300 00
Fulton, 700 00  Susquehanna, 1,200 00
Greene, 1,200 00  Tioga, 1,169 00
Huntingdon, 2,000 00  Union, 410 00
Indiana, $1,251 00  Venango, 952 60
Juniata, 584 50  Warren, 1,893 25
Lackawanna, 311 50  Washington, 727 50
Lancaster, 715 10  Wyoming, 800 00
Lawrence, 535 90

"The answers to the second and third queries (the effect of the repeal of the act so far as it applies to Hawks and Owls, and its total repeal) were answered by the respective county officers as follows:

'Replies of County Commissioners.

"Adams.—'The law should be repealed except as to wolves, foxes and wildcats; the repeal as to Hawks and Owls would be a saving to the county of $2,500.'

"Armstrong.—'Repeal the whole act.'

"Allegheny.—'So far as this county is concerned, its repeal would not affect the number destroyed.'

"Beaver.—'The commissioners think that the whole act should be repealed.'

"Berks.—'Our opinion is that the whole act should be repealed.'

"Bucks.—'Think that the portion as to hawks and owls should be repealed; the balance of the act should remain as it now is.'

"Bradford—'In the opinion of our county commissioners, hawks and owls are more beneficial to farmers than detrimental, but they are of the opinion that the whole act should be repealed for the following reasons:

"1. It encourages hunting as an occupation.

"2. Because the motives of self-interest will prompt the destruction of all these animals found doing damage.

"3. Because of the drain upon the treasury.'

"Blair.—'The general impression is that the act should stand as it now is; there is no doubt that it is beneficial in our county and mountain districts. The effect of repealing the whole act would be very injurious, both to crops, domestic and wild game. The law, as a whole, meets with general approval. The expense for the first year seems to be rather burdensome, but in the future it will be much less.
There were some three hundred and fifty foxes killed since the law went into effect; and thus it will be a short time until every destructive and noxious animal will be exterminated. What is true with regard to the fox is also true in relation to the others named in the act.

"Butler.—The act as a whole should stand as it is; that portion relating to hawks and owls should not be repealed.

"Cambria.—We favor the repeal of the whole law, and especially that portion relating to hawks and owls.

"Cameron.—The law should be repealed so far as it refers to minks, hawks and owls. It has a tendency to encourage a certain class of men who devote their entire time to hunting.

"Centre.—We believe the act ought to be repealed as to hawks and owls. The effect of repealing the whole act would be a saving of thousands of dollars to the tax-payers annually. There would be about as many of the destructive mammals and birds killed if the act was repealed, and by persons whose duty it is to protect their property. We emphatically favor repealing the entire act relating to bounties on scalps.

"Chester.—The opinion of the county commissioners and farmers generally is that the portion of the act referring to hawks and owls should be repealed. As to repealing the whole act, there is a difference of opinion. Many do not favor the repeal as to foxes, minks and weasels. We have paid bounties on the following: Six hundred and sixty-six hawks, sixty owls, two hundred and eight minks, two hundred and forty-eight weasels, and one hundred and seven foxes.

"Clarion.—We believe that the entire act should be repealed. Its repeal would be a benefit to the tax-payers, and no disadvantage to the farmers.

"Clearfield.—Two-thirds of the amount has been paid upon hawks and owls; minks, hawks and owls should be abandoned; wolves, wild-cats and foxes should be retained.

"Clinton.—Think there might be a bounty on wolves, wild-cats and minks; would be satisfied with the repeal of the whole act.

"Columbia.—Repeal it as to owls, as they feed on mice, etc. The bounty should be continued on hawks, as they feed mainly upon poultry. Repealing the whole act would have no injurious effects; the foxes would be killed in this county just the same. Weasels destroy rats, mice, etc. Those who are injured by minks would kill them just the same without the law.

"Crawford.—The commissioners are of the opinion that the whole law should be repealed at the earliest possible moment. The commissioners are all farmers, and they consider the destruction of these mammals and birds a great damage to the farmers; they are the farmers' best friends.

"Cumberland.—We do not see that our county will receive any benefit by continuing in effect any part of the act, and the repeal of the entire act will relieve the county of an unnecessary and unwaranted expense.

"Dauphin.—The repeal of the act would not affect the destruction of hawks and owls, as farmers, for self-protection, would destroy all they possibly could. Except as to wolves and foxes, we think the law should be repealed.

"Elk.—Repeal the whole act; there would be just as many killed."
"Erie.— It is our unanimous opinion that the entire act should be repealed; it is burdensome and inimical to the best interests of the farming community, and a useless expenditure of the county money."

"Fayette.— No complaints from the people at large. Much trouble to the county officers with the necessary papers, etc."

"Forest.— It would be wise to repeal the act as far as it refers to hawks, owls and minks."

"Franklin.— The act ought to be repealed. Twenty-five wild-cats, four hundred and twenty-five foxes, one hundred and fifty-five minks, eighty-three weasels, six hundred and seventy-eight hawks and sixty-eight owls."

"Fulton.— Our opinion is favorable to continuing the law as it now is."

"Greene.— Repeal the whole act, or at least that portion referring to hawks and owls."

"Huntingdon.— The law of 1885 should be repealed, and if any law is retained it should be the same as the old law, having the orders directed to the county commissioners instead of to the county treasurers. It makes considerable extra work for the commissioners' clerk, and often puts persons entitled to an order to great inconvenience to have it signed by the county commissioners in order to get the money, as the commissioners in a majority of the counties only meet once each month. A majority of the people in the agricultural districts of this county would oppose a repeal of the act."

"Indiana.— Our opinion is that the bounty should be taken off everything mentioned in the act of June 23, 1885, and an act passed to pay a bounty for every skunk killed."

"Juniata.— The entire act should be repealed."

"Lackawanna.— We think that the whole act should be repealed, as it is a nuisance, especially so far as it refers to hawks and owls."

"Lancaster.— The repeal of the act would have a good effect so far as our county is concerned."

"Lawrence.— It is the unanimous opinion of the board that the whole act should be repealed, believing that the law is entirely unnecessary so far as our county is concerned. We have not heard one farmer in the county approve it, but many of them condemn it. Its repeal is earnestly requested by all who have any knowledge of its workings."

"Lebanon.— The commissioners think that the part of the law referring to owls and hawks should be repealed by all means. Aside (from the above owls and hawks), we pay very little bounty, as foxes and other animals are not sufficiently numerous to affect our county."

"Lehigh.— Repeal the whole act if it can be done; if not, then repeal that portion referring to hawks and owls, by all means."

"Lycoming.— Its repeal would disappoint the farmers in this county. In their opinion, instead of a repeal, skunks or pole-cats should be added."

"McKean.— Think that the whole act should be repealed, or at least that part referring to hawks and owls."

"Mercer.— We are radically in favor of the repeal of the whole act, and in this we are supported by the sentiment of the entire farming community of our county."
"Mifflin.— We favor the repeal of that portion which relates to hawks and owls, and leaving the remainder as it now is."

"Montgomery.— The repeal of that portion relating to hawks and owls would be good."

"Northampton.— We are not in favor of repealing the act, and prefer it as it now stands."

"Perry.— The repeal of the law would be worse than useless. The money already paid in would be thrown away. In the future, fewer mammals and birds will be found and destroyed; the number will gradually decrease each year."

"Schuylkill.— The repeal or non-repeal of the law is immaterial to us."

"Susquehanna.— Favorable to a repeal of the act."

"Tioga.— The act referred to is a nuisance, and should be repealed as soon as possible."

"Union.— The commissioners recommend the repeal of the whole bill, except as to foxes."

"Venango.— We are in favor of the repeal of the whole act, believing that it would give entire satisfaction to the tax-payers of our county."

"Warren.— Repeal the whole act by all means."

"Washington.— It is the opinion of the commissioners that the only damage by hawks and owls is the destruction of our game birds, which is only felt by hunters; on the other hand, by the destruction of mice and other small vermin, they are beneficial to the farmer. The repeal of the whole act would be beneficial to our farmers."

"Wyoming.— The effect of the repeal would be good."

"A number of the commissioners have appended to their reports a list of the number of each kind of mammal or bird upon which bounty has been paid. As indicative of the relative proportion of the bounties upon each, we give the following:

"Chester.— Hawks, 666; owls, 60; minks, 208; weasels, 248, and foxes 107.

"Franklin.— Hawks, 678; owls, 68; wild-cats, 25; foxes, 425; minks, 155, and weasels, 88.

"Several of the commissioners state that the premiums upon hawks and owls constitute more than fifty per cent. of the total amount paid, while several of the commissioners call attention to the fact that wolves are enumerated in the title, but are not provided for in the body of the bill.

"In addition to the collection of data in this direction the ornithologist of the board, Dr. B. H. Warren, of West Chester, Pa., also had his attention directed to the actual results of the effect of the law: First, as it relates to hawks and owls, and, second, as a whole. The data which was collected by him is partially shown in an article in another portion of this report, and in a lecture delivered at the annual meeting of the board in January last.

"As a condensation of a large amount of correspondence upon this subject, which has reached the office of the board during the past year, we give the following as covering the main points:

"The act should be repealed because—

"1. It causes a drain upon the treasuries of the respective counties which is not warranted by the results produced.
"2. Hawks and owls, by the destruction of insects, confer a benefit which is much more than an offset for the poultry destroyed by them.

"3. Increased duties are imposed upon county officers, for which no additional compensation has been provided.

"4. In a number of cases county officers have been imposed on, and bounties illegally drawn.

"5. It encourages a certain class to follow hunting as a means of livelihood, and to the exclusion of other labor.

"6. Self-interest would lead to the destruction of nearly as many of these noxious animals and birds.

"7. The repeal of the act will, by the increase of the number of hawks, cause greater destruction of field mice, which destroy large amounts of clover and clover roots each year.

"8. The payment of bounties for any purpose is based upon wrong principles, and should be discouraged.

"The act should not be repealed because—

"1. This being the first year of its action, the total amount paid will be greatly in excess of that of any subsequent year, and owing to the increased scarcity each year, the amount paid will be annually less.

"2. By a repeal the good effects of bounties already paid would be practically lost.

"3. The destruction of these birds and mammals protects game.

"4. All laws are liable to abuse and violation, and this one is no exception to the general rule.

"5. The effect of a continuance of the law as it now is will be to increase the production of poultry and decrease its price."

From letters kindly sent by the commissioners of the several counties hereafter named, I am enabled to show part of the animals on which bounty was paid for a period of some six months, i.e., from January 1, 1886, to July 1, 1886. From reliable informants I find that the "Scalp Act" was not generally known to be in existence until about January 1, 1886:

Allegheny.—4 "cat" owls.

Armstrong.—167 hawks; 49 owls. "also quite an amount for foxes, minks and weasels."

Adams.—"We have paid since the first of October, 1885, to July 3, 1886, for 1,716 hawks, 402 owls, or $558.00 for hawks, and $201.00 for owls; total, $1,059.00. The premiums on weasels, minks and foxes are about one-third of the above. A bad feature about the act is the apparent manner in which the counties are imposed upon, in farming hawks, owls, foxes, etc."

Bucks.—128 hawks; 16 owls.

Bradford.—Total amount paid for all animals from January 8, 1886, to August 1, 1886, inclusive, $996.00. "One half for hawks and owls, balance for weasels, minks and foxes."

Blair.—123 hawks; 13 owls.

Beaver.—25 hawks; 12 owls.

Clarion.—165 hawks; 20 owls.

Centre.—119 hawks; 26 owls.

Cameron.—3 hawks; 2 owls.

Clinton.—34 hawks; 8 owls.
Crawford.—"Bounty account not kept so as to show how many of each kind paid for; the first five months they were very equally divided, but in May and June hawks, weasels and owls predominated; hawks leading the list. We paid the first bounty on a fox November 1885, $1.00; December, $275.90; January, 1886, $379.20; February, $182.00; March, $207.00; April, $236.40; May, $347.60; June, $1,079.00; total, $2,608.10, including justices' fees."

Chester.—1885—11 hawks; 6 minks; 5 weasels; 1 fox. 1886—from January 1 to December 1, inclusive, 666 hawks; 60 owls; 107 foxes; 208 minks; 248 weasels. 1887—from January 1 to March 18, inclusive, 289 hawks; 79 owls; 84 minks; 7 foxes; 199 weasels.

Delaware.—3 hawks; 3 foxes.

Erie.—414 hawks; 225 owls; 107 foxes. "It is rapidly on the increase; one-fifth of the whole number has been within the last two weeks." This letter was dated July 13, 1887.

Fayette.—278 hawks; 80 owls; 82 foxes; 24 minks; 6 wild-cats.

Forest.—110 foxes; 37 hawks; owls 2.

Franklin.—In 1885, 24 wild-cats; 278 foxes; 97 minks; 22 hawks; 9 weasels; 2 owls. In 1886, from January 1 to July 1, 9 wild-cats; 287 foxes; 76 minks; 132 hawks; 22 weasels; 30 owls.

Huntingdon.—64 owls; 347 hawks; 56 minks; 38 weasels; 362 foxes; 12 wild-cats.

Indiana.—350 foxes; 250 weasels; 300 hawks; 150 owls;

Juniata.—150 hawks; 70 foxes; 20 owls.

Lackawanna.—70 foxes; 30 hawks; 5 weasels; 7 wild-cats; 25 minks.

Lycoming.—700 hawks and owls; 250 foxes. "We pay about $115.00 per month for destroying the above-named animals."

Mifflin.—71 hawks; 14 owls; 17 weasels; 14 minks.

Montour.—"Paid for all animals $161.40."

Mercer.—"Our people did not become apprised of the passage of the act to which you refer until some time after its approval, and as a result we did not have any certificates presented until after the first of December, 1885. Since that time we have paid out $1,300.00, and of this amount fully $1,000.00 has been for hawks and owls, mostly hawks; have not paid for more than 10 or 12 foxes."

McKean.—17 wild-cats; 137 foxes; 115 minks; 120 hawks: 81 owls; 22 weasels.

Montgomery.—42 hawks; 8 foxes; 3 owls.

Pike.—32 hawks; 4 owls; 63 foxes; 9 weasels; 14 minks; 4 wild-cats.

Perry.—465 hawks; owls, 62; foxes, 453; 130 minks; 52 weasels. "Killed during 1885 (December) and to date. July 6, 1886."

Somerset.—14 wild-cats; 69 owls; 410 hawks; 250 weasels; 215 minks; 270 foxes. Magistrates' fees, $129.75.

Sullivan.—46 hawks and owls; 49 foxes.

Susquehanna.—In 1885, 19 foxes; 4 minks; 5 weasels; 2 hawks; 4 owls. January 1 to July 5, 1886, foxes, 217; minks, 171; weasels, 83; hawks, 223; owls, 55.

Union.—Hawks, $43.40; owls, $12.60; minks, $21.00; weasels, $11.60; fees included.

Venango.—126 hawks; 28 owls; 102 foxes.

In connection with the above I give the additional facts Centre
county for the year 1886 paid $1,529.00 as follows: 1,356 skunks at 50 cents; 577 foxes; 383 hawks; 172 weasels; 57 owls; 13 wild-cats; 712 scalp affidavits at 20 cents. From the large number of skunks returned it would appear that this county has a “special act,” which allows bounty for these animals. Delaware county, on December 22, 1886, had paid bounty on 3 foxes; 22 hawks and one weasel. Perry county for 1886 paid for foxes, minks weasels and wild-cats $468.85, and for hawks and owls $760.60. Chester county for 1886 paid $1,159.30 for 827 hawks, 108 owls, 231 minks, 331 weasels, 111 foxes and $288.30 for affidavits. The largest amount of bounty was paid by Crawford county, which was forced to make an outlay of over ten thousand dollars, a large portion of which was for hawks and owls. In conclusion I might add that by the enforcement of this unjust legislative act the county treasuries, in a period of about eighteen months, were depleted to the extent of nearly $100,000, of which sum, probably, not less than $65,000 were paid for the destruction of hawks and owls. Agriculturists, naturalists and others engaged in the protection of these birds are under great obligations to the able Chairman of the Senate Agricultural Committee, Hon. A. D. Harlan, of Chester county, Pa. Senator Harlan, after being in receipt of numerous resolutions passed by farmers’ clubs, institutes and grange organizations throughout this Commonwealth, when waited upon by members of the State Agricultural Board and a committee of naturalists, and being convinced that the preservation of raptorial birds was of utility to the farmer as well as gratifying to the scientist, at once gave his careful attention to the matter, and by his earnestness and industry in his committee and in the body of which he is a member, did very much to secure the repeal of this pernicious statute.

ORDER RAPTORES. BIRDS OF PREY.

SUBORDER SARCORHAMPHI. VULTURES.

FAMILY CARTHARTIDÆ. AMERICAN VULTURES.

GENUS CATHARTES. ILLIGER.

325. Cathartes aura (Linnae).

Turkey Vulture; Turkey Buzzard.

DESCRIPTION.

Entire plumage brownish-black, darkest on the back and tail above, and with a purplish lustre; many feathers have pale borders; bill white; feet pinkish; head and neck in living-bird bright red; iris grayish brown; plumage commencing on the neck with a circular ruff of projecting feathers; head and upper part of neck naked, or with a few scattering hair-like feathers, and with the skin wrinkled; nostrils large, oval, communicating with each other; tail rather long, rounded.

Young.—Quite similar to adult, but plumage generally is lighter in color; bill and skin on head and neck are quite dark; the naked portions of the head and neck, in some specimens, is of a bluish color.
Nestlings.—Bare skin of head nearly white; body covered with white down; length about 30 inches; extent of wings about 72 inches; wing about 25; tail 12 inches.

Hub.—Temperate North America, from New Jersey, Ohio Valley, Saskatchewan region and Washington Territory, southward to Patagonia, casual northward on the Atlantic coast to Maine.

This well known bird is found in Pennsylvania, particularly in the southern counties, at all seasons, but during the summer months is much more plentiful than at other times. The Turkey Buzzard usually rears its young in woods or thickets, mostly near streams of running water. It makes little or no effort to construct a nest; the eggs—never more than two in number, and occasionally only one—are deposited, generally in a slight concavity in the ground protected by shelving or overhanging rocks. The eggs are yellowish white, spotted with different shades of brown and purple, and measure about 2 2 inches in length by nearly 2 inches in breadth. It is stated that this species sometimes breeds in Pennsylvania as early as the last week in March. I have found nine nests in Chester and Delaware counties during the past five years; of this number seven were taken late in April or early in May, and all contained fresh eggs. The two remaining nests, found in June, contained downy young. I am informed that these birds, in Lancaster and York counties, along the Susquehanna river, are annually to be found breeding in small communities of a dozen or twenty individuals. Mr. Gentry, who has frequently discovered them breeding in rocky caverns along the Susquehanna, remarks that he has found several nests within a space of one hundred yards. This bird will resort for several consecutive seasons to a favorite nesting place, and occasionally when its eggs are taken will lay a second time in the same nest. The Turkey Vulture is very numerous in the Southern States where it resides all the year, but in the Eastern United States north of Pennsylvania it is said to be quite rare as a resident. Two young which I took from the nest and kept in captivity until full grown became exceedingly tame. These birds often when feeding and invariably is approached by a stranger, would utter a loud hiss, the only sound which this species, as well as other of the American Vultures, is known to make. They fed chiefly on fresh meat, and also devoured with apparent relish earth-worms, crickets, grasshoppers and other large insects; oftentimes they also eat pieces of bread, cake and particles of apples or pears which were thrown before them. The Turkey Buzzard, in its natural state, according to Audubon, sucks the eggs and devours the young of Herons and other birds. I have never known them to disturb either the eggs or young of other birds, but have observed that they subsist almost wholly on carrion. The benefits which these scavengers render are too well known to need any comment.
Suborder Falcones. Falcons, Hawks, Eagles, Etc.

Family Falconidae. Falcons, Etc.


Genus Circus. Lacépede.

331. Circus hudsonius (Linn).

Marsh Hawk; Harrier; Bog-trotter.

Description. (Plate 13.)

Dimensions.—Total length of female, 19 to 21 inches; extent of wings about 47 inches; wing about 15½; tail about 10 inches. Male smaller.

Hab.—North America in general, south to Panama.

The Marsh Hawk is quite plentiful during the spring and autumn in Pennsylvania. Its nests and eggs are said to have been found in the meadows near Philadelphia; also in Delaware county, and likewise along the Susquehanna river. As a native it is rare in this region. I have observed the Marsh Hawk only as a passing visitor, most numerous in the fall; frequenting, during its sojourn with us, the extensive and grassy meadow-lands, chiefly about the large streams. In the mountainous portions of this State, as well as the highlands, this bird is seldom met with.

When flying this species can easily be distinguished from other hawks by the white upper tail coverts, so conspicuous in the females and immature birds, or those usually met with. The old male, rare and seldom found in this section, can be recognized by the bluish-white plumage.

According to Mr. Gentry * the nest is commonly situated in the midst of a swamp or a low meadow, where there is a dense growth of vegetation and is composed, externally, of small sticks, for a ground work, on which is placed a superstructure of dried grasses, within which there is sometimes, though rarely, a lining of feathers. The same writer states that the eggs are four or five in number, and while the eggs of the same nest seldom display any perceptible difference in their markings, some specimens are a dull white with a greenish tinge, and destitute of spots; others have a bluish or greenish ground color, with irregular blotches of light lilac or lavender. The eggs are described as broadly oval in contour, with nearly symmetrical extremities and averaging 1.85 inches in length and 1.43 inches in width.

Food.

Notwithstanding the fact that these hawks rarely, if ever, prey

Plate 13.

Marsh Hawk.

1 Male; 2 Female.
upon any kind of game except sometimes an occasional Reed bird, gunners, who so industriously search over the swamps, never fail to destroy every Marsh Hawk which comes within range of their deadly weapons.

Marsh Hawks never, to my knowledge, disturb poultry, but subsist mainly on field mice, other small quadrupeds, frogs, large insects and sometimes, though not generally, small wild birds. In writing of the food-habits, etc., of this species Nuttall says: "It frequents chiefly, open, low and marshy situations, over which it sweeps or skims along at a little distance usually from the ground, in quest of mice, small birds, frogs, lizards and other reptiles, which it often selects by twilight as well as in the open day; and at times, pressed by hunger, it joins the owls, and seeks out its prey even by moonlight."

In fourteen examinations made by myself, seven hawks had only field mice in their stomachs: three, frogs; two, small birds (warblers); one, few feathers, apparently of a sparrow (Melospiza) and fragments of insects; one, large number of grasshoppers with a small quantity of hair, evidently that of a young rabbit.

**Genus ACCIPITER.** Brisson.

332. Accipiter velox (Wils.)

**Sharp-Shinned Hawk; Partridge Hawk.**

**Description.** (Plate 14.)

A large female of this species measures about 14 inches in length by 26 inches in extent. The male is smaller. In adult birds, especially the males, the plumage of the upper parts is bluish-gray, quite dark on top of head. Iris in adult, reddish orange, in young, light yellow.

*Hab.*—North America in general, south to Panama.

This extremely daring and spirited little Hawk is one of the most abundant of our North American species. In Pennsylvania during the early spring, autumn and winter it is quite plentiful, being frequently met with in the mountainous and heavily wooded districts, as well as the cultivated and rich agricultural regions. It is a native, but as such, is somewhat rare. I have taken two nests, both built in low cedar trees; these nests were entirely constructed of small twigs, and were loosely, but firmly, made. The cavity of one nest was quite superficial, but that of the other was well-formed. The eggs—each nest contained five—are deposited about the first of May. The eggs, nearly spherical, are white or bluish-white, marked with large and irregular splashes or blotches of brown, and measure about 1.46 by 1.16 inches. Gentry, a close observer and facile writer, remarks in

*Ornithology of the United States and Canada, by Thomas Nuttall. 2 vols. Published 1832.*
his "Life-Histories of Birds," that the eggs, in some instances, are laid on consecutive days, but we have positive proofs that sometimes a single day is intermitted, and at other times, even two and three days intervene between each deposit." In one of my nests I found two days to intervene after the deposition of each of three eggs, and the fifth ovum was deposited after an intervention of three days. Gentry has found them breeding in the deserted nest of the common grey squirrel. Mr. J. Hoopes Matlack, of West Chester, informs me he found a pair breeding in an old crow's nest; such sites, however, Gentry advises us, are rarely chosen. It is said this species will sometimes nidificate on a ledge or rock or hollow and decaying tree-limbs. One nest, which I had the opportunity of observing from its early commencement, was built by the united labor of both birds, which occupied a period of seven days. Gentry, who, doubtless, has had a more extensive experience, gives three or four days, according to the style, as the time requisite for the construction of the nest. Various writers assert that dry grass, leaves, moss, etc., aid in the make-up of the nests; such, no doubt is the case, but as previously stated, I have found sticks and twigs to solely constitute the nests. Incubation is alternately engaged in by both birds, which, while they show great solicitude for their offspring, repelling all bird intruders with the most determined zeal and pugnacity, will, when molested by man, show marked timidity, and leave to his desecration their nest and its contents. The young are carefully watched and fed by the parents, chiefly on a diet of small birds— sparrows principally—until Gentry says, they are about six weeks old, when they are able to provide food for themselves.

Food*. 

According to Nuttall, "this species feeds principally upon mice, lizards, small birds, and sometimes even squirrels. In thinly settled districts, this hawk seems to abound, and proves extremely destructive to young chickens, a single bird having been known regularly to come every day until he had carried away between twenty and thirty." The same writer relates a circumstance, where he was one day conversing with a planter, when one of these hawks came down and without any ceremony or heeding the loud cries of the housewife, who most reluctantly witnessed the robbery, snatched away a chicken directly before them. "In the fall, when the small birds gather in favored spots about the streams, this little falcon is found in their

*Dr. Cones says: "It preys chiefly upon small birds and quadrupeds, captured in the dashing manner of all the species of this group, and, like its small allies, feeds to some extent upon insects." Since the advent and alarming increase of the English Sparrow (Passer domesticus), it is not unusual for the Sharp-shinned Hawk to pay occasional visits to towns and villages where he should be heartily welcomed for the destruction he causes among these feathered pests.
Plate 14.

Sharp-shinned Hawk.
1. Male; 2. Female.
midst and selecting his victims as whim or appetite urges. They often choose the turtle doves, and swooping down in the midst of a flock gathered about a pool of water, almost invariably contrive to seize one of the birds ere the surprise caused by the suddenness of the attack is over.—Henshaw.

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
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<tbody>
<tr>
<td>1</td>
<td>Sept. 7, 1878</td>
<td>Chester county, Pa.,</td>
<td>Small bird (<em>Melospiza</em>).</td>
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<td>2</td>
<td>Sept. 14, 1878</td>
<td>Chester county, Pa.,</td>
<td>Quail</td>
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<td>3</td>
<td>Nov. 20, 1878</td>
<td>Newark, Delaware,</td>
<td>Chicken</td>
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<td>Feb. 17, 1879</td>
<td>Chester county, Pa.,</td>
<td>Snow bird (<em>Junco</em>).</td>
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<td>5</td>
<td>May 3, 1879</td>
<td>Chester county, Pa.,</td>
<td><em>Mice</em> (<em>Arvicola</em>)</td>
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<td>6</td>
<td>Sept. 10, 1879</td>
<td>Chester county, Pa.,</td>
<td><em>Sparrow</em> (<em>Passer domesticus</em>) and</td>
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<td></td>
<td></td>
<td></td>
<td>portions of field-mice.</td>
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<td>7</td>
<td>May 30, 1880</td>
<td>Delaware county, Pa.,</td>
<td>Chicken</td>
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<td>8</td>
<td>June 2, 1880</td>
<td>Chester county, Pa.,</td>
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<td>9</td>
<td>June 3, 1880</td>
<td>Chester county, Pa.,</td>
<td>Grasshoppers and beetles.</td>
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<td>Aug. 23, 1881</td>
<td>Chester county, Pa.,</td>
<td>Quail</td>
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<td>11</td>
<td>Oct. 16, 1881</td>
<td>Chester county, Pa.,</td>
<td>Quail and fragments of beetles.</td>
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<td>Oct. 29, 1881</td>
<td>Chester county, Pa.,</td>
<td>Chicken</td>
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<td>June 22, 1881</td>
<td>Lancaster county, Pa.,</td>
<td>Meadow Lark (<em>Sturnella</em>).</td>
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<td>14</td>
<td>Oct. 27, 1881</td>
<td>Chester county, Pa.,</td>
<td>Song <em>Sparrow</em> (<em>Melospiza</em>).</td>
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<td>15</td>
<td>Dec. 13, 1882</td>
<td>Chester county, Pa.,</td>
<td><em>Robin</em> (<em>Morus</em>).</td>
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<td>16</td>
<td>April 3, 1882</td>
<td>Chester county, Pa.,</td>
<td><em>Sparrow</em> (<em>Spizella pusilla</em>).</td>
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<td>17</td>
<td>Sept. 20, 1884</td>
<td>Chester county, Pa.,</td>
<td><strong>Sparrow</strong> (<em>Passer domesticus</em>).</td>
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<td>18</td>
<td>Oct. 3, 1886</td>
<td>Chester county, Pa.,</td>
<td><strong>Sparrow</strong> (<em>M. fasciatus</em>).</td>
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<td>19</td>
<td>Nov. 28, 1886</td>
<td>Chester county, Pa.,</td>
<td><strong>Sparrow</strong> (<em>M. fasciatus</em>).</td>
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**333. Accipiter cooperi** (Bonap.).

**Cooper's Hawk.**

**Description.**

*Adult.*—Upper part bluish-gray; sides of head and breast also slightly marked with same color; top of head much darker, in some specimens nearly black; feathers of occiput when pushed aside white at base; throat and under tail coverts white, the former with blackish longitudinal lines; other parts transversely barred with light red and white; tail rounded, quite long, tipped with white and with four bands of brownish-black; bill blackish; eye, legs and feet yellow; iris reddish-amber.

*Young.*—Umber-brown above, more or less spotted with white and rusty-brown; white spots on scapular feathers conspicuous; lower parts white with longitudinal spots of brown; tail tipped with white and branded as an adult; bill bluish-horn-color; tarsi and eye yellow or greenish yellow; iris bright yellow.

*Dimensions.*—Female: total length, 18 to 20 inches; extent, about 36 inches; wing, 10 to 11; tail, about 8. Male: 16 to 18 inches; extent, about 30; wing, 9 to 10; tail, about 8 inches.

*Hab.*—North America in general, south to southern Mexico.

This much detested and commonly called "Long-tailed Chicken or Pheasant Hawk," is a common native; it is resident, but is not near so plentiful during the winter months as throughout the late spring, summer and early autumn.

For impudent daring this species, without doubt, ranks preëminent among the raptorial genera. Almost every farmer or poultry raiser
can reiterate instances of where he or she was the victim of pillage by this bold and audacious marauder. In the spring of '78 a friend presented me with a Cooper's Hawk which he had caught in a steel trap, but not until he and his mate had destroyed some fifty young chickens. During one day they killed twelve. "This marauder sometimes attacks birds far superior to itself in weight, and sometimes possessed of a courage and strength equal to its own. As I was one morning observing the motions of some Parakeets, near Bayou Sara, in Louisiana, in the month of November, I heard a Cock crowing not far from me and in sight of a farm-house. The Hawk next moment flew past me, and so close that I might have touched it with the barrel of my gun had I been prepared. Not more than a few seconds elapsed before I heard the cackling of the hens and the war cry of the Cock, and at the same time observed the Hawk rising, as if without effort, a few yards in the air, and again falling toward the ground with the rapidity of lightining. I proceeded to the spot and found the Hawk grappled to the body of the Cock, both tumbling over and over, and paying no attention to me as I approached. Desirous of seeing the result, I remained still until, perceiving that the Hawk had given a fatal squeeze to the brave Cock, I ran to secure the former; but the marauder had kept a Hawk's eye upon me, and, disengaging himself, rose in the air in full confidence. The next moment I pulled trigger and he fell dead to the ground."—Audubon.

Like the Sparrow Hawk this bird has been tamed to come at call.

Nidification commonly is begun about the 20th of April, and lasts for a period of from three to five days. Occasionally this bird will deposit its eggs in a deserted crow's nest. Gentry, in his "Life Histories of Birds of Eastern Pennsylvania," mentions an instance of where the new-formed nest of the crow was taken after having driven its rightful occupants away. I believe, however, they prefer to erect their own nests, and, from my observation, am quite positive they only appropriate the nests of other birds when their own have been destroyed. Gentry observes, "in cases where other nests are occupied, it is mainly done by young birds, or those of indolent habits." The building of the nest is the conjoint labor of both birds. It is usually built in a thick woods. When in such a locality is mostly low down, yet, when, as is occasionally the case, an isolated tree is selected as the nesting site, it is frequently so placed as to render it inaccessible to all advances of the oologist. Externally the nest is built of sticks, varying much in size. It is generally lined with the inner layer of bark, although, frequently, blades of grass, feathers, and leaves enter into the construction of the interior. While certain writers have described the nest as broad, with but a slight concavity, I would remark that such statement is not in accord with my obser-
vations, as I have invariably found the concavities to be well marked. Dr. Wood states: "That the nests in this locality (Connecticut) are neatly built, very symmetrical, large in proportion to the size of the bird, and of sufficient depth for safety to the eggs, and to conceal the occupants."

The eggs measure about 1.92 by 1.50 and usually number from three to four, although it is not a rare occurrence to find five. Their color is a dull, bluish-white. Exceptional sets are sometimes taken with numerous and unevenly distributed brown or reddish spots. A gentleman of my acquaintance once took four eggs from a nest which were void of spots. The female, although driven off when the first complement was taken, made in the same nest a second deposit of four eggs, and, strange to say, the last were all spotted. The period of incubation is given by Gentry to be eighteen days. Although, in this particular, my observation has been somewhat limited, I am fully persuaded that the time required for this, likewise other of our Rapacidae, is, certainly, three weeks, or over. The young leave the nest in about twenty-five days; when about eight or nine weeks old they are able to provide food for themselves; to this time, however, they are carefully guarded by the old birds, and fed almost entirely on a diet of small birds, young chickens, and some few insects.

Food.

Dr. Coues says in speaking of this Hawk: "Possessed of spirit commensurate with its physical powers, it preys upon game little if any humbler than that of our more powerful Falcons. It attacks and destroys hares, grouse, teal, and even the young of larger ducks, in the state in which they are known as 'flappers,' besides capturing the usual variety of smaller birds and quadrupeds. It occasionally seizes upon reptiles or picks up insects. In securing its prey it gives chase openly and drives down its quarry with almost incredible velocity." Dr. Wood writes that "it is bold and fearless, often driving within a few rods of the farmer and seizing his chickens, which it carries to its young or devours itself. If once introduced to the young poultry, you may rest assured of a daily call until all are gone, unless you are fortunate enough to secure the intruder. It sometimes attacks the full-grown poultry with success. A gentleman once informed me that while standing by his wood-pile, close by the house, one of these birds dove upon a full-grown rooster, within six or eight rods of him. The fowl ran some two or three rods and dropped dead. The Hawk soon returned to devour his game, as it was too heavy for him to carry away, but his audacity cost him his life." Such exploits as these, however, are by no means uncommon, as is well-known to every or-
nithologist and poultry-raiser." * Dr. Wood further says: "Its food consists of any kind of game that it can capture, often attacking and killing birds much larger than itself. Partridges, quails, pigeons, and young rabbits constitute no inconsiderable portion of its bill-of-fare inland, while on the sea coast, teal, young ducks and many of the water birds satiate its rapacious appetite." Nuttall, in speaking of the dietary of this Hawk, says: "His food appears principally to be birds of various kinds; from the sparrow to the Ruffed grouse, all contribute to his rapacious appetite. In common with the sharp-shined hawk, his depredations among domestic fowls are very destructive."

Of the thirty-four birds which I have examined, sixteen showed the food taken to have been chickens; ten revealed small birds—sparrows, warblers and meadow larks—two, quail; one, bull-frogs; three, mice and insects; two, hair and other remains of small quadrupeds.

334. Accipiter atricapillus (Wils.).
American Goshawk.

Description.

Adult.—Head above, neck behind, and stripe from behind the eye, black, generally more or less tinged with ashy; other upper parts dark ashy-bluish or slate color, with the shafts of the feathers black, and frequently with the feathers narrowly edged with black, presenting a squamate or scale-like appearance; a conspicuous stripe over the eye, and an obscure and partially concealed occipital and nuchal band, white; entire under parts mottled with white and light ashy-brown; every feather with a longitudinal line of dark-brown on its shaft, and with numerous irregular and imperfect transverse lines or narrow stripes of light ashy-brown, more distinct and regular on the abdomen and tibie; quills brown, with bands of a deeper shade of the same color, and of ashy-white on their inner webs; tail same color as other upper parts; under surface very pale, nearly white, and having about four obscure bands of a deeper shade of ashy-brown, and narrowly tipped with white; under tail coverts white; bill dark bluish; cere and feet yellow; claws black; iris yellowish.

Young.—Entire upper parts, including head, dark-brown, with the feathers, especially on the head and neck behind, edged and spotted with light-reddish, or nearly white; tail light-ashy, with about five wide and conspicuous bands of ashy-brown, and narrowly tipped with ashy-white; quills brown, with wide bars of a darker shade of the same color, and wide bands of reddish-white on their inner webs; under parts white, generally tinged with yellowish, and frequently with reddish, every feather with a longitudinal stripe terminating in an ovate spot of brown; sides and tibie frequently with circular and lanceolate spots and irregular bands of the same color, the latter (tibie) generally very conspicuously marked in this manner; under tail coverts white, with a few large lanceolate spots of brown.

Total length, female, 22 to 24 inches; extent about 46; wing about 14; tail, 10½ to 11 inches. Male, about 20 inches; extent about 43; wing, 12½; tail, 9½ inches. When flying, this species, in any plumage, is easily distinguished by its large size and long tail.

Hub.—Northern and eastern North America, breeding mostly north of the United States. South in winter to the Middle States. Accidental in England.

* * * "The Birds of Connecticut," by Wm. Wood, M. D., is the title of a series of valuable papers published about 1858-79 in "Familiar Science," a monthly journal.
The Goshawk occurs in Pennsylvania, only as a rare and irregular visitant, during excessively severe winters, when no doubt it is forced to leave the boreal regions, its chosen habitat, by scarcity of food. Having had no opportunity of studying these birds in life, I add the following interesting account given by Audubon. The nest described in the subjoined quotation was found in the Great Pine forest of this State. "The flight of the Goshawk is extremely rapid and protracted. He sweeps along the margins of the fields, through the woods, and by the edges of ponds and rivers, with such speed as to enable him to seize his prey by merely deviating a few yards from his course; assisting himself on such occasions by his long tail, which, like a rudder, he throws to the right or left, upwards or downwards, to check his progress, or enable him suddenly to alter his course. At times he passes like a meteor through the underwood, where he secures squirrels and hares with ease. Should a flock of wild pigeons pass him when on these predatory excursions, he immediately gives chase, soon overtakes them, and, forcing his way into the very center of the flock, scatters them in confusion, when you may see him emerging with a bird in his talons, and diving towards the depth of the forest to feed upon his victim. When travelling, he flies high, with a constant beat of the wings, seldom moving in large circles like other hawks; and, when he does this, it is only a few times in a hurried manner, after which he continues his journey.

"Along the Atlantic coast, this species follows the numerous flocks of ducks that are found there during the autumn and winter; and greatly aids in the destruction of mallards, teals, black ducks, and other species, in company with the Duck Hawk. It is a restless bird, apparently more vigilant and industrious than many other hawks, and it seldom alights unless to devour its prey; nor can I recollect ever having seen one alighted for many minutes at a time without having a bird in its talons. When thus engaged with its prey, it stands nearly upright; and, in general, when perched, it keeps itself more erect than most species of hawks. It is extremely expert at catching snipes on the wing; and so well do these birds know their insecurity, that, on its approach, they prefer squatting to endeavoring to escape by flight.

"When the passenger pigeons are abundant in the western country, the Goshawk follows their close masses, and subsists upon them. A single hawk suffices to spread the greatest terror among their ranks; and the moment he sweeps towards a flock, the whole immediately dive into the deepest woods, where, notwithstanding their great speed, the marauder succeeds in clutching the fattest. While travelling along the Ohio, I observed several hawks of this species in the train of millions of these pigeons. Towards the evening of the same day,
I saw one abandoning its course to give chase to a large flock of Crow Blackbirds, then crossing the river. The hawk approached them with the swiftness of an arrow, when the blackbirds rushed together so closely that the flock looked like a dusky ball passing through the air. On reaching the mass, he, with the greatest ease, seized first one, then another and another, giving each a squeeze with his talons, and suffering it to drop upon the water. In this manner he had procured four or five before the poor birds reached the woods, into which they instantly plunged, when he gave up the chase, swept over the water in graceful curves, and picked the fruits of his industry, carrying each bird singly to the shore. Reader, is this instinct or reason?

"The nest of the Goshawk is placed on the branches of a tree, near the trunk or main stem. It is of great size, and resembles that of our crow, or some species of owl; being constructed of withered twigs and coarse grass, with a lining of fibrous strips of plants resembling hemp. It is, however, much flatter than that of the crow."

The fierce nature of this species is well shown in the concluding paragraphs from the pen of my highly esteemed friend, L. M. Turner*: "The tracts preferred by this Goshawk are the narrow valleys, borders of streams, and the open tundra, which it constantly scans for Ptarmigan and small mammals; the Lemming forming a considerable portion of its food. It will sit for hours in some secluded spot, awaiting a Ptarmigan to raise its wings. No sooner does its prey rise a few feet from the earth than with a few rapid strokes of the wing, and a short sail, the Goshawk is brought within seizing distance; it pounces upon the bird, grasping it with both feet under the wings, and after giving it a few blows on the head they both fall to the ground; often tumbling several feet before they stop, the hawk not relinquishing its hold during the time. During the mating season of the Ptarmigans many males suffer death while striving to gain the affection of the female, for as he launches high in air, rattling his hoarse note of defiance to any other male of its kind in the vicinity, the Goshawk darts from a patch of alders or willows, or from the edge of the neighboring bluff, and with a dash they come to the ground, often within a few yards of the terror-stricken female, who now seeks safety in flight as distant as her wings will carry her. I have seen this hawk sail without a quiver of its pinions, until within seizing distance of its quarry, and suddenly throw its wings back, when with a clash they came together, and the vicinity was filled with white feathers, floating peacefully through the air. I secured both birds, and found the entire side of the Ptarmigan ripped open.

*Contributions to the Natural History of Alaska, results of investigations made chiefly in the Yukon district and the Aleutian islands; conducted under the auspices of the U. S. Signal Service, extending from May, 1874, to August, 1881, by L. M. Turner.
Red-tailed Hawk.
1. Male; 2. Female
extent I had approached unobserved by the bird. It had been devouring a Ptarmigan, which it had secured but a little while before. The flesh of the bird was yet warm, though nearly all devoured. The Goshawk was only wing-tipped with shot and proved to be quite vicious, seizing my boot with its talons and striving to grasp my hand with its beak. The bird was so quick that I had to call the assistance of a native to detach the claws from my clothing. Upon skinning the bird I found its crop to be full of the flesh of the bird it was eating when I flushed it. I am under the impression that the Goshawk is not able to fly with the weight of a Ptarmigan in its claws. It is a resident of the interior and comes to the coast quite early in spring, as is attested by the fact that I killed one specimen April 28, and a fine example was brought to me from the mouth of the Uphún (part of the northern Yukon Delta), where it was killed April 25. It was a female, and contained an egg quite ready for extrusion, and had already received a pale bluish-green color on the shell. The bird was shot while on the nest, placed in a small poplar tree. The nest was composed of sticks and a few blades of grass. The size was quite bulky, measuring nearly two feet in extreme diameter, and having but a slight depression. The bird was extremely vicious, choosing to remain on the nest rather than desert it. The male attacked the native, and tore his cotton shirt into shreds and snatched the cap from the head of the astonished man, who was so surprised, at the impetuosity of the attack, that he struck wildly at the bird with his arms, and before he could reload his gun the bird took flight. This Goshawk breeds wherever found in summer, placing its nest in a tree or shrub, or even on the ledge of a cliff, inaccessible to foxes and enemies.”

Genus BUTEO. G. P. J. Bierv.

337. Buteo borealis (Gmel.).

Red-tailed Hawk.

Description. (Plate 15.)

The adult is easily recognized by the red tail. The tail in young birds is usually ashy-brown, with about ten darker bands. Tail in both old and young is generally tipped with white. Breast of adult mostly spotted or marked with reddish-brown; in the young, breast is pure white enclosed by numerous dark markings. Length of male, 19 to 22 inches; extent of wings, 41 to 47 inches. Female—length, 22 to 24 inches; extent, 51 to 55 inches. From a careful examination of over one hundred of these Hawks, I have found that they, like other of the raptors, not only vary greatly in the markings of their plumage, but also show marked differences in the color of the irides. The iris of the adult, though usually brown, is sometimes both brown and yellowish. In immature birds, the iris is commonly straw color, but sometimes it is nearly white, and occasionally, though rarely, is brown; in other specimens, I have seen one-half of the iris brown while the remainder would be white or yellowish. In immature birds, light colored irides with specks of brown are frequent.

Hab.—Eastern North America, west to the Great Plains.
This Hawk—the most abundant of our raptorial birds—is the de-tested “Hen Hawk” of the farmer. The Red-tailed Hawk is exceed-ingly shy and wary, and is taken with difficulty, unless approached on horse back or in a sleigh or wagon. Red-tailed Hawks in their fall migrations are gregarious. One clear, cold autumn afternoon in 1876, I saw, near West Chester, a flock of these Hawks. The sky was des-titute of clouds, except a cumulus stratum directly beneath, and ap-parently about half way between the Hawks and the earth. In the center of this vapor was an opening of sufficient size to enable me to watch the gyrations of the birds; two of them suddenly separated from the main body, approached each other screaming, and apparently in great rage. They descended screaming, and, to all appearances, clinched to within about one hundred yards of the earth, when they parted. Evidently neither bird had received much injury, as they both, after taking short flights across the meadow, ascended in com-pany with two or three of their companions that had accompanied them part way down, to the main body. Another individual closed his wings until the body presented a triangular outline, descended with almost lightening-like rapidity to the top of a sycamore, where it alighted, and remained for some seconds pluming itself. This party of Hawks, after performing for nearly twenty minutes, these, and nu-merous other aerial antics, continued their southern flight. Combats in mid-air are quite common among Red-tailed Hawks. I have re-peatedly witnessed such battles, and am fully convinced that in the great majority of cases food is the incentive to such action. Illus-trative of the superior vision of this Hawk—and the same applies to other of the *Rapacia*—the following is given, as observed by the writer: A clear morning early in March, I saw a Red-tail circling over the meadows; every circle took him higher and higher in the air, until at an altitude where he appeared no larger than a blackbird, he stopped, and with nearly closed wings, descended like an arrow to a tree near by me; from this perch, almost the same instant he had alighted, he flew to the ground and snatched from its grassy covert a mouse. The momentum with which this bird passed through the at-mosphere produced a sound not very unlike that of the rush of distant water. This species when wounded, like all other rapacious birds, will defend itself with its claws and bill against all advances. A stick or gun barrel presented to it, when crippled, will be grasped, and the bird can be carried pendant from the same a considerable distance before it will loose its hold. With such tenacity do they hold on that a friend of mine who had winged one, in his endeavors to capture it alive, had the bird to fasten on his forearm with both claws; to relieve himself he was obliged to take out his penknife and sever the tendons of both legs.
Nest building generally occurs in March and lasts from eight to fifteen days. The nest is built in the woods, commonly on a large oak or hickory tree. A pair of these hawks resorted for five consecutive years to a large oak tree (Quercus tinctoria), for nesting purposes, in a belt of timber adjacent to the far-famed Deborah’s Rock, East Bradford township. The nest is a rather bulky structure; is made, externally, of sticks and twigs, some of the former being an inch in thickness; internally, it is lined with leaves and the inner layer of bark—usually from the oak and chestnut trees. This lining of bark is frequently torn in shreds.

Certain ornithologists, Audubon among the number, have found five eggs in their nests. I have, however, mostly found two, and on no occasion have I found more than three to constitute the full complement. The eggs vary much in their markings. Their ground color is a dull white or rusty white, marked with minute brown spots, or with large purplish dark-brown blotches, often covering the greater part of the egg. Gentry tells us: “The eggs vary in size, even in the same nest. The largest measures 2.52 by 1.88 inches, and the smallest 2.10 by 1.72 inches.” Incubation lasts about three weeks. Certain writers claim that this specie will boldly defend invasion of its home on the part of man. Such may have been the experience of others, but such statement is the reverse of my experience. I have taken both eggs and young, and, as yet, I have encountered no opposition; but have found them cowardly, flying away, in fact, beyond gunshot at my approach, uttering cries of distress, and seemingly to engage in mutual condolence over their misfortune.

Food.

Doctor Wood says, in speaking of this species, “In their bill of fare, snakes form quite an item in the spring and summer months, but in the winter months the wild game of our woods and the poultry yard satisfy the cravings of hunger. When capturing snakes they sometimes ‘wake up the wrong passenger.’ A farmer living in this vicinity, while putting up a fence around his pasture, noticed a large Hawk on the ground some forty rods from him, sometimes rising up two or three feet then dropping down. Supposing him to be devouring some game, he paid but little attention to it at first, but from it continuing in the same place, and keeping up the same maneuvering for a time, his curiosity was excited, and coming near the bird he discovered that the tail of a large black snake was coiled around the Hawk’s neck, and that the head and a part of its body was in a hole in the ground. The Hawk was nearly exhausted. With a blow of his axe the farmer severed the snake, and brought the Hawk to his barn where he kept him alive for some time. The part of the snake
attached to the bird measured three feet, which was, probably, about one-half its length. The Hawk evidently seized the snake when he was partly in his hole, and was unable to draw him out; and when found the serpent was endeavoring to convince the would-be captor that 'it is a poor rule that don't work both ways.' This was the adult Red-tail Hawk.

During the breeding season they frequently hunt together for food for themselves and young, "and if, perchance, they spy a squirrel on a tree, one will drive it while the other poises itself ready to seize it if it dodges to the other side to evade the grasp of the first Hawk. From the two there is no escape. Grasping it firmly by the neck, the assailant practically demonstrates the possibility of garroting its victim, when the ill-fated squirrel is carried to the eyry, and torn to pieces to satiate the cravings of their rapacious young."—Wood. In speaking of the food, Gentry remarks substantially as follows: They feed principally on small quadrupeds, small birds and reptiles, and that a few insects, mostly of a coleopterous and orthopterous character, are eaten by way of variety. "The food of the young consists of grasshoppers and the flesh of birds and of small quadrupeds which are taken as prey. The external covering is removed, and the flesh is administered in small bits."—Gentry. "It alights on the borders of clear streams to drink—I have observed it in such situations—immersing its bill up to the eyes, and swallowing as much as was necessary to quench its thirst at a single draught."—Audubon.

Nuttall says that when straitened for food it is fierce and predatory, prowling around the farm, will now and then seize a hen or chicken, which it snatches by making a lateral approach. He further observes that these depredations on the farm yard happen, however, only in winter. "They are frequently seen near wet meadows, where mice, moles and frogs are prevalent; and also feed upon lizards, appearing, indeed, often content with the most humble game."—Nuttall. In consequence of limited space it is impracticable to give in detail the result of dissections which I have made of this species, but would state briefly that my examinations of one hundred and seventy-three Red-tails captured in Pennsylvania, chiefly in Chester county, revealed in one hundred and twenty-eight, principally field-mice (arricola), and other small quadrupeds, also some few small birds; in nine of these one hundred and twenty-eight Hawks, small birds were present in addition to the quadrupeds. Fourteen had fed on chickens; six, small birds—Meadow Larks and Sparrows; six, rabbits; three, quail; three, red squirrels; three, mice and insects; three, snakes; two, remains of skunk; two, carrion; one, ham skin; one, meat, probably beef. I have repeatedly found three and four mice in the viscera of one bird, oftentimes five and in a few instances as many as seven of
these destructive little rodents were obtained from the crop and stomach of one Hawk.

339. Buteo lineatus (Gmel.).

Red Shouldered Hawk.

Description.

Adult.—Wing coverts, from its flexure to the body, fine bright rufous; breast and other lower parts of the body paler orange rufous, many feathers with transverse bars and spots of white, which predominate on the abdomen and under tail coverts; entire upper parts reddish-brown; on the head mixed with rufous, and with white spots on the wing coverts and shorter quills and rump; quills brownish-black, with white spots on their outer webs, and with bars of a lighter shade of brown and of white on their inner webs; tail brownish-black, with about five transverse bands of white and tipped with white; bill blue-black; cere and feet yellow; iris brown.

Young.—Entire under parts yellowish-white, with longitudinal stripes and oblong spots of dark-brown; throat dark-brown; upper parts lighter ashy-brown, with many partially concealed spots and bars of white; quills dark-brown, with wide transverse bars of rufous and white on both webs; tail ashy-brown, with numerous bands, pale-brownish and rufous white; tail beneath silvery-white; legs and feet greenish-yellow.

Total length: Female, 21 to 23 inches; extent, about 41 inches; wing, 14; tail, 9 inches. Male, 18 to 20 inches; extent, about 40; wing, 12; tail, 8 inches.

Hab.—Eastern North America, west to Texas and the plains, south to the Gulf Coast and Maine.

During the winter these Hawks frequent principally the large water courses, meadow-lands, and the vicinity of ponds, and not frequently an individual of this species can be observed on its perch overlooking a spring-head. When the streams and meadows are frozen, I have noticed that they especially resort to such localities as last named. When disturbed from its perch it utters, in a plaintive and impatient voice, the note, keeo, keeo. Its flight, which is generally short, is graceful and very owl-like. This Hawk, like its relative, the Red-tail, may be observed sitting by the hour on some favorite tree or stake adjacent to swampy or boggy ground, watching for small quadrupeds and batrachians, which constitute its principal fare. Although this species is a native in this State it has never been my good fortune to find a nest.

From "Birds of Connecticut," by Doctor William Wood, the following mention of the nest, eggs and habits is taken:

"Nidification commences soon after their arrival from the south. Oviposition usually occurs from the middle of April to the first of May. In one instance I took eggs on the first day of April that had been incubated at least a week, and then, again, I have taken them as late as the middle of May. More eggs can be obtained of this bird in this vicinity than of any other of our Rapacia, and I think it may safely be said, all others. The nest is usually placed in the fork of a
high tree (the bird instinctively seeking safety rather than any particular kind of a tree), and consists of sticks and twigs, resembling the Crow's nest, though generally somewhat larger and more compactly built. Period of incubation about three weeks. The eggs usually number from two to four, more commonly three; in one instance I found six. Of some thirty sets before me, there is a great diversity of markings. In shape, form and ground-work they are all alike, but in markings quite different. They are about the size, or a little larger, than the eggs of the domestic fowl; of a broad, oval form, granulated; of a dusky-white color, very slightly inclined to blue in the fresh egg, with one or more very large reddish-brown blotches on the larger end, interspersed with smaller ones, diminishing in size and number as they approach the smaller end. This is the most common appearance of the egg. I have taken from the same nest eggs handsomely blotched and white, or dirty-white without any marks. I have selected four sets for measurement:

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<th>No.</th>
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During the courting season it is very noisy, sailing around in circles with its mate, and filling the air with its shrill notes. Their mutual attachment continues through life. They hunt in pairs. The male not only assists in incubation, but supplies his mate with food. If approached by the sportsman while sitting, if the nest is low and exposed, the female will fly off very quietly and stealthily long before the male arrives within shot, and alight at some distance. If the nest is high up she will draw down her head, thinking herself perfectly concealed and secure, while her tail invariably projects over the nest, giving unmistakable evidence of its occupancy. They become attached to a particular piece of woods, and will build near the same spot for years, if not killed, and will even continue to build there for some time if their eggs are annually taken, occasionally rebuilding an old nest; according to my observations they usually prefer a new one.

Food.

Dr. Wood says: "This species subsists mostly on small birds and quadrupeds, now and then adding to their bill of fare a snake." Merriam says: "I once took from the stomach of one of these hawks a snake measuring twenty-two inches in length." Wilson informs us that he has taken the fragments and whole carcasses of ten frogs of various dimensions from the crop of a single individual. "If not successful in obtaining a supply of frogs, it will eat the flesh of dead animals or fowls, apparently with a good relish." — Wood.
Plate 16.

1 Broad-winged Hawk
2, 3 Sparrow Hawk
Nuttall remarks that this Hawk lives principally on frogs, and probably insects and cray-fish in the winter. Gentry tells us the food consists of small quadrupeds and small birds generally, reptiles and many insects, and that the food of the young consists of fragments of quadrupeds, besides an immense number of young grasshoppers and beetles.

In my examinations of fifty-seven of these Hawks which have been captured in Pennsylvania, forty-three showed field-mice, some few other small quadrupeds, grasshoppers and insects, mostly beetles; nine revealed frogs and insects; two, small birds, remains of small mammals and a few beetles; two, snakes and portions of frogs. The gizzard of one bird contained a few hairs of a field-mouse and some long black hairs which appeared very much like that of a skunk. The bird on dissection gave a very decided odor of pole-cat. In two of these Hawks, shot in Florida, I found in one portions of a small catfish, and in the other remains of a small mammal and some few coleopterous insects.

343. **Buteo latissimus** (Wils.).

**Broad-winged Hawk.**

*Description.* *(Plate 16, Fig. I.)*

*Adult.*—Entire upper parts umber-brown; feathers on the occiput and back of the neck white at their bases; throat white, with longitudinal lines of brown and with a patch of brown on each side running from the base of the lower mandible; breast with a wide band composed of large cordate and sagittate spots and transverse bands of reddish-ferruginous tinged with ash; other under parts white, with numerous sagittate spots of reddish on the flanks, abdomen and tibie. In some specimens, the ferruginous color predominates on all the under parts, except the under tail coverts, and all the feathers have large circular or ovate spots of white on both edges; under tail coverts white; quills brownish-black, widely bordered with white on their inner webs; tail dark-brown, narrowly tipped with white, and with one wide band of white and several narrower bands near the base; bill, dark; feet, yellow; iris, brown.

*Young.*—Upper parts dull umber-brown, many feathers edged with fulvous and ashy-white; upper tail coverts spotted with white, under parts white, generally tinged with yellowish, and having longitudinal stripes and oblong and lanceolate spots of brownish-black; a stripe of dark-brown on each side of the neck from the base of the under mandible; tail brown, with several bands of a darker shade of the same color, and of white on the inner webs, and narrowly tipped with white; length of male about 14 inches; extent of wings about 32; tail about 7 inches; female, length about 17 inches, extent about 38; tail about 7½ inches.

*Hab.*—Eastern North America, from New Brunswick and the Saskatchewan region to Texas and Mexico, and thence southward to Central America, northern South America, and the West Indies.

Of the genus *Buteo*, in this section, the Broad-winged is the least abundant. It is a native and resident. The movements in the air of this Hawk are easy and beautifully graceful. When in quest of food, its flight is in circles. At times, when circling, like the Sparrow Hawk, it will stand for an instant beating the air, and then descend.
with great velocity upon its prey, which it secures, not in its descent, but as it is on the rise. I have on more than one occasion witnessed this species take aliment in the way described. I incorporate it, notwithstanding that it disagrees with certain good authority.

Nest-building takes place from the first to the middle of May, and the four nests which I have found near West Chester have all been located in high trees; three in hickory trees, the other in an oak. All of these nests were over fifty or sixty feet from the ground. The nest is very similar to that of the Cooper's Hawk; it is made of sticks, twigs, leaves and rootlets, lined with feathers; one I found lined with bark. The complement of eggs is usually four, although three sometimes is the full set. The eggs are somewhat larger than those of the Cooper's Hawk, with a dull white, grayish-ground color, with brownish red spots, which vary in size from specks to large patches, frequently confluent.

This Hawk is easily captured, appearing quite tame and unsuspicuous. I have always found it to be cowardly, and to evince no disposition to repel an invasion of its nest.

Audubon relates the following circumstance, which came under the notice of himself and brother-in-law while out on a tour: "As we crossed a narrow skirt of woods my young companion spied a nest on a tree of moderate height, and, as my eye reached it, we both perceived that the parent bird was sitting in it. Some little consultation took place, as neither of us could determine whether it was a Crow's or a Hawk's nest, and it was resolved that my young friend should climb the tree, and bring down one of the eggs. On reaching the nest, he said the bird, which still remained quiet, was a Hawk, and unable to fly. I desired him to cover it with his handkerchief, try to secure it, and bring it down, together with the eggs. All this was accomplished without the least difficulty. I looked at it with indescribable pleasure, as I saw it was new to me, and then felt vexed that it was not of a more spirited nature, as it had neither defended its eggs nor itself. It lay quietly in the handkerchief, and I carried it home to my father-in-law's, showed it to the family, and went to my room, where I instantly began drawing it. I put the bird on a stick made fast to my table. It merely moved its feet to grasp the stick, and stood erect, but raised its feathers, and drew in its head on its shoulders. I passed my hand over it to smooth the feathers by gentle pressure. It moved not. The plumage remained as I wished it. Its eye, directed towards mine, appeared truly sorrowful. I measured the length of its bill with my compass, began my outlines, continued measuring part after part, as I went on, and finished the drawing without the bird even moving once. The drawing being finished I raised the window, laid hold of the poor bird, and launched it into the air,
when it sailed off until out of my sight, without uttering a single cry, or deviating from its course."

It would seem, however, that the disposition of this bird, under certain circumstances, is very variable. Mr. A. G. Boardman, of Maine, who has found several nests, and secured the eggs, finds it to be courageous and spirited. A man whom he had employed to obtain a nest, was attacked with great fury, while ascending the tree; his cap was torn from his head, and he would have been seriously injured if the bird had not been shot. Another instance is mentioned by Dr. Wood, where this Hawk attacked a boy climbing to her nest, fastened her talons in his arm, and could not be removed until beaten off and killed with a club.

Food.

Gentry says: "The food of this species consists of small birds, small quadrupeds, reptiles and insects." "When skimming athwart a meadow or similar situation, it moves with trifling noise, and when it espies a reptile or a quadruped, pounces down upon it with the fleetness of an arrow, seldom missing its aim, and bears it away to an adjoining tree, where it feasts upon its still quivering flesh with self-complacency. When it visits the farm-yard, which it seldom does, there is manifested much of the fearless spirit of lineatus. It comes directly to the spot and not in a stealthy, circuitous manner, after the fashion of borealis, alights upon the summit of a tall tree, singles out its victim and darts down upon it, bearing it away, even when the proprietor is within easy distance. The coolness and audaciousness of the act, for the time being, disconcert the actions of the latter, and entirely eclipse his presence of mind. In some districts young chickens and goslings are the objects of these visits; but with us tame pigeons and the smaller fowls."—Gentry.

In speaking of this bird, Dr. Wood says: "Seldom, if ever, does it seize its prey on the wing, but secures it mostly on the ground, subsisting on frogs, snakes, mice and small birds, devouring the latter without removing the feathers. This Hawk in its habits is not as neat in preparing its food as most of its genus; holding its prey with both feet, it tears and eats without much regard to cleanliness or feathers."

In twelve specimens examined by myself, four revealed mice; three, small birds; four, frogs; one, killed the 22d of May, 1882, was gorged with cray-fish, with which were traces of coleopterous insects.
Birds of Pennsylvania.

Genus ARCHIBUTEleo. Brehm.

347a. Archibuteo lagopus sancti-johannis (Gmel.).

American Rough-legged Hawk.

Description.

"Adult male and female: Too variable in plumage to be concisely described. In general, the whole plumage with dark brown or blackish and light brown, gray, or whitish, the lighter colors edging or barring the individual feathers; tendency to excess of the whitish on the head, and to the formation of a dark abdominal zone or area which may or may not include the tibie; usually a blackish antecorrial and maxillary area. Lining of wings extensively blackish. Tail usually white from the base for some distance, then with dark and light barring. The inner webs of the flight feathers extensively white from the base, usually with little, if any, of the dark barring so prevalent among buteonine hawks. From such a light and variegated plumage as this, the bird varies to more or less nearly uniform blackish, in which case the tail is usually barred several times with white. * * Length of a female, 22.00; extent, 54.00; wing, 17.50; tail, 9.00; iris light brown; bill mostly blackish-blue, cere pale greenish-yellow, feet dull yellow, claws blue-black. This is about an average size; the male averages smaller."—Coues's Key.

Hab.—Whole of North America north of Mexico, breeding chiefly north of the United States.

In any plumage this bird can easily be distinguished from other of our hawks by the tarsus, which is thickly feathered in front to the toes. I have found the Rough-legged or Black Hawk in Pennsylvania only as a winter sojourner, about the meadows and grass fields along or near large streams. In the winter of 1879, when hunting along the Brandywine creek, I saw seven of these hawks at one time, perched about on trees in a meadow of some five acres in extent. In this locality, the species is usually found singly or in pairs. The Rough-legs generally migrate northward about the middle of March; I have, however, observed them here late in April. "Its migrations appear to be quite regular and extensive—more so, perhaps, than is generally supposed—though probably it does not differ from most Hawks in this respect. Birds of this family must follow their prey, wherever this leads them, and only a few of the more powerful species, able to prey upon hares and Ptarmigan, pass the winter in our highest latitudes. The Rough-legged is a rather northerly species, rarely, if ever, breeding within the limits of the United States, and becoming rarer to wards its southern terminus."—Coues. Although this Hawk usually breeds north of the United States, or at least is generally so recorded by various writers, it occasionally nests as far south as Pennsylvania. April 5, 1886. Mr. Samuel B. Ladd, of West Chester, Pa., found a nest and two eggs of this bird, in a thick woods, at Fites Eddy, on the Susquehanna river. Mr. Ladd has kindly furnished me with the following description of this nest and eggs: "The nest, partly concealed by a wild grape vine, was built in the crotch of an oak tree.
some thirty feet from the ground, and was composed entirely of sticks, averaging about one-half an inch in diameter; interior made up of small sticks or twigs. The general appearance of the nest was as if it had been crushed. Eggs measure respectively, 2.35 \(\times\) 1.79 and 2.40 \(\times\) 1.83. Ground color, white, marked or rather clouded near the larger end with brown and lavender, with a few dark-brown pencilings."

"It is a sluggish bird, and confines itself to the meadows and low grounds bordering the rivers and salt marshes along our bays and inlets. In such places, you may see it perched on a stake, where it remains for hours at a time, unless some wounded bird comes in sight, when it sails after it, and secures it without manifesting much swiftness of flight. It feeds principally on moles, mice, and other small quadrupeds, and never attacks a duck on the wing, although now and then it pursues a wounded one. When not alarmed, it usually flies low and sedately, and does not exhibit any of the courage and vigor so conspicuous in most other hawks, suffering thousands of birds to pass without pursuing them. The greatest feat I have seen it perform was scrambling at the edge of the water to secure a lethargic frog. They alight on trees to roost, but appear so hungry or indolent at all times that they seldom retire to rest until after dusk. Their large eyes, indeed, seem to indicate their possession of the faculty of seeing at that late hour. I have frequently put up one that seemed watching for food at the edge of a ditch long after sunset. Whenever an opportunity offers, they eat to excess, and, like the Turkey Buzzards and Carrion Crows, disgorge their food, to enable themselves to fly off. The species is more nocturnal in its habits than any other hawk found in the United States. The number of meadow mice which this species destroys ought, one might think, to secure it the protection of every husbandman."—Audubon.

In the stomachs of eleven of these hawks, which I have examined, were found only field-mice.

Genus **Aquila**. Brisson.

349. **Aquila chrysaetos** (Linn.).

Golden Eagle.

This large bird is found throughout most of North America, and occurs in Pennsylvania only as an occasional winter visitant. The only species with which it is sometimes confounded is the Bald or White-headed Eagle in immature plumage. The two species can always be distinguished at a single glance, if you remember that the Golden Eagle has the tarsus *densely feathered* to the toes, and the Bald Eagle has a *bare tarsus*. The Golden Eagle measures 3 feet or
over in length, and 6 feet or more in plan extent and is said to weigh from 9 to 13 pounds. The following mention of the peculiarities of the Golden Eagle in captivity I gleaned from conversation with Mr. B. M. Everhart, who for several years kept one in his yard. This bird, in consequence of a gun-shot wound in the wing, was unable to fly off. "All the yard situated to the north and east of the house was known as Nero's (bird's name) domain. Along the walk leading to my office was his perch, a dead tree stump some eight feet high. When satiated with food he would sit there for hours at a time. If at any time during the day a cat or domestic fowl happened to enter his ground, it had to make a speedy departure or be killed. The latter was mostly the case, for Nero seldom 'went for' anything without his capturing it. When I neglected to give him his daily allowance (1 lb. meat), as was sometimes the case, he wandered about the yard uttering a ventriloquial, gutteral sound, which had the effect of bringing around him birds and chickens. Occasionally the former, and invariably the latter, would be killed. Towards people other than myself he displayed great animosity, this being particularly the case with children and timorous individuals. One day Joshua Hoopes, a school teacher at that time, brought a party of his boys to see the bird, and I noticed one of their number, a puny and delicate lad, the eagle continually eyed and several times endeavored to make at him. Towards a female domestic, who had annoyed him by throwing water on him and poking at him with a stick, he showed great antipathy; we were eventually obliged, for her personal safety and our own convenience, to discharge the girl, as she could not go into the yard without being attacked. An Irishman one day slyly entered the yard, but in crossing Nero's province he was set upon by the bird. In the fleshy part of the man's thigh he imbedded his talons, and it was with considerable difficulty his hold was loosened. Erin's son declared that 'Niver before in his howl life had he seed sich a devil,' and that nothing short of the eagle's life could appease for his injuries. Examination showed that although there were ugly flesh wounds, nothing of a serious nature would follow. This information being imparted, and a two-dollar bill tendered to the Irishman, his sufferings were much relieved. He stated that although he looked upon the 'critter' as a 'bold, bad bird,' still he deemed him a fit subject to 'kape fra' from intrusion in the back yard, and that in the future, whenever he had any business with Bridget, he would enter the front gate and make known his wants at the front door. The strongest and largest tom cat he could manage with ease. When anyone had a specially objectionable cat which they wanted disposed of, they would bag it up and bring it to the eagle. As soon as he saw the bag—now the bird, which an instant before sat moping, ruff-feathered, and seemingly
half dead, suddenly, as if by magic, changed, as it were, into a new being; body erect, feathers close to the body, tail expanded, the sunken eyes with ten-fold increased lustre, followed with argus gaze every motion of the bag and occupant; soon as grimalkin was liberated the eagle swooped down and grasped it. If the cat was of ordinary size, Nero displayed little concern in dispatching it; but if it was a Thomas feline, of huge dimensions, all the powers of the bird were brought into requisition. Then the true nature of the eagle was seen. The eyes, before bright, now shone like balls of fire, the crest feathers standing up, and the contraction of the massive femoral muscles were discernable; his voice, before hushed, now added discord to the dying yells of his struggling victim, so inextricably fixed in his relentless talons. He could kill a cat in from two to five minutes. Commonly, the eagle would grasp the cat around the small of the back with one foot, with the other he encircled the neck, thus retaining his hold until the animal had ceased its struggles, which were soon over, as they were greatly augmented by fright and excessive violence of action. When the cat became quiet the eagle would raise his wings, which he had allowed to drop, draw his body up as high as possible from his prey, and proceed leisurely to tear off the skin from his captive's back and side, exposing the muscles and viscera, which he ate.

In reference this eagle, Audubon says: "They are capable of remaining without food for several days at a time, and eat voraciously whenever they find an opportunity.

"Young fawns, raccoons, hares, wild turkeys and other large birds are their usual food; and they devour putrid flesh only when hard pressed by hunger, none alighting on carrion at any other time."

**Genus Haliaeetus.** Savigny.

**352. Haliaeetus leucocephalus** (Linn.).

**Bald Eagle.**

**Description.**

Bill large, strong, straight at the base, rather abruptly hooked; wings long; tarsi rather short.

Adult.—Head, tail, and its upper and under covers, white; entire other plumage brownish-black, generally with the edges of the feathers paler; bill, feet and irises yellow.

Younger.—Entire plumage, including head and tail, dark-brown; paler on the throat; edges of the feathers paler or fulvous, especially on the under parts; tail more or less mottled with white, which color, in more advanced age, extends over a large portion of the tail, especially on the inner webs; bill brownish-black; irises brown.

Male.—Length about 34 inches; extent of wings about 7 feet. Female larger, measuring sometimes 8 feet in extent.

**Hab.**—North America at large, south to Mexico.
The name "bald," which is given to this species is not applied because the head is bare, but because the feathers of the neck and head in the adults are pure white. In Pennsylvania, as well as throughout the United States, we have but two species of Eagles. The "Black," "Gray," and "Washington" Eagles are all young of the Bald Eagle. Three years, it is stated, are required before this species assumes the adult plumage. The Bald Eagle, although found in Pennsylvania at all seasons of the year, is much oftener met with during the winter months than at other times. A few of these birds annually rear their young along the Susquehanna river, and elsewhere in this State. The nest, a bulky affair, built usually on a large tree, mostly near the water, is said to be about five or six feet in diameter. It is made up chiefly of large sticks, lined inside with grasses, leaves, etc. The eggs commonly 2—rarely 3—are white and measure about 3 by 2½ inches. A favorite article of food with this bird is fish, which he obtains, chiefly, by strategy and rapine. The Bald Eagle is quite plentiful in the vicinity of large rivers, where the Fish Hawk is common; unlike this last-named bird, however, he cannot be called piscivorous, as he subsists largely on ducks, geese and other aquatic birds. Referring to this Eagle, Audubon says: "No sooner does the Fish Hawk make its appearance along our Atlantic shores, or ascend our numerous and large rivers, than the Eagle follows it, and, like a selfish oppressor, robs it of the hard-earned fruits of its labor. Perched on some tall summit, in view of the ocean, or of some water-course, he watches every motion of the Fish Hawk while on wing. When the latter rises from the water, with a fish in its grasp, forth rushes the Eagle in pursuit. He mounts above the Fish Hawk, and threatens it by actions well understood, when the latter, fearing perhaps that its life is in danger, drops its prey. In an instant, the Eagle, accurately estimating the rapid descent of the fish, closes his wings, follows it with the swiftness of thought, and the next moment grasps it. * * * This bird now and then procures fish for himself by pursuing them in the shallows of small creeks. I have witnessed several instances of this in the Perkiomen creek in Pennsylvania, where, in this manner, I saw one of them secure a number of Red fins, by wading briskly through the water, and striking at them with his bill. I have also observed a pair scrambling over the ice of frozen pond to get at some fish below, but without success. It does not confine itself to these kinds of food, but greedily devours young pigs, lambs, fawns, poultry and the putrid flesh of carcasses of every description, driving off the Vultures and Carrion Crows, or the dogs, and keeping a whole party at defiance until it is satiated." Even man is not exempt from the attacks of these predacious birds. I have repeatedly seen in newspapers accounts of combats between men and Eagles; frequently the
bird would be the aggressor. While it is admitted that these reports are largely due to the imaginative reporter, it is believed that such occurrences do occasionally take place. Veritable instances are related of their carrying off infants. According to Wilson, "an attempt of this kind was made upon a child lying by its mother, as she was weeding a garden, at Egg Harbor, New Jersey, but the garment seized upon by the Eagle giving way at the instant of the attempt, the child's life was spared." Nuttall speaks of an instance said to have happened at Petersburg, Ga., near the Savannah river, "where an infant, sleeping in the shade near the house, was seized and carried off to the eyry, near the edge of a swamp five miles distant, and when found, almost immediately, the child was dead."

**Subfamily Falconinae. Falcons.**

**Genus Falco. Linnaeus.**

356. Falco peregrinus anatum (Bonap.).

**Duck Hawk: Great-footed Hawk.**

**Description.**

*Adult.*—Frontal band white; entire upper parts bluish cinereous, with transverse bands of brownish-black, lighter on the rump; under parts (throat and foreneck frequently unspotted) yellowish-white, with cordate and circular spots of black on the breast and abdomen, and transverse bands of black on the sides, under tail coverts and tibiae; quills and tail brownish-black, the latter with transverse bars of pale cinereous; cheeks with a patch of black; bill light-blue; cere and base of bill yellow; tarsi and toes yellow; iris hazel; sexes alike.

*Younger.*—Entire upper parts brownish-black; frontal spot obscure; large space on the cheeks black; under parts dull yellowish-white, darker than in adult, and with longitudinal stripes of brownish-black; tarsi and toes bluish-lead color.

Female: total length, 18 to 20 inches; extent, about 45; wing, 14 to 15; tail, 7 inches.

*Hub.*—North America at large.

In Pennsylvania I have found the Duck Hawk only as a rare visitant during the winter, when solitary individuals are occasionally observed. This bird like others of the northern Hawks is bold and pedacious. It is much oftener found along the sea coast and large rivers than in inland districts. Dr. Coues states that this species breeds as far south as Virginia, usually in the mountainous districts. Mr. Gentry says: "In eastern Pennsylvania it is a very rare species, and breeds only in occasional instances. Perhaps a more careful and thorough exploration of our numerous river banks, and the summits of our numerous mountain ridges would reveal the fact that it breeds in larger numbers than is at present allowed."

The following information relative to the breeding of the Duck Hawk in Pennsylvania is obtained from Thomas M. Brewer's North 7 Birds.
American Ornithology, p. 9, pt. I: "I have been informed by Professor S. F. Baird that this Hawk undoubtedly nested on a high cliff near the house of Professor S. S. Haldeman, near Columbia, Pennsylvania, as attested by the assurances of Professor Haldeman, who has on several occasions procured very young ones which had fallen from the nest. Specimens of these are in the Smithsonian Institution. Professor Haldeman, in answer to my inquiries, has kindly furnished me with the following interesting information in regard to the occurrence of this bird in Pennsylvania: In the Proceedings of the Academy of Natural Sciences, Vol. I, p. 54 (1841), I have noticed the occurrence of \textit{Falco peregrinus anatum} on the Susquehanna. A pair had a nest for many years about a hundred yards from my house, on a high and almost vertical cliff; but as a railway now traverses its base, it is not probable that the species will return to the locality. I have not seen an individual for a number of years past. * * * * * This bird remained ten or eleven months in the year, disappearing only in the coldest weather, and returning with the first favorable change. The nest was difficult of access, and I never saw it; but it was once reached and the young taken by getting down from above. I have seen them at Harper's Ferry since the railway has been in use there, recognizing them by their flight and cry. I feel confident that they breed there, the cliffs being well adapted to their habits. Ranges of similar cliffs occur along the rivers of East Tennessee, but I did not meet with the bird when travelling there. On the Susquehanna they breed early in the Spring, the young (to the number of \textit{not less} than three) leaving the nest perhaps in May; and there may possibly be a second brood. I used formerly to see this species about three miles farther up the Susquehanna, where it probably inhabits the cliffs on the western side. * * * * * I am under the impression that at my locality but a single pair remained, the young disappearing in the course of the season. In the wild region between Columbia and tidewater, there are many localities suited to the habits of this bird.'"

The nest and eggs of the Duck Hawk I have never seen. They are described by Audubon as follows: "I have nowhere seen it so abundant as along the high, rocky shores of Labrador and Newfoundland, where I procured several adult individuals of both sexes, as well as some eggs and young. The nests were placed on the shelves of rocks, a few feet from the top, and were flat, and rudely constructed of sticks and moss. In some were found four eggs, in others only two, and in one five. In one nest only a single young bird was found. The eggs vary considerably in color and size, which, I think, is owing to a difference of age in the females; the eggs of young birds being smaller. The average length of four was two inches, their breadth one and five-eighths. They are somewhat rounded, though larger at one end than
the other; their general and most common color is a reddish or rusty yellowish-brown, spotted and confusedly marked with darker tints of the same, here and there intermixed with lighter. The young are at first thickly covered with soft white down."

Food.

"He pursues the smaller ducks, water-hens, and other swimming birds; and, if they are not quick in diving, seizes them, and rises with them from the water. I have seen this hawk come at the report of a gun, and carry off a teal, not thirty steps distant from the sportsman who had killed it, with a daring assurance as surprising as unexpected. This conduct has been observed by many individuals, and is a characteristic trait of the species. The largest bird that I have seen this hawk attack and grapple with on the wing is the Mallard.

"The Great-footed Hawk does not, however, content himself with waterfowl. He is generally seen following the flocks of pigeons, and even blackbirds, causing great terror in their ranks, and forcing them to perform aerial evolutions to escape the grasp of his dreaded talons. For several days, I watched one of them that had taken a particular fancy to some tame pigeons, to secure which it went so far as to enter their house at one of the holes, seize a bird, and issue by another hole in an instant, causing such terror among the rest as to render me fearful that they would abandon the place. However, I fortunately shot the depredator.

"They occasionally feed on dead fish, that have floated to the shores or sand-bars. I saw several of them thus occupied, while descending the Mississippi on a journey undertaken expressly for the purpose of observing and procuring different specimens of birds, and which lasted four months, as I followed the windings of that great river, floating down it only a few miles daily. During that period, I and my companion counted upwards of fifty of these hawks, and killed several; one of which was found to contain in its stomach bones of birds, a few downy feathers, the gizzard of a teal, and the eyes and many scales of a fish."—Audubon.

I have examined but three of these hawks; the stomachs of two were destitute of food-materials, the other contained a few feathers of a domestic pigeon.

357. Falco columbarius, Linn.

Pigeon Hawk.

Description.

Adult Male.—Entire upper parts bluish-slate color, every feather with a black longitudinal line; forehead and throat white; other under parts pale yellowish or reddish-white; every feather with a longitudinal line of brownish-black; tibie light ferruginous, with lines of black; quills black, tipped with ashy-white; tail light
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bluish-ashy, tipped with white and with a wide subterminal band of black, and with several other transverse narrower bands of black; inner webs nearly white; cere and legs yellow; bill blue; iris brown.

Young.—Entire upper plumage dusky-brown, quite light in some specimens, and with a tinge of ashy; head above, with narrow stripes of dark brown and ferruginous, and in some specimens many irregular spots and edgings of the latter color on the other upper parts; forehead and entire under parts dull-white, the latter with longitudinal stripes of light-brown; sides and flanks light-brown, with pairs of circular spots of white; tibiae dull white, with dashes of brown; tail pale-brown, with about six transverse bands of white; cere and legs greenish-yellow.

Young.—Upper plumage brownish-black, white of the forehead and under parts more deeply tinged with reddish-yellow; dark stripes wider than in preceding; sides and flanks with wide transverse bands of brownish-black, and with circular spots of yellowish-white; quills black; tail brownish-black, tipped with white, and with about four bands of white; cere and feet greenish-yellow.

Total length, female 12 to 14 inches; wing, 8 to 9 inches; tail, 5 to 5½ inches. Male, total length, 10 to 11 inches; wing, 7½ to 8 inches; tail, 5 inches.

Hab.—The whole of North America, south to the West Indies and northern South America.

This falcon, a native of more northern latitudes, is rarely found in this region except during the winter season, when solitary birds are occasionally observed. The Pigeon Hawk is most frequently found in the mountainous and heavily-wooded districts. Wilson writes: "He is generally migratory in the Middle and Northern States, arriving in Pennsylvania early in spring, and extending his migrations as far north as Hudson's Bay. After building and rearing his young, he retires to the south early in November. Small birds and mice are his principal food. When the reed-birds, grakles, and red-winged blackbirds congregate in large flocks, he is often observed hovering in their rear, or on their flanks, picking up the weak, the wounded, or stragglers, and frequently making a sudden and fatal sweep into the very midst of their multitudes. The flocks of robins and pigeons are honored with the same attentions from this marauder, whose daily excursions are entirely regulated by the movements of the great body on whose unfortunate members he fattens."

In the few examinations which I have made of these hawks, only the remains of birds—common pigeons and sparrows—have been detected. From my observations in the field, as well as dissections, I believe the Pigeon Hawk during its residence in this locality preys mainly on various small birds. The following is taken from my notebook in relation to a pair of these hawks: "Two Pigeon Hawks during the late fall lurked about the southern suburbs of the borough of West Chester, preying at regular intervals on the pigeons of a blacksmith. In one week the hawks killed or drove away fifty of the birds. The hawks would enter the boxes and take from them the pigeons."
360. _Falco sparverius._ Linn.

American Sparrow Hawk.

Description. (Plate 16: Fig. 3, female; Fig. 2, male.)

Length, 10 to 12 inches; extent of wings, 18 to 23 inches.

_Hab._—Whole of North America, south to northern South America.

This well-known little Hawk is the smallest and most beautiful of the family _Falconidae._ It is a resident, but is more numerous during fall and winter than at other seasons. Unlike other of our native Hawks, it sometimes rears two broods in a season. The Sparrow Hawk builds no nest, but deposits her eggs—numbering from five to seven, rarely the latter number—in hollow trees, selecting usually the deserted hole of a woodpecker. The eggs, nearly spherical, measure about 1.33 by 1.13 inches, and are of a whitish or pale yellow-brown color, blotched all over with dark brown. Oviposition occurs in April. Occasionally, if the eggs are taken, the bird will a second time deposit eggs in the same nest. When the young or eggs are disturbed, the parent birds will sometimes defend invasion of their domicile with great temerity. Some few years ago I was endeavoring to secure the young from a nest of this species. I had climbed the tree to the aperture, about thirty-five feet from the ground, wherein were snugly packed five young, one of which I removed, when both old birds assailed me. They several times struck my head and arms with their talons and wings. So persistent were their attacks that I, desiring to obtaining the young alive, directed a companion, who stood near by, to shoot both birds. I have repeatedly taken the eggs and young of this species, but never, only in the above-cited instance, encountered such determined opposition. When reared from the nest, this species will soon become attached to its master. I raised two, which were given their freedom. Both birds would come at my call and alight on my outstretched arm or shoulders, anxiously waiting for a grasshopper or piece of meat, which was always their recompense. This Hawk will resort, for several consecutive years, to the same tree for breeding purposes. From Doctor Wood’s “Birds of Connecticut,” the following remarks, with regard to the nesting of this bird, are taken:

“One of my collectors found a nest of four eggs in the top of a stump, about ten feet from the ground. This nest was composed of grass, and was discovered by the grass protruding through a crack in the stump. Whether this Hawk constructed this nest, or whether it had been made by some other bird, it is impossible to tell; but if this Hawk constructs no nest, as asserted by Doctor Brewer and others, it must have obtained it piratically, as the nest was new. In another instance, which occurred in Granby, Connecticut, the nest was known
to have been obtained in this way: A farmer made a dove-house inside of his barn, with holes through the sides of the building communicating with it. A pair of doves that had mated there were attacked and killed by a pair of Sparrow Hawks, who took possession of their nest, laid four eggs, and commenced incubating."

Incubation, which lasts for about a period of from twenty-one to twenty-four days, is engaged in by both birds, and while one is sitting its mate supplies it with food. When first hatched, the young are covered with a white down. The food of young, while under parental care, I have found to consist chiefly of insects.

Food.

H. W. Illenshaw says: "Its food consists chiefly of the various kinds of coleopterous insects and grasshoppers, of which it destroys multitudes; in fact, this last item is the most important of all, and where these insects are abundant I have never seen them recourse to any other kind of food."

Allen, in his "Ornithological Notes on the Birds of the Great Salt Lake Valley," says: "The Sparrow Hawk, however, was by far the most numerous of the Falconidae; thirty were seen in the air at one time near the mouth of Weber cañon, engaged in the capture of the hateful grasshoppers, which seems at this season to form the principal food of this and other birds." Audubon mentions that he had one of these birds tamed. It was allowed its liberty. "In attempting to secure a chicken one day, the old hen attacked him with such violence as to cost him his life." Doctor Wood says: "When they cannot readily procure their favorite food, mice and small birds are greedily devoured; and, according to a writer in the American Naturalist, they are not wholly devoid of the piratical habits of the Bald Eagle. 'A tame cat was crossing the street and bearing a large mouse in her mouth; a Sparrow Hawk came flying over, and seeing the mouse in her mouth, made a sudden swoop and tried to seize it with its talons, but did not succeed. The Hawk continued its attempts until they reached the opposite side of the street, when the cat disappeared under the sidewalk.' If it catches a mouse that proves to be lousy and poor, it will leave it and seek another." Gentry writes: "Of all our falcons, it is the least timid and suspicious; and manifests nearly the courage and address of F. columbarius. Like the latter, it does not deserve the severe censure and cruel persecutions which are occasionally inflicted upon it. It is certainly regarded in some sections with less disfavor than any other species. The countless number of field-mice and noxious insects which it destroys should command for it universal respect. It is certainly a great benefactor to agriculturists. It is too frail a creature to commit much mischief in the farm-yard.
If it destroys a few young chickens occasionally, as has been asserted, the immense good which it accomplishes more than balances the mischief done. Its numerous visits to the barn-yard are not made with the view of depredating upon the farmer's poultry, but for the vermin which frequent his various out-buildings, and are so destructive to his stored grains. Let them be encouraged in their visits. They cannot carry away the adult hen, and as for the chicks, they are so well guarded by the mother that, only in rare instances, will this Hawk have the hardihood to venture an assault upon the brood unless it be considerably scattered from the parent, when it will merely single out the most distant chick."

The stomach contents of sixty-five of this species which I have dissected showed, in thirty-one, principally field-mice, with frequent traces of various insects; twenty-three, mainly grasshoppers and beetles; seven, small birds; two, meadow larks; one, remains of mouse and small bird; one, insects and small bird.

**Subfamily Pandioninae. Ospreys.**

**Genus Pandion.** Savigny.

364. Pandion haliaetus carolinensis (Gmel.)

American Osprey; Fish Hawk.

**Description.**

Wings, long; legs, toes and claws, very robust and strong.

**Adult.**—Head and entire under parts, white; stripe through the eye, top of the head and upper parts of the body, wings and tail, deepumber-brown, tail having about eight bands of blackish-brown; breast (particularly in female), more or less spotted with pale yellowish-brown; bill and claws, bluish-black; tarsi and toes, grayish-blue. Iris, in some specimens, red, but mostly yellow.

**Young.**—Similar to the adult, but with the upper plumage edged and tipped with pale-brownish, nearly white; spots on the breast more numerous and darker colored.

Total length, female, about 25 inches; extent, about 52 inches; wing, 21 inches; tail, 10½ inches; male rather smaller.

**Hab.**—North America, from Hudson's bay and Alaska south to the West Indies and northern South America.

The Fish Hawk, although most numerous about the sea coast, is quite frequently met with along our large rivers. This bird arrives in Pennsylvania generally about the last week in March, and remains sometimes as late as the first of November. Although the Fish Hawk commonly rears its young along the sea coast, it is frequently found breeding near the borders of large rivers or in the vicinity of large inland lakes. The nest, a particularly bulky structure (from 4 to 8 feet in diameter), composed chiefly of sticks, and lined with seaweeds, grasses, etc., is built usually on a large tree, near the water. In Florida, I have found eggs and young of this bird early in March. The Fish Hawk occasionally breeds in Pennsylvania; nests have been found along the Susquehanna river.
Some few years ago Messrs. William Ingram and Joseph Price, of West Chester, Pa., discovered a nest and young of the Fish Hawk along the Brandywine creek, in the vicinity of Chadd’s Ford, Delaware county. The eggs, two or three in number, measure about 2½ inches in length by 1½ inches in width; they are yellowish white, thickly covered with large blotches of different shades of brown. "I have observed many of these birds, at the approach of winter, sailing over the lakes near the Mississippi, where they feed on the fish which the Wood Ibis kills, the Hawks themselves being unable to discover them whilst alive in the muddy water with which these lakes are filled. There the Ibises wade among the water in immense flocks, and so trample the bottom as to convert the lakes into filthy puddles, in which the fishes are unable to respire with ease. They rise to the surface and are instantly killed by the Ibises. The whole surface is sometimes covered in this manner with dead fish, so that not only are the Ibises plentifully supplied, but Vultures, Eagles and Fish Hawks come to participate in the spoil. Except in such places, and on such occasions, I have not observed the Fish Hawk to eat of any other prey than that which it had procured by plunging headlong into the water after it."—Audubon. Although it is asserted by certain reputable writers that during the breeding season these birds subsist in part on reptiles and batrachians, I believe that such food is only taken when they are unable to secure fish, which they are so expert in catching. In the stomachs of eighteen Fish Hawks, killed in Pennsylvania, New Jersey, Maryland and Florida, I found only the remains of fishes.

**SUBORDER STRIGES. OWLS.*

**FAMILY STRIGIDÆ. BARN OWLS.**

**GENUS STRIX. LINNAEUS.**

365. Strix pratincola. (Bonap.)

American Barn Owl.

**DESCRIPTION. (Plate 17.)**

Length of female about 16 inches; extent of wings about 43 inches. Male rather smaller.

*Hab.*—Warmer parts of North America, from the Middle States, Ohio Valley and California, southward through Mexico.

The Barn Owl has of late years become rather rare in various sec-

*To distinguish an Owl from a Hawk remember the Owl’s eyes are situated in the front of the head and look forward, while the Hawk’s eyes are directed to either side. The extremely soft and downy plumage of these birds is such that their flight is almost noiseless. During the day-light we usually find them concealed in hollow trees, or dense foliage, preferably cedar thickets. While it is generally an accepted fact that Owls are nocturnal in their habits it is not true that they are exclusively so. The Short-eared and Barred Owls are of a decidedly diurnal nature; and in cloudy weather or in early twilight it is not unusual to see the Great Horned Owl sally...*
Plate 17.

Barn Owl.
tions of Pennsylvania, where formerly it is said to have been quite plentiful. I have never found this species breeding in eastern Pennsyl-
vania. Prof. Gentry, however, who has been more fortunate, says: "\nIn the selection of a place for nesting purposes, these Owls vary in \ndifferent localities. In eastern Pennsylvania generally a hollow tree, \nchiefly an apple or an oak, is chosen, but occasionally, a dilapidated \nand unoccupied barn; but more rarely, an occupied building in close \nproximity to man. When the former situations are chosen, the hollow \nis lined with a few dried grasses and feathers, although instances are \nnot unfrequently met with where the eggs are deposited upon the bare \nbottom. In the latter places, a few rude sticks constitute a frame-\nwork which is lined with a few fine grasses and feathers. It is depos-\nited upon a short timber in a somewhat inaccessible part of the build-\ning. Nesting ordinarily takes place early in March, although we have \nobserved newly-built nests in the latter part of February. Oviposi-\ntion commences about the second week of March. The number of \neggs laid varies from three to four, very rarely more. * * * The \neggs are somewhat subpherical, scarcely more pointed at one \n extremity than the other, unless in exceptional cases; of a bluish- \nwhite color, and measure 1.67 inches in length, and 1.37 in width. \nThey vary, however, in size in different localities." "It is generally believed that the Barn Owl is decidedly crepus-\ncular and nocturnal in its habits, never venturing out from its hiding \nplace in quest of the particular insects and quadrupeds which consti-\ntute a conspicuous portion of its diet. During cloudy weather, and \nevén late in the afternoon, it is no uncommon thing to find it abroad \non such missions. In the broad glare of noon, we have on a couple of \noccasions, during the breeding period, encountered it foraging for \nfood wherewith to feed its young."—Gentry.

Food.

These Owls subsist principally on mice—especially meadow mice—\nrats and various insects. Sometimes they catch and devour small \nbirds, but never, I think, molest poultry, either old or young.

forth in quest of prey. Birds of this suborder, unlike certain other species of the Raptores, never, \nit is stated, unless reduced to the utmost extremity, feed on carrion, but subsist on such food as \nthey are able to kill. Their dietary, although variable with locality and circumstances, consists \nmainly of small quadrupeds (principally field mice), insects, chiefly beetles and grasshoppers, \nand some few of the smaller kinds of birds. "Many species are capable of living without water \nfor months at a time, though some of them drink it readily and often bathe freely." Benjamin \nM. Everhart, the well-known Pennsylvania botanist, had in captivity, for a period of about two \nyears, a Great Horned Owl, and during this time he says it never would drink water. The Owls \nlike many other birds of prey, eject from the mouth in small ball-like masses; the indigestible \nportions of their food, such as hair, bones, etc. These little balls or pellets, as they are usually \n called, are frequently to be found in great quantities about localities where these birds resort \nduring the daytime. The eggs are white, nearly round and commonly number from three to \nfive; deposited generally in hollow trees or the deserted nests of Hawks and Crows. Their cries \nare loud and dismal.
Family **BUBONIDÆ.** Horned Owls, Etc.

**Genus ASIO.** Brisson.

366. *Asio wilsonianus* (Less.).

**American Long-eared Owl.**

**Description.**

Ear-tufts long and conspicuous; eyes rather small; wings long tarsi and toes densely feathered; upper parts mottled with brownish-black, fulvous, and ash-white, the former predominating; breast pale-fulvous, with longitudinal stripes of brownish-black; abdomen white; every feather with a wide longitudinal stripe, and with transverse stripes of brownish-black; legs and toes pale-fulvous, usually unspotted, but frequently with irregular narrow transverse stripes of dark-brown; eye nearly encircled with black; other feathers of the face ash-white; with minute lines of black; ear-tufts brownish-black edged with fulvous and ash-white; quills pale-fulvous at their bases, with irregular transverse bands of brown; inferior coverts of the wing pale-fulvous, frequently nearly white; the larger widely tipped with black; tail brown, with several irregular transverse bands of ashfulvous, which are mottled, as on the quills; bill and claws dark; irides yellow.

Total length: Female, about 15 inches; extent, about 38; wing, 11 to 11 ½; tail, 6 inches. Male, rather smaller.

**Hab.**—Temperate North America.

Owing to the fact that these birds oftentimes conceal themselves during the daytime in cedar trees, the local appellation of "Cedar Owl" has arisen. The Long-eared Owl is a resident and one of the most abundant of all the Owl tribe in this State. While Owls usually lead a solitary life or associate in pairs, we find the subject of this sketch to be social and gregarious, associating commonly in parties of from twelve to twenty-five individuals. During the winter months, if not molested, they often take up a residence in the dark retreats furnished by the numerous coniferous trees growing around the habitations of man. In relation to a party of these owls Dr. William R. Stavely, Lahaska, Bucks county, Pennsylvania, writes me as follows: "For over twenty years I have had congregated in my lawn from fifty to seventy-five Owls. They are peaceable and quiet, only on rare occasions would you know one was about. On dull days and foggy evenings they were flying about in all directions. Never in all that
time have I missed any poultry or have they inflicted any injury on anything of value.

"The first I noticed of their presence was the discovery of quite a pile of what appeared to be mice hair and bones, and on investigation found the Norway fir was the roosting place of to me at that time a vast number of owls. They had ejected the bolus of hair and bones apparently of an army of tree-eating destructive mice, aiding the fruit grower against one of the worst and most inveterate enemies. * * * Their merits would fill sheets; the demerits nil."

Although it is true that the Long-eared Owls at times do construct their own nests, I am inclined to believe that these birds, in this region at least, prefer to occupy the deserted nests of other birds. I have on several occasions found the Long-eared Owls breeding, and always observed that they occupied the abandoned nests of Crows or Hawks. Audubon says: "The Long-eared Owl is careless as to the situation in which its young are to be reared, and generally accommodates itself with the abandoned nest of some other bird that proves of sufficient size, whether it be high or low, in the fissure of a rock or on the ground. Sometimes, however, it makes a nest itself; and this I found to be the case in one instance near the Juniata river, in Pennsylvania, where it was composed of green twigs, with the leaflets adhering, and lined with fresh grass and wool, but without any feathers." Of all our Owls this species is, without doubt, the most serviceable to the farmer and horticulturist, as it preys almost wholly on field-mice and other destructive little rodents. Unhappily, during the past four or five years there has been a rapid decrease in the number of these birds in many localities in Pennsylvania; this diminution. I judge, is largely due to the fact that the stuffed heads of these harmless and beneficial Owls make an attractive ornament for lovely woman's headwear.

The eggs of this bird vary considerable in size; a small example in my possession measures about 1½ by 1¼ inches.

Nuttall states that "besides mice and rats, this species also preys on field-mice, moles and beetles."

Audubon says: "It preys chiefly on quadrupeds of the genus Arvicola, and in summer destroys many beetles."

I have examined the stomachs of twenty-three Long-eared Owls and found that twenty-two of them had fed only on mice; the other examination made of a specimen taken in the late spring, showed some beetles and portions of a small bird.
367. **Asio accipitrinus (Pall.).**

**Short-eared Owl.**

**Description.**

Ear-tufts very short; entire plumage buff or pale-fulvous; every feather on the upper parts with a wide longitudinal stripe of dark-brown, which color predominates on the back; under parts paler, frequently nearly white on the abdomen, with longitudinal stripes of brownish-black; most numerous on the breast, very narrow and less numerous on the abdomen and flanks; legs and toes usually of a deeper shade of the same color as the abdomen; quills pale reddish-fulvous at their bases, brown at their ends, with wide irregular bands and large spots of reddish-fulvous; tail pale reddish-fulvous, with about five irregular transverse bands of dark-brown, which color predominates on the two central feathers; under tail coverts usually nearly white; throat white; eyes enclosed by large spots of brownish-black; ear-tufts brown, edged with fulvous; bill and claws dark; irides yellow.

Total length: Female, about 15 inches; wing, 12; tail, 6 inches. Male, rather smaller.

**Hab.**—Throughout North America; nearly cosmopolitan.

The vulgar name of Marsh Owl is quite appropriate, as this species frequents mostly during is sojourn in this region marshy districts and grass fields. Sometimes small parties of five, eight or even ten individuals, will be found in favorite grassy retreats.

According to my observation the Short-eared Owl occurs in Pennsylvania as a tolerably common winter resident, arriving from more northern latitudes, early in November and departing early in April. Turnbull, in his "Birds of Eastern Pennsylvania," records it as a winter resident, "not uncommon." The Messrs. Baird speak of it as "abundant; not seen in summer," and Dr. Michener says: "Resident, frequent in winter; rare in summer." Audubon found a nest of this Owl in Pennsylvania on one of the high mountain ridges of the Great Pine Forest on June 17. In reference to this "find," he writes: "It contained four eggs, nearly ready to be hatched. They were of a dull bluish-white, of a somewhat elongated or elliptical form, measuring an inch and a half in length, and an inch and an eighth in breadth. The nest was placed under a low bush, and covered over by tall grass, through which a path had been made by the bird. It was formed of dry grass, raked together in a slovenly manner and quite flat, but covering a large space, on one side of which were found many pellets and two field mice. I should never have discovered their nest had not the sitting bird made a noise by clicking its bill as I was passing close by. The poor thing was so intent on her task that I almost put my hand on her before she moved; and then, instead of flying off, she hopped with great leaps until about ten yards from me, keeping up a constant clicking of her mandibles. Having satisfied myself as to the species, made an outline of two of the eggs and measured them, I proceeded slowly to a short distance and watched her
movements. Having remained silent and still for about ten minutes, I saw her hop toward the nest and soon felt assured she had resumed her task."

L. M. Turner, the Arctic explorer, in his "Contributions to the Natural History of Alaska," says: "Among the natives of the Yukon District the liver of this bird is used as a love-philter. The liver is dried and reduced to a powder, and placed, unknown to the person to whom the philter is to be administered, in some food. On eating the food the desired affection is supposed to make itself evident. I knew of an incident where a native endeavored, by this means, to regain the affection of his wife. The mother-in-law had more potency than dried Owl liver, and as she controlled her daughter the philter was as naught. It is administered indifferently, by man or woman, and is frequently used by the Eskimo."

Food.

Nuttall says: "Its food is almost exclusively mice, for which it watches, seated on a stump, with all the vigilance of a cat, listening attentively to the low squeak of its prey, to which it is so much alive as to be sometimes brought in sight by imitating the sound." In the gorged pellets of this species examined by Audubon, he found the remains of bones of small quadrupeds, mixed with hair, and remains of various beetles.

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<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
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<tbody>
<tr>
<td>1</td>
<td>Jan. 4, 1880</td>
<td>Chester county, Pa.</td>
<td>Field mice.</td>
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<td>2</td>
<td>Jan. 5, 1880</td>
<td>Chester county, Pa.</td>
<td>Field mice.</td>
</tr>
<tr>
<td>3</td>
<td>March 17, 1882</td>
<td>Purchased at Phila. Market</td>
<td>Field mice.</td>
</tr>
<tr>
<td>4</td>
<td>Nov. 13, 1883</td>
<td>Delaware county, Pa.</td>
<td>Field mice.</td>
</tr>
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<td>5</td>
<td>Nov. 7, 1883</td>
<td>Cecil county, Md.</td>
<td>Field mice.</td>
</tr>
<tr>
<td>6</td>
<td>Nov. 1, 1885</td>
<td>Chester county, Pa.</td>
<td>Field mice.</td>
</tr>
<tr>
<td>7</td>
<td>March 8, 1885</td>
<td>Chester county, Pa.</td>
<td>Field mice.</td>
</tr>
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<td>8</td>
<td>Nov. 21, 1886</td>
<td>Chester county, Pa.</td>
<td>Field mice.</td>
</tr>
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<td>9</td>
<td>Nov. 23, 1886</td>
<td>Chester county, Pa.</td>
<td>Field mice.</td>
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<td>10</td>
<td>Nov. 27, 1886</td>
<td>Chester county, Pa.</td>
<td>Field mice.</td>
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<tr>
<td>11</td>
<td>Dec. 8, 1886</td>
<td>Chester county, Pa.</td>
<td>Field mice.</td>
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</tbody>
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Genus SYRNION. Savigny.

368. Syrniun nebulosum (Forst.).

Barred Owl.

Description.

Head large, without car-tufts; tail rather long; upper parts light ashy-brown, frequently tinged with dull-yellow, with transverse narrow bands of white, most numerous on the head and neck behind, broader on the back; breast with transverse bands of brown and white; abdomen ashy-white, with longitudinal stripes of brown; tars and toes ashy-white, tinged with fulvous, generally without spots, but frequently mottled and banded with dark-brown; quills brown, with six or seven
transverse bars, nearly pure-white on the outer webs, and ashy-fuscous on the inner webs; tail light-brown, with about five bands or white, generally tinged with reddish-yellow; discal feathers* tipped with white; face ashy-white, with lines of brown, and a spot of black in front of the eye; throat dark-brown; claws horn-color; bill yellow; irides bluish-black. Sexes alike.

Total length about 20 inches; extent about 44; wing, 13 to 14; tail, 9 inches.

Hab.—Eastern United States, west to Minnesota and Texas, north to Nova Scotia and Quebec.

The Barred Owl is readily distinguished from other species by its large size, yellow-colored bill and its black eyes. Barred Owls are exceedingly abundant in many of the Southern States, where they are known by the names of "Hoot and Swamp Owls." In Pennsylvania, I have found this species to be a tolerably common resident during the winter, when they are observed frequenting, chiefly, wooded districts. Wilson says: "In winter, particularly, it is numerous in the lower parts of Pennsylvania, among the woods that border the extensive meadows of the Schuylkill and Delaware. It is very frequently observed flying during the day, and certainly sees more distinctly at that time than many of its family. In one spring, at different times, I met with more than forty of them, generally flying or sitting exposed. I also once met with one of their nests, containing three young, in the crotch of a white oak, among thick foliage. The nest was rudely put together, composed outwardly of sticks, intermixed with some dry grass and leaves, and lined with smaller twigs." The Barred and Great-Horned Owls are the only species, in this locality, whose depredations in the poultry yard bring them to the notice of the farmer. Unfortunately, however, the hatred towards these two birds, and particularly the enmity against the Great-Horned Owls, has brought all our owls in bad favor; the farmer's boy and sportsman, with few exceptions, leave no opportunity pass to pillage an owl's nest or slay its owners. In this way, there are annually destroyed large numbers of the Screech. Long and Short-eared species, simply because the popular idea is that owls, large and small, prey only on poultry and game.

Food.

Wilson says, although mice and small game are the most usual food of Barred Owls, they sometimes seize on fowls, partridges and young rabbits. "A specimen that I kept alive for a few weeks, often, in the daytime, flew about the room in which his cage was placed: he alighted with ease on the backs of chairs, or on other pieces of furniture; seldom miscalculating the distance or missing a footing, as many of the other owls would in the same circumstances. This bird soon became tame, and would accept food at almost any time in the day or night; on receiving a piece of meat, he sometimes attempted to clutch it with his foot, and my fingers often had narrow escapes from his sharp, crooked

* Radiating feathers surrounding the eyes.
talons. Usually, he would seize it with his mouth, and, if not too large, swallow it without tearing; if the piece was more bulky than he could manage, he stood on it, and tore it with his beak. Fish he invariably rejected, but greedily ate mice and small birds; a dead pigeon that I put in his cage was untouched for several days. * * *

"The Barred Owl subsists principally upon small birds, field-mice and reptiles. He is frequently seen, in early twilight, flying over the low meadow-lands, searching for the mice that dwell there; he usually takes a direct course, and sometimes flies so low that the tips of his wings seem to touch the grass. When he discovers his prey, he drops on it instantly, folding his wings and protruding his feet, in which his quarry is always secured; he often captures frogs that are sitting on the shores of ponds and rivers; but I am inclined to think that the statement, quoted by Audubon, that he often catches fish, is incorrect." — Samuels.*

The Florida Barred Owl—a local race, technically called _Syrniun nebulosum alleni_—is exceedingly abundant about the almost impervious swamps and heavily timbered regions along the St. John’s river. In the winter of 1885, I was informed by two residents of Florida, both gentlemen whom I consider thoroughly trustworthy, that this owl frequently preys on fish, which it secures, while sitting close to the water’s edge, by a dextrous movement of the foot. The stomach contents of five of these Florida Owls, which I examined, consisted only of the remains of small birds and coleopterous insects.

Referring to this species, Nuttall says: "Their food is principally rabbits, squirrels, grouse, quails, rats, mice and frogs. From necessity, as well as choice, they not infrequently appear around the farmhouse and garden, in quest of poultry, particularly young chickens. At these times they prowl abroad towards evening, and fly low and steadily about, as if beating for their prey. In Alabama, Georgia, West Florida and Louisiana, where they abound, they are often to be seen abroad by day, particularly in cloudy weather, and at times even soar and fly with all the address of diurnal birds of prey."

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<th>No.</th>
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<td>2</td>
<td>Nov. 17, 1879</td>
<td>Chester county, Pa.</td>
<td>Beetles and small bird (Robin).</td>
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<td>4</td>
<td>Jan. 11, 1881</td>
<td>Chester county, Pa.</td>
<td>Remains of chicken and field mice.</td>
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<tr>
<td>5</td>
<td>Jan. 20, 1883</td>
<td>Chester county, Pa.</td>
<td>Field-mice and small bird (Meadow Lark).</td>
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<tr>
<td>7</td>
<td>Dec. 16, 1886</td>
<td>Chester county, Pa.</td>
<td>Remains of rabbit (Lepus).</td>
</tr>
<tr>
<td>8</td>
<td>Nov. 18, 1887</td>
<td>Cecil county, Md.</td>
<td>Fragments of beetles and bones of small mammal.</td>
</tr>
</tbody>
</table>

* Our Northern and Eastern Birds, by E. A. Samuels, p. 74.
Genus NYCTALOPH Brehm.

372. Nyctala acadica (Gmel.).

Acadian Owl; Saw-whet Owl.

Description.

Small; wings long; tail short; upper parts reddish-brown, tinged with olive; head in front with fine lines of white, and on the neck behind, rump, and scapulars, with large, partially concealed spots of white; face ashy-white; throat white; under parts ashy-white, with longitudinal stripes of pale reddish-brown; under coverts of wings and tail white; quills brown, with small spots of white on their outer edges, and large spots of the same on their inner webs; tail brown, every feather with about three pairs of spots of white; bill and claws dark; irides yellow.

Total length about 7½ to 8 inches; extent about 18; wing 5½; tail 2½ to 3 inches.

Sexes nearly the same size and alike in colors.

Hab.—North America at large; breeding from Middle States northward.

The Acadian is the smallest Owl found in the United States east of the Mississippi river. Although apparently larger, it is in reality smaller, than our common Robin. This pigmy mass of owl-life is, I suppose, the species which was regarded as not destructive to poultry and game, by the author of the "Scalp Act," when he introduced therein a clause exempting "The Arcadian Screech or Barn Owl." From the fact, however, that the decapitated heads of Pheasants,* Night Hawks, and doubtless other birds, were cremated and paid for as the heads of destructive, rapacious "Hawks," it is but reasonable to suppose that our little Acadian Owl, when found by the eager scalp hunter, was generally slain, and the bounty of fifty cents given "for the benefit of agriculture and for the protection of game."

The name of Saw-whet is applied to this bird because, at times, its squeaky voice resembles the whetting or filing of a saw. Owing to the small size of this Owl, together with the fact that during the daytime it remains secreted in hollow trees, thick foliage or in dark and secluded rocky retreats, it is seldom met with, hence is regarded as one of our rarest residents. The young of this bird, taken in the vicinity of Philadelphia, have been seen by Prof. Gentry, and in E. A. Samuel's work, "Our Northern and Eastern Birds," the following interesting account is given, by Mr. Richard Christ, of a nest that he found April 25, 1867, at Nazareth, Pennsylvania:

"This, the smallest of all our Owls, is also the most rare, but a single specimen being seen in a period of several years. It is very tame when found, permitting one to approach very close to it before flying

*In December, 1886, Prof. S. F. Baird informed me that he had received for identification, from one or more counties in Pennsylvania, the heads of Pheasants (Bonasa umbellus). These heads were called by the parties sending them to Prof. Baird "Hawk heads," and as such they had been presented for the fifty-cent bounty, which had been paid. Prof. Baird also examined some Pennsylvania "wolf scalps," on which premiums had been given, and ascertained that the so-called "wolf scalps" had been fashioned from pelts of the common Red Fox (Vulpes fulva)."
away. I am inclined to think that it sees less in the daytime than any other species of our Owls, for one can touch it without being noticed, the bird taking flight more from alarm to its sense of hearing than any other cause.

"It generally frequents stone quarries or piles of rocks, beneath which it takes shelter; and it is from this habit that the bird here is known by the name of "Stone Owl." On the 25th of April, 1867, I was so fortunate as to find the nest of one of these birds. It was placed or located in the hollow of a tree, about twenty feet from the ground; the entrance to the hole was very small, scarcely two inches in diameter. On climbing the tree and looking in the hollow, I discovered sitting on the bottom what I supposed might be a small Owl. Uncertain as to the truth, I introduced a small stick into the hole, and turned the bird over upon her side, she making no struggle whatever, but remaining perfectly still as if dead. I discovered that she was sitting upon a single egg. Supposing that she had but just commenced laying, I left her, and did not molest her again for several days; on the fifth day after, I again examined the nest. and found the bird on her egg, none other having been laid. I enlarged the hole, and took the egg, leaving the Owl quietly sitting on the rotten chips which formed the bottom of the nest.

"The egg was white, with a bluish tint, like many of the other Owls' eggs, nearly globular in form, and considerably smaller than the egg of the Red or Mottled Owl."

Dr. Elliott Coues, in his "Birds of the North-west, says: "Mr. Gentry informs me of a curious circumstance in regard to this Owl. Referring to the association of the Burrowing Owl of the West with the prairie dog, he continues: 'In the hollow of an oak tree, not far from Germantown, lives an individual of the common chickaree squirrel (Sciurus hudsonius), with a specimen of this little Owl as his sole companion. They occupy the same hole together in perfect harmony and mutual goodwill. It is not an accidental, temporary association, for the bird and the squirrel have repeatedly been observed to enter the same hole together, as if they had always shared the apartment. But what benefit can either derive from the other?'"

Food.

This little Owl, although sometimes known to prey on small quadrupeds, principally mice, and at times on small birds, such as sparrows and warblers, subsists mainly on the larger species of insects which it is able to secure in its nocturnal wanderings.
373. **Megascops asio.** (Linn.).

Screech Owl; Red Owl; Mottled Owl; Gray Owl.

**Description.** (Plate 18.)

Adult or young Screech Owls may be either red or gray in color. The nestlings are white. This species measures about 10 inches in length; extent of wings about 22 inches.

*Hab.*—Temperate eastern North America, south to Georgia and west to the plains. Accidental in England.

This handsome little owl is the most common of all owls found in Pennsylvania. It is a resident, but unlike the Long-eared species, is not gregarious. Its almost spherical and white eggs—from four to six in number (mostly four)—are deposited in a hollow tree. A tree in an apple orchard is frequently made use of for breeding purposes, as well as a common diurnal resort at all seasons. The eggs measure about 1.33 by 1.18 inches. This bird, when taken from the nest and raised, makes a very interesting pet, one that not only becomes attached to its master, but which also is capable of rendering him most efficient services in the destruction of mice, whose vexations ravages are frequently so annoying. Some few years ago an acquaintance of mine placed two of these birds in his cellar which was overrun with mice, and in a few weeks the place was depopulated of these little four-footed pests.

A Screech Owl which I kept for several months in captivity fed eagerly on grasshoppers and pieces of fresh beef. When a mouse was given to this bird it would seize it with its claws, and after severing with its bill the skin about the head and neck, would swallow the whole mass, always, I think, head foremost. When it fed on small birds—which were frequently shot and placed in its box—but which it would seldom touch, I noticed that it generally tore open the skull and ate the brain substance. This owl would never drink water.

The flight of the Mottled Owl is smooth, rapid, protracted and noiseless. It rises at times above the top branches of the highest of our forest trees whilst in pursuit of large beetles; and at other times sails low and swiftly over the fields, or through the woods, in search
Plate 18.

½ natural size.

Screech Owl.
of small birds, field mice, moles or wood rats, from which it chiefly derives its subsistance. Sometimes on alighting, which it does plumply, the Mottled Owl immediately bends its body, turns its head to look behind it, performs a curious nod, utters its notes, then shakes and plumes itself, and resumes its flight in search of prey. It now and then, while on the wing, produces a clicking sound with its mandibles, but more frequently when perched near its mate or young. This I have thought was done by the bird to manifest its courage, and let the hearer know that it is not to be meddled with; although few birds of prey are more gentle when seized, as it will suffer a person to touch its feathers and caress it without attempting to bite or strike with its talons, unless at rare intervals.

"The notes of this Owl are uttered in a tremulous, doleful manner, and somewhat resemble the chattering of the teeth of a person under the influence of extreme cold, although much louder. They are heard at a distance of several hundred yards, and by some people are thought to be of ominous import."

"The little fellow is generally found about farm-houses, orchards and gardens. It alights on the roof, the fence or the garden gate, and utters its mournful ditty, at intervals, for hours at a time, as if it were in a state of great suffering, although this is far from being the case—the song of all birds being an indication of content and happiness. In a state of confinement it utters its notes with as much satisfaction as if at liberty. They are chiefly heard during the latter part of winter—that being the season of love, when the male bird is particularly attentive to the fair one, which excites his tender emotions, and around which he flies and struts much in the manner of the common Pigeon, adding numerous nods and bows, the sight of which is very amusing."

— Audubon.

Prof. Samuel Aughey in his "Notes on the Nature of the Food of the Birds of Nebraska," says the Screech Owl is largely an insect-eating bird. Mr. L. M. Turner informs me that he has made a number of examinations of Screech Owls captured in Illinois, and very generally found their food consisted of such insects as the larger beetles and grasshoppers, also many mice. Grasshoppers and other orthopterous insects are devoured in large quantities by these birds.

During the summer months and at other times when insect life is abundant the Screech Owls subsist mainly on an insect diet. These birds also prey on mice, shrews, other small quadrupeds and small birds. In the twenty-seven stomach examinations, which I have recorded of birds, taken principally in the winter season, seventeen had fed on mice and insects; five, small birds; three, mice and insects; two, small birds and insects.
Genus *Bubo* — Cuvier.

375. *Bubo virginianus* (Gmel.).

**Great Horned Owl:** Hoot Owl.

(Plate 18.)

Length, about 25 inches; extent of wings, about 58 inches.

*Hub.*—Eastern North America, west to the Mississippi Valley, and from Labrador south to Costa Rica.

This well-known and rather common inhabitant of the forests can easily be recognized by its large size, the conspicuous white feathers of the throat and the long ear-tufts which measure $2\frac{1}{2}$ inches or more in length. The Great Horned, the largest of all our native Owls, is the first to commence nesting. I have found its eggs in February, and am told that it occasionally lays in January. In this locality the Great Horned Owl seldom breeds in hollow trees; sometimes it constructs a rude and bulky nest of sticks, lined with grasses and feathers, on the large horizontal limbs of trees in its favorite wooded retreats. Its eggs, measuring about $2\frac{1}{2}$ inches in length by 2 inches in width, are mostly deposited in the deserted nests of Hawks or Crows. Although it is stated by different writers that this species lays four or more eggs, I have never found, in seven nests examined, over two eggs or a like number of young. Mr. Thomas H. Jackson, of West Chester, Pa., writing in the *Ornithologist and Oöologist*, June, 1886, says: "In thirteen nests of this bird that have come under personal notice, twelve contained two eggs, or young, and only one contained three eggs. All the nests referred to above were placed in branches of trees, and were generally those of Hawks or Crows, renovated or enlarged. Occasionally a hollow tree is used for this purpose. Upon one occasion I replaced the Owl's eggs taken from a nest with those of the common hen, and upon visiting them at the expiration of three weeks, found that both the latter had been hatched and had fallen from the nest, about twenty feet from the ground, and that the Owls had deserted the locality. The Great Horned Owls are liberal providers for their young. I have frequently found full grown rabbits lying in the nest beside the young, and scarcely a nest visited did not have a strong odor of skunk, while bones and feathers were scattered around attesting to the predacious habits of the proprietors." The flight of the Great Horned Owl is elevated, rapid and graceful. It sails with apparent ease and in large circles, in the manner of an eagle, rises and descends without the least difficulty, by merely inclining its wings or its tail as it passes through the air. Now and then it glides silently close over the earth with incomparable velocity, and drops, as if shot dead, on the prey beneath. At other times, it suddenly alights on the top of a fence stake or a dead stump, shakes its feathers, arranges them, and
Great Horned Owl.
utters a shriek so horrid that the woods around echo to its dismal sound. "Now, it seems as if you heard the barking of a cur dog; again the notes are so rough and mingled together that they might be mistaken for the last gurglings of a murdered person striving in vain to call for assistance; at another time, when not more than fifty yards distant, it utters its more usual hoo, hoo, hoo-e, in so peculiar an undertone that a person unacquainted with the notes of this species might easily conceive them to be produced by an Owl more than a mile distant. During the utterance of all these unmusical cries it moves its body, and more particularly its head, in various ways, putting them into positions, all of which appear to please it much, however grotesque they may seem to the eye of man. In the interval following each cry, it snaps its bill."—Audubon.

These Owls, like the preceding species, are not migratory and when not engaged in breeding lead a solitary existence. Although chiefly nocturnal in habits, Great Horned Owls are often seen in cloudy weather and in the early twilight searching for food. On one occasion, when the sun was shining brightly (about 10 a.m.), I saw one of these owls make two attempts to catch a hen and her young chicks.

Food.

Audubon says: Its food consists chiefly of the larger species of gallinaceous birds, half-grown Wild Turkeys, Pheasants and domestic poultry of all kinds, together with several species of ducks. Hares, young opossums and squirrels are equally agreeable to it, and whenever chance throws a dead fish on the shore the Great Horned Owl feeds with peculiar avidity on it."

Gentry, in Life Histories of Birds of Eastern Pennsylvania, says: "The food of this species consists of small quadrupeds, small birds and insects. The poultry-yards are not safe from its nocturnal ravages. Instances are known where, in the course of a few nights, entire roosts have been completely destroyed. The food of the young at first consists of fragments of the animals and reptiles taken captive, besides various lepidopterous and coleopterous insects."

Nuttall tells us they usually prey on young rabbits, squirrels, rats, mice, quails and small birds of various kinds; and when these resources fail or diminish, they occasionally prowl pretty boldly around the farm-yard in quest of chickens, which they seize on the roost.

Nuttall further writes: My friend Dr. Boykin, of Georgia, says a Great Horned Owl, prowling around his premises, saw a cat dozing on the roof of a smoke-house, and supposing grimalkin a more harmless, rabbit-like animal than appeared in the sequel, blindly snatched her up in his talons, but, finding he had caught a Tartar, it was not long before he allowed puss once more to tread the ground."
My own records of sixteen examinations of Great Horned Owls, which, with one exception, were all taken during the winter months, revealed in eleven individuals only remains of poultry; two others, portions of rabbits, and of the three remaining birds of this series it was found that one had taken two mice; another showed small amount of hair, apparently that of an opossum. The sixteenth and last bird contained a mouse and parts of beetles.

Genus *NYCTEA*. Stephens.

376. *Nyctea nyctea* (Linn.).

**Snowy Owl.**

**Description.**

Bill nearly concealed by projecting plumes; eyes large; entire plumage white, frequently with a few spots or imperfect bars, only on the upper parts dark-brown, and on the under parts with a few irregular and imperfect bars of the same; quills and tail with a few spots or traces of bands of the same dark-brown; the prevalence of the dark-brown color varies much in different specimens; frequently both upper and under parts are very distinctly banded transversely, and sometimes this color predominates on the back; plumage of the legs and toes pure snowy-white; bill and claws horn-color; irides yellow.

Length about 23 inches; extent of wings about 4½ feet.

**Hab.**—Northern portions of the Northern Hemisphere. In North America, breeding mostly north of the United States; in winter migrating south to the Middle States, straggling to South Carolina, Texas and the Bermudas.

The Snowy Owl rendered so conspicuous by its large size and white plumage is a native chiefly of the Arctic regions. This Owl is found in Pennsylvania only as a winter visitant. Although specimens are taken nearly every winter, this species is most frequently observed during excessively severe winters.

Wilson says: "Unlike most of his tribe he hunts by day as well as by twilight, and is particularly fond of frequenting the shores and banks of shallow rivers, over the surface of which he slowly sails, or sits on a rock a little raised above the water watching for fish. These he seizes with a sudden and instantaneous stroke of the foot, seldom missing his aim." Nuttall writes: "He ventures abroad boldly at all seasons, and like the Hawks, seeks his prey by daylight as well as dark, skimming aloft and reconnoitring his prey, which is commonly the White Grouse, or some other birds of the same genus, as well as hares. On these he darts from above, and rapidly seizes them in his resistless talons. At times he watches for fish, and condescends also to prey upon rats, mice and even carrion."

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Winter, 1879,</td>
<td>Chester county, Pa.,</td>
<td>Rabbit</td>
</tr>
<tr>
<td>2</td>
<td>Winter, 1879,</td>
<td>Chester county, Pa.,</td>
<td>Meat, apparently beef</td>
</tr>
<tr>
<td>3</td>
<td>Dec. 16, 1883,</td>
<td>Delaware county, Pa.,</td>
<td>Common rat</td>
</tr>
</tbody>
</table>
ORDER COCCYGES. CUCKOOS.

SUBORDER CUCULI. CUCKOOS.

FAMILY CUCULIDÆ. Cuckoos, Anis

SUBFAMILY COCCYGINÆ. American Cuckoos.

GENUS COCCYZUS. Vieillot.

387. Coccyzus americanus (Linn.).

Yellow-billed Cuckoo.

Description.

Upper mandible and tip of lower black; rest of lower mandible, and cutting edges of the upper yellow; upper parts of a metallic greenish-olive, slightly tinged with ash towards the bill; beneath white; tail feathers (except the medium, which are like the back) black, tipped with white for about an inch on the outer feathers, the external one with the outer edge almost entirely white; quills orange-cinnamon; the terminal portion and a gloss on the outer webs olive; iris brown. Length 12 inches; wing 5.95; tail 6.35.

Hab. — Temperate North America, from New Brunswick, Canada, Minnesota, Nevada and Oregon south to Costa Rica and the West Indies. Less common from the eastern border of the plains westward.

This species is easily known by the yellow under mandible, the broadly white tipped tail feathers and the bright cinnamon markings of the wings. The Yellow-billed Cuckoo, a common summer resident, arrives in Pennsylvania about the last week in April and returns generally to its southern winter resorts by the latter part of September. The common names of Rain-crow and Kow-bird given to both the Yellow and Black-billed Cuckoos arise from their peculiar and loud guttural notes of Kow, Kow, which are, it is said, most clamorous at the approach of rain. Both species are also known in some sections of this State by the name of Indian hen. The Cuckoos are much more frequently heard than seen, unless it is at times when they dart from one tree to another, or into the thick foliage of bushes. The nest of this species is loosely built of small sticks lined with grasses, and placed usually on the low limb of a tree, sometimes, however, it is found in thick bushes. The eggs, generally two or four, are light greenish-blue in color and measure about 1.24 inches in length, and about .90 of an inch in width. Writing of this species Audubon says: “It robs smaller birds of their eggs, which it sucks on all occasions, and is cowardly and shy, without being vigilant. On this latter account it often falls a prey to several species of Hawks, of which the Pigeon Hawk may be considered as its most dangerous enemy. It prefers the Southern States for its residence, and when very mild
winters occur in Louisiana, some individuals remain there, not finding it necessary to go farther south. They feed on insects, such as caterpillars and butterflies, as well as on berries of many kinds, evincing a special predilection for the mulberry. In autumn they eat many grapes. They now and then descend to the ground to pick up a wood-snail or a beetle."

According to Wilson the diet of this species consists for the most part of caterpillars, particularly such as infest apple trees. They also eat various kinds of berries. But from the circumstance of destroying such numbers of very noxious larvae, they prove themselves the friends of the farmer and are highly deserving of his protection."

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<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>July 15, 1879</td>
<td>West Bradford, Pa.</td>
<td>Grasshoppers and snails (<em>helix</em>).</td>
</tr>
<tr>
<td>3</td>
<td>June 5, 1880</td>
<td>Chester county, Pa.</td>
<td>Caterpillars and fragments of beetles.</td>
</tr>
<tr>
<td>5</td>
<td>May 26, 1883</td>
<td>West Chester, Pa.</td>
<td>Stomach gorged with insects, chiefly caterpillars (feeding in locust trees).</td>
</tr>
<tr>
<td>6</td>
<td>June 1, 1883</td>
<td>Pocopson, Pa.</td>
<td>Many caterpillars and fragments of beetles (feeding in locust trees).</td>
</tr>
<tr>
<td>7</td>
<td>June 1, 1883</td>
<td>Pocopson, Pa.</td>
<td>Berries.</td>
</tr>
<tr>
<td>8</td>
<td>July 28, 1883</td>
<td>Chester county, Pa.</td>
<td></td>
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388. *Coccyzus erythrophthalmus* (Wils.).

**Black-billed Cuckoo.**

**Description.**

Bill entirely black; upper parts generally of a metallic greenish-olive, ashy towards the base of the bill; beneath pure-white, with a brownish-yellow tinge on the throat; inner webs of the quills tinged with cinnamon; under surface of all the tail feathers hoary ash-gray; all except the central, on either side, suffused with darker to the short, bluish-white, and not well-defined tip; a naked red skin around the eye; iris brown.

Length about 12 inches; extent about 16; wing, 5; tail, 6.50.

*Hab.—* Eastern North America, from Labrador and Manitoba south to the West Indies and the valley of the Amazon; west to the Rocky mountains. Accidental in the British Islands and Italy.

This species is found in Pennsylvania only as a summer resident. It arrives generally a few days after the Yellow-billed has made its appearance, and returns to its southern winter resorts about two weeks, Audubon says, earlier than the Yellow-billed Cuckoo.

In February, 1885, I saw several of these birds in the Florida orange orchards. The nest, a frail structure of twigs, bark, and in some instances blossoms of different plants, is placed on a low tree or bush. The eggs, usually two or four, are mostly a trifle smaller and darker
Plate 20.

Belted Kingfisher.

1. Males; 2. Female.
in color than those of the Yellow-billed Cuckoo. Both species, according to my observation, always build their own nests, and never, like the Cow Bunting, deposit their eggs in the nests of other birds. The Rain-Crows are extremely cowardly, and if attacked by any of their feathered neighbors, whose nests they sometimes pillage, they immediately fly off and conceal themselves in the dusky retreats of a tree or bush. In relation to this bird, Audubon says: “The flight of this species is swifter than that of its near relative, the Yellow-billed Cuckoo, for which bird it is easily mistaken by ordinary observers. It does not so much frequent the interior of woods, but appears along their margins, on the edges of creeks and damp places. But the most remarkable distinction between this species and the Yellow-billed Cuckoo is, that the former, instead of feeding principally on insects and fruits, procures fresh-water shell-fish and aquatic larvae for its sustenance. It is, therefore, more frequently seen on the ground, near the edges of the water, or descending along the drooping branches of trees to their extremities, to seize the insects in the water beneath them.” In the adult plumage the Yellow-billed and the Black-billed Cuckoos, when flying, can be distinguished, if you bear in mind that in the former the long tail feathers, with large white tips, are very conspicuous; on the other hand, the white tips on the tail feathers of the Black-billed are not well marked. This bird, as well as the Yellow-billed Cuckoo, I have observed, subsists largely on the tent caterpillars, which are so numerous at times on our various fruit and shade trees. It also feeds on beetles, grasshoppers, snails and earth-worms. According to Mr. Gentry, “its vegetable food is chiefly the seeds of grasses, and the berries of Juniperus Virginiana.”

Suborder ALCYONES. Kingfishers.

Family ALCEDINIDÆ. Kingfishers.

Genus CERYLE. Boie.

390. Ceryle alcyon (Linn.).

Belted Kingfisher.

(Plate 29.)

Length about 13 inches; extent of wings about 22 inches.

Hab.—North America, south to Panama and the West Indies.

Kingfishers are common residents along our rivers, streams and ponds, about which they are found at all seasons, unless forced to migrate southward by excessively cold weather. The loud and harsh cry of this bird, as Wilson has properly stated, is not unlike the noise made by twirling a watchman’s rattle. “It is uttered while moving
from place to place, always on being disturbed, and even sometimes when he is about to plunge into the water for a fish. But especially is it heard at night when the male bird is returning to the nest with food for his mate and young."—Gentry. Their eggs are deposited in holes which they excavate in the sides of banks, usually about the streams and ponds they frequent. On many occasions, I have discovered their nests in high embankments along public roads, railroad cuts and old quarries. The excavations vary greatly in depth, but average about four or five feet; occasionally you find one straight, commonly, however, they are directed to the right or left of the main opening and terminate in quite a large cavity. The eggs (1.30 by 1.06 inches) are white and usually six in number, although I have in several instances seen seven. The eggs, according to my observation, are invariably deposited on the bare earth. Mr. Gentry, however, tells us that he has "in many instances known them to be deposited in a warm and cozy nest constructed of dried grasses and feathers." Kingfishers feed almost entirely on fish. Their proficiency in catching small fish is such that they are in bad repute among the owners and proprietors of trout and carp ponds. Two gentlemen of my acquaintance were so greatly annoyed by the loss of gold-fish and trout, which had been sustained from the regular visits of several pairs of these birds, that they adopted the following means for their destruction. Stakes were driven down about the ponds in several places; the tops of the stakes were sufficiently large to support steel-traps, which were set, but not baited. The birds on visiting the ponds would invariably fly to one of the stakes and alight. In less than one week ten or twelve Kingfishers were in this way trapped and killed. A friend of mine, some few years ago, informed me that he caught one of these birds on a hook and line, while fishing in the Brandywine, near Chadd's Ford. My informant said he had a live bait (minnow) on his hook, and as he was winding up his line on the reel, he saw a Kingfisher plunge into the water at his bait, which it not only caught, but at the same time hooked and entangled itself in the line so that it could not escape. One day B. M. Everhart found a Kingfisher lying on the bank of a small stream. On making an investigation, Mr. Everhart ascertained that the bird was unable to fly, as its bill was tightly clasped in the grasp of a large fresh-water mussel. I have heard of two or three instances where Kingfishers have been captured under similar circumstances, which would naturally lead one to suppose that they feed to a limited degree on the flesh of these bivalves. According to certain writers, this species is said to feed occasionally, though rarely, on insects. Mr. E. A. Samuels states that he once shot a Kingfisher which had just seized a mouse (Arvicola).
**Birds of Pennsylvania.**

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<th>No.</th>
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<th>Locality</th>
<th>Food-Materials</th>
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<tr>
<td>1</td>
<td>Feb. 3, 1879</td>
<td>Chester county, Pa.,</td>
<td>Remains of fish.</td>
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<td>2</td>
<td>Feb. 25, 1879</td>
<td>Newark, Del.,</td>
<td>Remains of fish.</td>
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<td>3</td>
<td>June 11, 1880</td>
<td>Chester county, Pa.,</td>
<td>Remains of fish.</td>
</tr>
<tr>
<td>4</td>
<td>Aug. 20, 1880</td>
<td>Chester county, Pa.,</td>
<td>Remains of fish.</td>
</tr>
<tr>
<td>5</td>
<td>Mar. 3, 1881</td>
<td>Chester county, Pa.,</td>
<td>Remains of fish.</td>
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<td>6</td>
<td>Apr. 15, 1881</td>
<td>Chester county, Pa.,</td>
<td>Remains of fish.</td>
</tr>
<tr>
<td>7</td>
<td>Sept. 11, 1881</td>
<td>Chester county, Pa.,</td>
<td>Remains of fish.</td>
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<td>8</td>
<td>Nov. 28, 1882</td>
<td>Chester county, Pa.,</td>
<td>Remains of fish.</td>
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<td>9</td>
<td>Apr. 20, 1882</td>
<td>Chester county, Pa.,</td>
<td>Remains of fish.</td>
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<tr>
<td>10</td>
<td>May 30, 1882</td>
<td>Chester county, Pa.,</td>
<td>Remains of fish.</td>
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<tr>
<td>11</td>
<td>Aug. 27, 1883</td>
<td>Delaware county, Pa.,</td>
<td>Remains of fish.</td>
</tr>
<tr>
<td>12</td>
<td>Apr. 1, 1884</td>
<td>Chester county, Pa.,</td>
<td>Remains of fish.</td>
</tr>
<tr>
<td>13</td>
<td>July 20, 1885</td>
<td>Chester county, Pa.,</td>
<td>Remains of fish.</td>
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</tbody>
</table>

**ORDER PICI. WOODPECKERS.**

**Family PICIDÆ. Woodpeckers.**

[Although Woodpeckers make no efforts to build nests as other birds generally do, they nevertheless prepare with great care and labor equally suitable receptacles for their eggs and young. Woodpeckers lay their eggs,* which are white, and usually number from four to six, on chips and bits of rotten wood in cavities which they excavate with their powerful and chisel-like or wedge-shaped bills, in the dead limbs or trunks of trees. These holes or nesting places—often times dug to a considerable depth—at the mouth are often just sufficiently large to permit the birds to readily pass in and out; from the entrance downward the diameter of these wooden burrows increase in size.

The tongue of all our Woodpeckers, with one exception, viz.: the Yellow-bellied, is capable of being protruded beyond the point of the bill to a considerable extent. The cornua or horns of the tongue extending backward, curl up over the back of the skull, and rest in slight depressions designed for their reception; these horns are enveloped in muscles by the action of which the tongue is thrust out. This singular arrangement can easily be demonstrated by simply taking hold of the end of the tongue of a Flicker we will say, and as you move it backward and forward place a finger on the top of the bird’s head, and at once a peculiar, worm-like movement will be discovered as the horns run back and forth between the skin and bony covering of the head, beneath your finger. The end of the tongue in Woodpeckers, other than the species above mentioned, is generally furnished on either side with little barbs, very similar in appearance to those found on small fish-hooks. In the Yellow-bellied Woodpecker the horns of the hyoid bone extend only to the base of the

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*The following measurements will show the average size of species which usually breed in this State: Hairy Woodpecker, about 1 inch long and a little less than 1 wide. Downy Woodpecker, about .80 of an inch long by about .65 wide. Pileated Woodpecker, about 1.25 of an inch long by 1 inch wide. Red-headed Woodpecker, a little over 1 inch long and about .85 of an inch in width, Flicker, about 1.10 long and .90 wide.
skull, hence the tongue is capable of but little extensibility; in place of the barbs commonly seen, we find the end quite abundantly provided with "numerous bushy filaments." The peculiar structure of their feet and sharp nails enable them by the additional support of the rigid tail, to ascend the trunks and limbs of trees with singular address and celerity, either in straight or spiral lines. From "Cones Key to North American Birds"—a most valuable work and one which deserves a place in the library of all who desire to thoroughly acquaint themselves with our feather fauna—the following extract relative to these birds is taken: "Species are abundant in all the wooded portion of this country and wherever found are nearly resident. For, although insectivorous, they feed principally upon dormant or at least stationary insects, and therefore need not migrate; they are, moreover, hardy birds. They dig insects and their larvae out of trees, and are eminently beneficial to the agriculturist and fruit-grower. Contrary to prevalent impression, their boring does not seem to injure fruit trees, which may be riddled with holes without harmful results. The number of noxious insects these birds destroy is simply incalculable; what little fruit some of them steal is not to be mentioned in the same connection, and they deserve the goodwill of all. The birds of the genus Sphyrapicus are probably an exception to most of these statements. But Woodpeckers also feed largely upon nuts, berries and other fruits; and those which thus vary their fare to the greatest extent are apt to be more or less migratory, like the common Redhead for example. Woodpeckers rarely, if ever, climb head downward, like Nuthatches, nor are the tarsi applied to their support."

The notes of these birds, uttered when on the wing, likewise when at rest, are loud and unmusical. Woodpeckers, with the exception of the Flicker, are not usually observed to alight on the ground. Insects which lie under the bark are readily discovered by the Woodpecker, who gives a sharp tap with his bill, and then placing his head close to the tree, listens attentively to hear the movements of his favorite prey. As soon as he discovers a beetle or a grub moving in its snug retreat the bark or other covering of the luckless insect is torn away and the crawling creature is captured. The large chisel-like bill and the stiff tail feathers, which gradually taper to a point, will suffice to enable you to recognize a Woodpecker.

Genus DRYOBATES. Boie.

393. Dryobates villosus. (Linn.)

Hairy Woodpecker.

Description.

"The Hairy Woodpecker is 9 inches long and 15 in extent; crown black; line over and under the eye white; the eye is placed in a black line, that widens as it descends to the back; hind head scarlet, sometimes intermixed with black; nostrils hid under remarkably thick, bushy, recumbent hairs, or bristles; under the bill are
Birds of Pennsylvania.

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certain long hairs thrown forward and upward; bill a bluish horn-color, grooved, wedged at the end, straight and about an inch and a quarter long; touches of black, proceeding from the lower mandible, end in a broad, black strip that joins the black on the shoulder; back black, divided by a broad, lateral strip of white, the feathers composing which are loose and unwebbed, resembling hairs,—whence its name; rump and shoulders of the wing black; wings black, tipped and spotted with white, three rows of spots being visible on the secondaries and five on the primaries; greater wing coverts also spotted with white; tail, as in the others, cuneiform, consisting of ten strong-shafted and pointed feathers, the four middle ones black, the next partially white, the two exterior ones white, tinged at the tip with a brownish burnt-color; tail coverts black; whole lower side pure white; legs, feet and claws light blue, the latter remarkably large and strong; inside of the mouth flesh colored; tongue pointed, beset with barbs, and capable of being protruded more than an inch and a half; the oosphoides, in this species, passes on each side of the neck, ascends the skull, passes down towards the nostril, and is wound round the bone of the right eye, which projects considerably more than the left for its accommodation. The great mass of hairs that cover the nostril appears to be designed as a protection to the front of the head, when the bird is engaged in digging holes into the wood. The membrane which encloses the brain in this, as in all the other species of Woodpeckers, is also of extraordinary strength; no doubt, to prevent any bad effects from violent concussion while the bird is employed in digging for food. The female wants the red on the hind head, and the white below is tinged with brownish.”—Wilson.

Hab.—Middle portions of the eastern United States, from the Atlantic coast to the great plains.

The Hairy Woodpecker is found in Pennsylvania at all seasons of the year. It is quite plentiful, but in many sections, and probably throughout the State, is less abundant than the Downy Woodpecker. The Hairy Woodpeckers, generally shy and somewhat difficult to approach, are found mostly in the woods, and although they sometimes when in quest of food visit the trees in orchards and yards, their visits to these places are much less frequent than those of the little Downy.

Both the Hairy and Downy Woodpeckers are called “Sap-suckers,” by those who are unacquainted with birds, from the common belief that both subsist largely on the sap of apple and other fruit trees. This popular, yet mistaken idea, has induced many farmers and fruit growers to destroy these two species, as well as other Woodpeckers, when found about their orchards.

Food.

Gentry says: “Its food consists of the larvae and the pupæ of insects which eke out an existence in the outer woody layer, or lie dormant underneath the bark. The small spiders, which also occupy the latter situations, contribute no mean part of their diet. When there is a scarcity of insect food in winter, the seeds of grasses and various kinds of berries are greedily eaten.” Wilson refers to this bird as “a haunter of orchards and lover of apple trees, an eager hunter of insects, their eggs and larvae in old stumps and old rails, in rotten branches and crevices of the bark.” “The food of this species consists principally of the eggs and larvae of injurious insects that are burrowing in the
wood of our fruit and forest trees; these he is enabled to obtain by chiselling out a small hole with his powerful bill, and drawing them from their lurking-places with his long barbed tongue. He also eats some small fruits and berries, but never, so far as I am aware, the buds or blossoms of trees, as some persons assert.—E. A. Samuels.

<table>
<thead>
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<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
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<tr>
<td>1</td>
<td>Nov. 2, 1879</td>
<td>Chester county, Pa.</td>
<td>Seeds of berries</td>
</tr>
<tr>
<td>2</td>
<td>April 11, 1880</td>
<td>Newark, Delaware</td>
<td>Larvae and beetles</td>
</tr>
<tr>
<td>4</td>
<td>Dec. 30, 1880</td>
<td>Chester county, Pa.</td>
<td>Small seeds and particles of Indian corn.</td>
</tr>
<tr>
<td>8</td>
<td>May 18, 1883</td>
<td>Chester county, Pa.</td>
<td>Black ants, diptera and beetles.</td>
</tr>
</tbody>
</table>

394. Dryobates pubescens (Linn.).

**Downy Woodpecker.**

**Description.**

A miniature of *D. villosus.* Above black, with a white band down the back; two white stripes on the side of the head; the lower of opposite sides always separated; the upper sometimes confluent on the nape; two stripes of black on the side of the head, the lower not running into the forehead; beneath white; wing much spotted with white, the larger coverts with two series each; tertiaries or inner secondaries all banded with white; two outer tail feathers white, with two bands of black at the end, third white at tip and externally. Male, with red terminating the white feathers on the nape; legs and feet bluish-gray; claws light-blue tipped with black; iris brown; bill blackish.

Length, about 6½ inches; wing, 3⅝.

**Hab.**—Northern and eastern North America, from British Columbia and the eastern edge of the Plains northward and eastward.

This indefatigable little insect-hunter, the smallest of all our Woodpeckers, is a common resident in Pennsylvania. The timid disposition so frequently noticed in the preceding species is rarely, if ever, shown by the Downy Woodpeckers, which, at all seasons, are found frequenting our shade and fruit trees, and not unfrequently these little feathered carpenters may be observed excavating nesting places in trees close to the habitations of man.

**Food.**

Downy Woodpeckers subsist chiefly on various forms of insects, and when this food becomes scarce they feed oftentimes on the seeds of grasses and some few other plants; also, small fruits, such as wild grapes, cedar berries, etc. In the winter months I have seen these Woodpeckers, also Tufted Titmice and White-bellied Nuthatches feed with apparent relish on pieces of fat beef and pork, which had been suspended in trees or nailed to grape-arbors for their benefit. The
kernels of walnuts, shell-barks and other nuts that I have placed in trees were likewise eaten by both the Woodpecker and Nuthatch.

The following interesting and instructive account of the Downy Woodpecker in apple orchards is given by Wilson: "The principal characteristics of this little bird are diligence, familiarity, perseverance and a strength and energy in the head and muscles of the neck which are truly astonishing. Mounted on the infected branch of an old apple tree, where insects have lodged their corroding and destructive brood in crevices between the bark and wood, he labors sometimes for half an hour incessantly at the same spot before he has succeeded in dislodging and destroying them. At these times you may walk up pretty close to the tree, and even stand immediately below it, within five or six feet of the bird, without in the least embarrassing him. The strokes of his bill are distinctly heard several hundred yards off. * * * * He has a single note, chink, which like the former species, he frequently repeats; and when he flies off, or alights on another tree, he utters a rather shriller cry, composed of nearly the same kind of note, quickly reiterated. In fall and winter, he associates with the Titmouse, Creeper, etc., both in their wood and orchard excursions, and usually leads the van. Of all our Woodpeckers, none rid the apple-trees of so many vermin as this, digging off the moss which the negligence of the proprietor had suffered to accumulate, and probing every crevice. In fact, the orchard is his favorite resort in all seasons; and his industry is unequalled and almost incessant, which is more than can be said of any other species we have. In fall he is particularly fond of boring the apple trees for insects, digging a circular hole through the bark, just sufficient to admit his bill; after that, a second, third, etc., in pretty regular horizontal circles round the body of the tree; these parallel circles of holes are often not more than an inch or an inch and a half apart, and sometimes so close together that I have covered eight or ten of them at once with a dollar. From nearly the surface of the ground up to the first fork, and sometimes far beyond it, the whole bark of many apple trees is perforated in this manner, so as to appear as if made by successive discharges of buck-shot; and our little Woodpecker—the subject of the present account—is the principal perpetrator of this supposed mischief; I say supposed, for, so far from these perforations of the bark being ruinous, they are not only harmless, but, I have good reason to believe, really beneficial to the health and fertility of the tree. I leave it to the philosophical botanist to account for this; but the fact I am confident of. In more than fifty orchards which I have myself carefully examined, those trees which were marked by the Woodpecker (for some trees they never touch, perhaps because not penetrated by insects) were uniformly the most thriving and seemingly the most productive. Many of these were
upwards of sixty years old, their trunks completely covered with holes, while the branches were broad, luxuriant and loaded with fruit. Of decayed trees, more than three-fourths were untouched by the Woodpecker. Several intelligent farmers, with whom I have conversed, candidly acknowledge the truth of these observations, and with justice look upon these birds as beneficial; but the most common opinion is, that they bore the tree to suck the sap, and so destroy its vegetation; though pine and other resinous trees, on the juices of which it is not pretended they feed, are often found equally perforated. Were the sap of the tree their object, the saccharine juice of the birch, the sugar maple, and several others, would be much more inviting (because more sweet and nourishing) than that of either the pear or apple tree; but I have not observed one mark on the former for ten thousand that may be seen on the latter. Besides, the early part of spring is the season when the sap flows most abundantly; whereas, it is only during the months of September, October and November that Woodpeckers are seen so indefatigably engaged in orchards, probing every crack and crevice, boring through the bark—and, what is worth remarking, chiefly on the south and south-west sides of the tree—for the eggs and larvae deposited there by the countless swarms of summer insects. These, if suffered to remain, would prey upon the very vitals—if I may so express it—of the tree, and in the succeeding summer give birth to myriads more of their race, equally destructive.

"Here, then, is a whole species, I may say genus, of birds, which Providence seems to have formed for the protection of our fruit and forest trees from the ravages of vermin, which every day destroy millions of those noxious insects that would otherwise blast the hopes of the husbandman; they even promote the fertility of the tree, and, in return, are proscribed by those who ought to have been their protectors, and incitements and rewards held out for their destruction! Let us examine better into the operations of nature, and many of our mistaken opinions and groundless prejudices will be abandoned for more just, enlarged and humane modes of thinking."

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
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</thead>
<tbody>
<tr>
<td>3</td>
<td>Mar. 6, 1880</td>
<td>East Bradford, Pa.</td>
<td>Larvæ, beetles and seeds of Rosa lucida.</td>
</tr>
<tr>
<td>4</td>
<td>May 1, 1880</td>
<td>Willistown, Pa.</td>
<td>Larvæ.</td>
</tr>
<tr>
<td>7</td>
<td>Nov. 20, 1884</td>
<td>East Bradford, Pa.</td>
<td>Small seeds and fragments of beetles.</td>
</tr>
<tr>
<td>8</td>
<td>Nov. 20, 1884</td>
<td>East Bradford, Pa.</td>
<td>Larvæ and fragments of beetles.</td>
</tr>
<tr>
<td>9</td>
<td>Dec. 20, 1884</td>
<td>West Chester, Pa.</td>
<td>Insects, chiefly beetles.</td>
</tr>
<tr>
<td>10</td>
<td>May 23, 1885</td>
<td>Chester county, Pa.</td>
<td>Larvæ.</td>
</tr>
</tbody>
</table>
Genus Sphyrapicus. RAIRD.

402. Sphyrapicus varius (Linn.).

Yellow-bellied Sapsucker.

Description.

First primary shortest; fourth longest; third a little shorter; general color above black, much variegated with white; feathers of the back and rump brownish-white, spotted with black; crown scarlet, bordered by black on the sides of the head and nape; a streak from above the eye, and another from the bristles of the bill, passing below the eye and into the yellowish of the belly, and a stripe along the edges of the wing coverts white; a triangular broad patch of scarlet on the chin, bordered on each side by black stripes from the lower mandible, which meet behind, and extend into a large quadrate spot on the breast; rest of under parts yellowish-white, streaked on the sides with black; inner web of inner tail-feather white, spotted with black; outer feathers black, edged and spotted with white. Female, with the red of the throat replaced by white. Young male, without black on the breast, or red on the top of the head.

Length, 8.25 inches; extent about 16; wing about 4.75; tail, 3.30 inches.

Hab. — North America, north and east of the Great Plains, south to the West Indies, Mexico, and Guatemala.

The Yellow-bellied Woodpecker, although mentioned by some writers as a resident in Pennsylvania, very rarely, I think, breeds here. Occasionally a few of these birds are found in winter. Generally speaking, however, the Yellow-bellied Woodpeckers are to be observed as somewhat common spring and fall migrants, which arrive in this region early in April, and soon disappear to return again, but not earlier than the last week in September. During their visits in the spring these birds are much less abundant than in the autumn, and are seen principally in the woods, although I have, in many instances, observed them in apple orchards. While they sojourn with us in the fall, they evince a strong disposition to frequent apple trees; often as many as six or eight of these birds, can be secured in a small orchard. All Woodpeckers have a common habit of hiding behind limbs, or sometimes in holes, etc., as you approach a tree on which they are feeding, and usually they continually shift their positions to escape notice. When hunting in apple orchards, particularly in the fall, I have repeatedly seen the Yellow-bellied Woodpecker slip behind a limb, and remain perfectly motionless, as if he understood that the color of his back, not unlike the general appearance of the bark or lichens, against which he rested, might aid him in eluding observation. Oftentimes I have made two or three circuits about trees where these birds were thus hiding, and generally noticed that they would not move until convinced by my actions that they had been discovered. Of all our Woodpeckers, the subject of this present sketch is probably the most expert in capturing insects on the wing;

9 Birds.
this bird, oftentimes, like the Common Pewee or other fly-catchers, may be seen to start from a limb and seize its passing prey. This bird, like the Hairy and Downy Woodpeckers, is frequently seen clinging to the small twigs of various trees and bushes collecting insects or picking at berries. The Yellow-bellied Woodpecker is the only representative of the genus *Sphyrapicus* found east of the Mississippi river; two species and one sub-species of this genus occur in the Rocky mountain and Pacific coast regions of the United States.

Food.

In referring to these sap-sucking Woodpeckers, Dr. Cones says: "Birds of this remarkable genus feed much upon fruits, as well as insects, and also upon soft inner bark (cambium); they injure fruit-trees by stripping off the bark, sometimes in large areas, instead of simply boring holes. Of the several species commonly called "Sap suckers," they alone deserve the name. In declaring war against Woodpeckers, the agriculturist will do well to discriminate between these somewhat injurious and the highly beneficial species." My field observations, also the *post mortem* examinations of some twenty odd Yellow-bellied Woodpeckers (taken chiefly during the fall migrations), lead me to think that in this region these birds subsist mainly on insects, such as beetles, large flies, ants, spiders and larvae. In the viscera of specimens taken in the late autumn and winter, I have found sometimes small seeds and berries. In the stomachs of two birds which were shot in apple trees, I detected a small amount of a vegetable substance, which may have been inner bark. On one occasion I opened the stomach of an adult male, taken in the spring, and noticed that it contained a considerable quantity of fluid, of a yellowish color; a drop of this fluid touched to my tongue was found to be exceedingly sweet.

"Dr. Bryant, who has paid some attention to the examination of the food of this bird, in the 'Proceedings of the Boston Society of Natural History,' vol. X, 91, makes the following remarks: 'It has long been known that some of our smaller Woodpeckers pick out portions of the sound bark of trees, particularly of apple trees, where there are no larvae, and apparently no inducement for them to do so. What their object is has never been satisfactorily established. In Massachusetts, I am not aware that these holes are ever sufficiently large or numerous to cause any material injury to the apple-trees; they are generally seen in circles round the limbs or trunks and consist of small, irregularly rounded holes, and in this vicinity are made almost exclusively by the Downy Woodpecker (*D. pubescens*), aided occasionally by the Hairy Woodpecker (*D. villosus*). In certain parts of the west, however, it is said that great damage is done in or-
chards by the Yellow-bellied Woodpecker (S. varius); and Dr. Hoy, of Racine, Wis., has advanced the theory that the object of the bird in so doing is to obtain the inner bark for food. A number of specimens of this bird, forwarded by Dr. Hoy to the Smithsonian Institution, have been placed in my hands by Professor Baird for examination: as the specimens are alcoholic, the soft parts are, as is always the case, too much distorted to be available for correct comparisons; the gizzard, however, seems smaller, and the proventriculus larger, than in other species of this family with which I have compared them. The contents of the stomach are berries, small coleopters, larvæ of boring beetles, ants, and fragments of the inner bark of the apple tree.

"After giving minute analyses of the characteristics of the tongues and portions of the skulls of the different small Woodpeckers, and comparing them with the Yellow-bellied Woodpecker's, showing how the latter differ from the others, he says:

"The general shape of the whole tongue is not much unlike that of the Robin; the ciliated edges show an analogy to the Meliphagidae, and indicate that the sap of the trees pecked by them may form a portion of their food. In the stomachs of the six individuals examined by me, fragments of the inner bark were found in all, so that it can hardly be presumbed to have been accidentally introduced. It is evident, from the shape of the tongue, that it is not used as a dart, in the manner of the true Woodpecker, to draw out insects from their lurking-places, but that these are seized by the bill, as in other insectivorous birds. Insects, however, probably form their chief diet, as all the stomachs examined also contained insects, the quantity of which was greater than that of the fragments of bark: in one bird, there were two larvæ of a boring beetle, so large that there was not room for both in the stomach at once, and one remained in the lower part of the œsophagus. If these were, as is probable, the larvæ of the Saperda, they would do more damage than twenty Woodpeckers; and I sincerely hope that these birds are not to be exterminated, unless it is clearly demonstrated that the injury caused by the destruction of the bark is not more than compensated by their destruction of noxious insects."—From E. A. Samuels' Northern and Eastern Birds.

Gentry says: "The food of these birds is less of an insect character than that of any other of the Picarian family. Although a great destroyer of insects in their most destructive stages, yet the untold mischief which they achieve in the perforation of the inner bark of many trees to such an extent as to kill them, fairly outbalances the immense good which they accomplish. In some parts of Wisconsin, this destruction is perpetrated on a grand scale. In 1868, Dr. Brewer, in com-
pany with Dr. Hoy, visited Racine, and witnessed the results of this perforatory process. The punctures were made into the inner bark of trees, and were so close together that the bark eventually became stripped off, causing a complete and fatal destruction of them. In one garden, all the mountain-ash and white pine trees were entirely killed. It is evident from the foregoing statements that these birds manifest an ungovernable and decided taste for the inner bark. As these attacks were made in the spring, it is probable that the sap, which had begun to circulate, was the chief source of attraction. We have observed them to attack trees in this neighborhood, but never to such an extent."

**Genus CEOPHLOŒUS. Cabanis.**

405. Ceophloœus pileatus (Linn.).

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**Pileated Woodpecker.**

**Description.**

Bill blue-black, lower mandible much lighter in color than the upper; feet and tarsi in dried specimens black; iris yellowish; general color of body, wings and tail dull black; a narrow white streak from just above the eye to occiput, a wider one from the nostril feathers (inclusive) under the eye and along the side of the head and neck; side of the breast (concealed by the wing), axillaries, and under wing coverts, and concealed bases of all the quills, with chin and beneath the head, white, tinged with sulphur-yellow; entire crown, from the base of the bill to a well-developed occipital crest, as also a patch on the ramus of the lower jaw, scarlet-red; a few white crescents on the sides of the body and on the abdomen. Female similar to male, but without red on the cheek and only the back part of crest red.

Length about 18 inches; extent about 27; wing, 9½ inches.

**Hab.**—Formerly whole wooded region of North America; now rare or extirpated in the more thickly settled parts of the Eastern States.

This bird, the largest of all our Woodpeckers, is found in Pennsylvania at all seasons, but occurs only in the heavily wooded districts, and even in these secluded localities it is not common. In April, 1885, I found a nest of the Pileated Woodpecker in Orange county, Florida, where this species is exceedingly numerous. It was made in a wild cherry tree, growing near the edge of an orange grove. The excavation, about two feet, or a little less in depth, was made in a dead limb. The entrance to the nest was not over twelve or fifteen feet from the ground. The glossy, white eggs, quite small for the size of the bird, were removed when three had been deposited on a few chips at the bottom of the opening. As the mouth of the cavity had been somewhat broken when they were taken out, I supposed the birds would desert the place, but about one week later I visited the tree and saw a Pileated Woodpecker, which I judge was the same bird that had been robbed by me, at work in this cavity. Having heard the bird working, I approached the tree cautiously, and stood back of a neighboring tree, whose thick branches, with their abun-
Plate 21.

Red-headed Woodpecker.
1. Male; 2. Female; 3. Young.
dant covering of "long moss," entirely concealed my person from this woodchopper's keen eye. I watched, and soon saw its large bill clapping a chip appear at the opening of the cavity, in another instant the head and neck were protruded, and after taking a quick survey of all surroundings, as if to assure herself that no enemy was a witness to her industry and vigilance, the chip was dropped down, and the bird resumed her digging. After she had thus reappeared several times with pieces of wood, and always manifested the same caution before dropping the chips, I, when she again came in view, made a slight noise, but did not show myself, when immediately she dropped back into the cavity and did not again continue her labors or show herself, although I remained quiet for several minutes. As the dinner horn had sounded some time before, I deemed it more important to attend to the wants of the inner man than to continue to wait for the bird to renew her work, and picking up a piece of shell-rock I threw it against the limb, when she flew out uttering a shrill cry. These birds feed largely on beetles and their larvæ, which are so abundant in dead trees. Wild grapes, berries and acorns are also sometimes eaten.

Genus MELANERPES. Swainson.

406. Melanerpes erythrocephalus (Linn.).

Red-headed Woodpecker.

Description. (Plate 2L)

Head and neck all around crimson red, margined by a narrow crescent of black on the upper part of the breast; back, primary quills, and tail bluish-black; under parts generally, a broad band across the middle of the wing, and the rump white; belly usually tinged with reddish. Bill and feet blue-black; iris brown. Female is not different.

Young.—Head, neck and back dull gray, varied with blackish; secondary feathers, usually crossed with dark bands. The head in nearly all specimens taken in fall and winter, with more or less red feathers.

Length, 9½ inches; extent about 18; wing, 5½ inches.

Hab.—United States, west to the Rocky mountains, straggling westward to Salt Lake valley; rare or local east of the Hudson river.

The Red-headed Woodpecker, readily recognized by its red, white and blue plumage, is found in Pennsylvania at all seasons, but during the summer is much more abundant than at other periods. I have repeatedly observed these birds during the autumn and winter months, in small parties numbering from eight to a dozen or sometimes twenty individuals, but never found them in large flocks. Mr. Gentry says: "Near the center of our State, especially in the counties of Union and Northumberland, the greatest numbers are to be found. No later than the tenth of August, we have seen immense flocks, numbering hundreds, in orchards, gleaning among the trunks and branches of apple trees for the insects which lurk in their creviced bark. So tame
and confiding were thev that it was possible to approach within a few paces of them without exciting suspicion or creating alarm. In the vicinity of the White Deer mountains, in Union county, they exist in great abundance during the breeding period, and are the objects of special protection by the farmers, for the immense good which they accomplish in the destruction of myriads of noxious insects.

In many localities in Eastern Pennsylvania during the past few years these beautiful birds have become quite scarce. As farmers and fruit-growers very generally seem to fully appreciate the beneficent services these birds render, and seldom subject them to persecution, I attribute this scarcity largely to the fact that the adult Red-heads find a ready market for millinery purposes. When pursued by gunners, these Woodpeckers first endeavor to escape by flying to the topmost branches of the tallest trees; then, if further molested, they will conceal themselves in holes, where I have known them to remain for over one hour before venturing out.

In this locality these birds subsist chiefly on an insect bill of fare; cherries, berries, occasionally ripe apples, green corn and pears are fed upon. In several examinations that I have made of birds shot in the winter season were discovered particles of acorns, gravel and different forms of insects. In the winter, like the common Crow Blackbirds, the Red-heads will sometimes visit corn-cribs and feed on corn which they pick from the ears. Although I have never seen this species store up acorns, etc., there is no doubt that they occasionally thus provide for themselves.

In writing of the food-habits of the Red head, Wilson says: "Though this bird occasionally regales himself on fruit, yet his natural and most useful food is insects, particularly those numerorous and destructive species that penetrate the bark and body of the tree to deposit their eggs and larvae, the latter of which are well known to make immense havoc. That insects are his natural food is evident from the construction of his wedge-formed bill, the length, elasticity, and figure of his tongue, and the strength and position of his claws, as well as from his usual habits. In fact, insects form at least two-thirds of his subsistence; and his stomach is scarcely ever found without them. He searches for them with a dexterity and intelligence, I may safely say, more than human; he perceives, by the exterior appearance of the bark, where they lurk below; when he is dubious, he rattles vehemently on the outside with his bill, and his acute ear distinguishes the terrified vermin shrinking within to their inmost retreats, where his pointed and barbed tongue soon reaches them. The masses of bugs, caterpillars and other larvae which I have taken from the stomachs of these birds have often surprised me. These larvae, it should be remembered, feed not only on the buds, leaves and blossoms, but
on the very vegetable life of the tree—the alburnum, or newly forming bark and wood. The consequence is, that the whole branches and whole trees decay under the silent ravages of these destructive vermin; witness the late destruction of many hundred acres of pine trees in the north-eastern parts of South Carolina, and the thousands of peach trees that yearly decay from the same cause. Will any one say that taking half a dozen or half a hundred apples from a tree is equally ruinous with cutting it down, or that the services of a useful animal should not be rewarded with a small portion of that which it has contributed to preserve? We are told, in the benevolent language of the Scriptures, not to muzzle the mouth of the ox that treadeth out the corn; and why should not the same generous liberality be extended to this useful family of birds, which form so powerful a phalanx against the inroads of many millions of destructive vermin?"

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
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<tbody>
<tr>
<td>1</td>
<td>May 6, 1880</td>
<td>Chester county, Pa.</td>
<td>Beetles and sand</td>
</tr>
<tr>
<td>2</td>
<td>May 17, 1880</td>
<td>Chester county, Pa.</td>
<td>Larvae and seeds</td>
</tr>
<tr>
<td>3</td>
<td>June 12, 1880</td>
<td>Chester county, Pa.</td>
<td>Cherries</td>
</tr>
<tr>
<td>4</td>
<td>June 12, 1880</td>
<td>Chester county, Pa.</td>
<td>Cherries and ants</td>
</tr>
<tr>
<td>5</td>
<td>Sept. 11, 1880</td>
<td>Chester county, Pa.</td>
<td>Corn (maize)</td>
</tr>
<tr>
<td>6</td>
<td>Sept. 11, 1880</td>
<td>Chester county, Pa.</td>
<td>Black ants</td>
</tr>
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<td>7</td>
<td>Sept. 11, 1880</td>
<td>Chester county, Pa.</td>
<td>Larvae and beetles</td>
</tr>
<tr>
<td>8</td>
<td>May 8, 1883</td>
<td>Chester county, Pa.</td>
<td>Chiefly beetles and few dipterous insects</td>
</tr>
<tr>
<td>9</td>
<td>July 5, 1883</td>
<td>Chester county, Pa.</td>
<td>Piece of an apple</td>
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<td>10</td>
<td>March 15, 1886</td>
<td>Allerton Farm, Pa.</td>
<td>Beetles</td>
</tr>
<tr>
<td>11</td>
<td>March 13, 1888</td>
<td>Volusia, Florida,</td>
<td>Palmetto berries</td>
</tr>
</tbody>
</table>

409. Melanerpes carolinus (Linn.).

Red-bellied Woodpecker.

Description.

Top of head and nape crimson red; forehead whitish, strongly tinged with light red, a shade of which is also seen on the cheek; still stronger on the middle of the belly. Under parts brownish white, with a faint wash of yellowish on the belly; back, rump and wing coverts banded black and white; upper tail coverts white, with occasional blotches; tail feathers black; first transversely banded with white; second less so; all the rest with whitish tips; inner feathers banded with white on the inner web; the outer web with a stripe of white along the middle; iris red. Female with the crown ashy; forehead pale red; nape right red.

Length, 9½ inches; extent about 17; wing about 5 inches.

Hab.—Eastern United States, to the Rocky mountains; rare or accidental east of the Hudson river.

Audubon found nests of Red-bellied Woodpeckers in orchards in Pennsylvania. The Messrs. Baird, writing in 1844, mention this species as occurring in the vicinity of Carlisle, Cumberland county, in reference to it they say: "Abundant; most so in winter; resident."

Dr. Ezra Michener, in his Chester county list of 1863, records this
bird as a "resident, frequent; rare in summer." Dr. Turnbull, in his Birds of Eastern Pennsylvania and New Jersey, 1869, says, "common, but more frequent in summer; found mostly on the larger trees of the forest." Mr. Gentry, writing in 1877 (Life Histories of Birds), observes that he has found a few of these birds in Eastern Pennsylvania from November until the latter part of April. According to my observation, the Red-bellied Woodpecker occurs in Pennsylvania only as a rare winter visitant. The few birds observed by myself in this locality were exceedingly shy, and when found were seen in tall trees in the forests.

The stomach contents of three of these birds, captured during the winter months in Chester and Delaware counties, Pa., consisted of black beetles, larvae, fragments of acorns, and a few seeds of wild grapes.

In various sections of Florida where the Red-bellied Woodpeckers are exceedingly numerous; in fact, by odds, the most abundant of all the woodpeckers, the common names of "Orange Sapsucker" and "Orange-borer" are universally applied to them. On making inquiry of farmers and others, I learned that the names were given because these woodpeckers "sucked the sap" of orange trees and fed on oranges. Supposing these statements were wrongfully made, I, at first, gave but little attention to them. When, however, I visited Welaka, Palatka, Volusia, Deland and other places where numerous orange trees were thriving, I was informed by the orange growers that the Red-bellied Woodpeckers oftentimes destroyed large numbers of oranges when they had matured and were ready for picking; also, that "they damaged the orange trees by boring holes in them and sucking the sap." I had but little opportunity of making a careful study of this orange-eating habit, so greatly talked about, owing to the fact that when I first visited these localities it was late in February, or after the oranges had been picked and shipped north. In the month of March, 1885, I camped a few days at "Bluffton," near Volusia, in an orange grove, owned by Mr. Bird, of New York city. This grove contained about thirty acres of trees, which were loaded with fruit, then being picked for market. Through the kindness of Mr. Bird and his overseer, Mr. Curtis, I collected twenty-six Red-bellied Woodpeckers in this orange grove, eleven of these birds had fed to a more or less extent on oranges.

Three of the eleven stomachs taken from specimens killed in the forenoon, soon after daylight, contained only orange pulp. Eight stomachs showed, in addition to orange pulp, insects and berries. The stomachs of the remaining fifteen birds contained no traces of oranges, but revealed chiefly insects, a few berries and seeds— I examined two dozen or more oranges which had been attacked by the Woodpeckers, and found that all had been bored about midway between the stem
Flicker.
1. Male; 2. Female.
and blossom end. These holes, always round, varied greatly in size. The birds usually, I think, pick off the skin from a space about the size of an ordinary five cent piece, and then eat out the pulp. In an orchard at Hawkinsville, near Deland Landing, on the St. John's river, I oftentimes, in the month of April, 1885, found oranges which had been evidently overlooked when the crop was gathered, and in most instances observed that they were bored. In this orchard, on one occasion, I saw a Red-bellied Woodpecker eating an orange. He evidently recognized the fact that it was about the last of the season, as he had enlarged the opening sufficiently that his head was almost entirely hidden in the yellow skin, from the sides of which he picked the few remaining particles of pulp. I was shown orange trees that these "Sap-suckers" were said to have bored, these borings, however, did not appear to injure the trees, as they seemed to me to be equally as flourishing as other trees whose trunks showed no marks of a woodpecker's bill.

**Genus COLAPTES. Swainson.**

412. *Colaptes auratus* (Linn.).

*Flicker.*

**Description.** *(Plate 22.)*

Bill differs from other of our woodpeckers. It is long, slender, slightly curved, without lateral ridges; nostrils exposed. Shafts and under surfaces of wing and tail feathers gamboge yellow; a black patch on each side of the cheek; a red crescent on the upper part of hind-neck, throat and stripe beneath the eye pale lilac brown. A crescentic patch on the breast and rounded spots on the belly black; back and wing coverts with interrupted transverse bands of black; neck above and on sides ashly. In the female the black check patch is usually absent.

Length, about 12 inches; extent about 20; wing about 6 inches.


This species, the most common of all our Woodpeckers, is found in Pennsylvania during all months of the year, but is far more numerous in the summer season than at other times. The Flicker, like all of the Woodpeckers, flies in an undulatory manner. When flying it is easily recognized from other species by its conspicuous golden-yellow under parts of the tail and wings and white rump. As previously remarked, Woodpeckers are not commonly seen on the ground; in this particular, however, the subject of this present sketch differs from other of his kin, as he is frequently to be observed hopping about in grass fields, meadows or along the roadside searching for food. Although the Flicker commonly lays about six eggs, I have known as many as seventeen eggs to have been taken from the nest of one bird. Flickers are great destroyers of ants: they also subsist on various forms of noxious
insects, and in the fall and winter season, eat in addition to insect-food, berries, wild cherries, small seeds of grasses, etc.

ORDER MACROCHIRES. Goatsuckers and Swifts.

Suborder CAPRIMULGI. Goatsuckers.

Family CAPRIMULGIDÆ. Goatsuckers.

Genus ANTROSTOMUS. Gould.

417. Antrostomus vociferus (Wils.).

Whip-poor-will.  

(Plate 23.)

Length about 10 inches; extent of wings about 18 inches.

Hab.—Eastern United States to the plains, south to Guatemala.

The name of "Goatsuckers," given to members of this family, originated from a silly notion that the European species sucked the teats of goats. It is misleading and should be abolished.

Although the Whip-poor-will and Night Hawk are generally regarded, by those who are not versed in ornithology, as the same bird, it can readily be seen, by referring to plate 23, that they differ greatly. It will be observed that the Whip-poor-will has conspicuous, long and stiff bristles at the base of bill; the bill of the Night Hawk is not furnished with long, conspicuous and stiff bristles. The Whip-poor-will has no white spot on the primaries; the Night Hawk has a well-marked spot of white on five outer primaries. The white on tail of males of both species is also different. In the Whip-poor-will the lower half, of the three outer tail feathers, is white; Night Hawk has a broad white bar crossing the tail (except middle feathers) near the tip. The males, both species, have transverse white throat bars. The female Whip-poor-will has a tawny throat bar, and inconspicuous terminal spots of the same color on lateral tail feathers. Female Night Hawk, throat bar tawny, white spot on wing, but no terminal patch of white crossing tail.

The Whip-poor-will is a rather common summer resident in the wooded and mountainous portions of Pennsylvania. It arrives in this locality from April 22 to May 1, and migrates southward in September. The Whip-poor-will migrates singly or in pairs, and, unlike the Night Hawk, is never to be found in flocks. The Whip-poor-will is nocturnal in habits, and is seldom seen during the day unless accidentally discovered in a state of repose, when, if started, it rises and
Plate 23.

1. Night-Hawk
2. Whip-poor-will

Males
flies off, but only to such a distance as it considers necessary, in order to secure it from the farther intrusion of the disturber of its noon-day slumbers. "Its flight is very low, light, swift, noiseless and protracted, as the bird moves over the places which it inhabits, in pursuit of the moths, beetles and other insects of which its food is composed. During the day, it sleeps on the ground, the lowest branches of small trees, or the fallen trunks of trees, so abundantly dispersed through the woods. In such situations, you may approach within a few feet of it; and, should you observe it whilst asleep, and not make any noise sufficient to alarm it, will suffer you to pass quite near without taking flight, as it seems to sleep with great soundness, especially about the middle of the day. In rainy or very cloudy weather, it sleeps less, and is more on the alert. Its eyes are then kept open for hours at a time, and it flies off as soon as it discovers an enemy approaching, which it can do, at such times, at a distance of twenty or thirty yards. "It always appears with its body parallel to the direction of the branch or trunk on which it sits, and, I believe, never alights across a branch or fence rail. "No sooner has the sun disappeared beneath the horizon, than this bird bestirs itself, and sets out in pursuit of insects. It passes low over the bushes, moves to the right or left, alights on the ground to secure its prey, passes repeatedly in different directions over the same field, skims along the skirts of the woods and settles occasionally on the tops of the fence stakes or on the stumps of trees, from whence it sallies, like a Flycatcher, after insects, and on seizing them returns to the same spot. "When thus situated, it frequently alights on the ground, to pick up a beetle; it also balances itself in the air, in front of the trunks of trees, or against the sides of banks, to discover ants and other small insects that may be lurking there. It is a remarkable fact that even the largest moths on which the Whip-poor-will feeds, are always swallowed tail foremost, and when swallowed, the wings and legs are found closely laid together, and as if partially glued by the saliva or gastric juice of the bird. The act of deglutition must be greatly aided by the long bristly feathers of the upper mandible, as these no doubt force the wings of the insects close together, before they enter the mouth."—Audubon. In several of these birds, which I have examined, were found only insects, chiefly of a lepidopterous character; once I took from the stomach of a male bird the remains of two or three common potato beetles. The Whip-poor-will never builds a nest. In this section, it deposits its eggs about the 20th of May, on the bare ground, or on dry leaves, and occasionally, though rarely, it is said on logs, in the gloomy retreats of thickets or woods. The eggs, never more than two in number, are white or yellowish white, irregularly spotted or blotched with brown, and bluish-gray. They measure about 1.25 inches in length and .89 of an inch
in width. This bird, like the Chuck-will's-widow,* when flying about in quest of food, may be heard to utter a kind of low growling sound. This noise is the only sound I ever heard the Whip-poor-will make when on the wing.

**Genus CHORDEILES. SWAINSON.**

*420. Chordeiles virginianus. (Gmel.)*

**Night Hawk.**

**Description. (Plate 23).**

Male, above mottled with blackish, grayish and rufous; a white V-shaped mark on the throat; behind this a collar of pale rufous blotches, and another on the breast of grayish mottling; under parts banded transversely with dull-yellowish or reddish white and brown; wing quills quite uniformly brown; the five outer primaries with a white blotch midway between the tip and carpal joint, not extending on the outer web of the outer quill; tail with a terminal white patch.

Female without the caudal white patch, the white of the throat mixed with reddish. Length about 9½ inches; extent about 23; wing about 8 inches.

*Hab.*—Northern and eastern North America, east of the Great Plains, south through tropical America to Buenos Ayres.

The Night Hawk occurs in Pennsylvania as a common summer resident. It usually arrives from its southern winter resorts, a few days after the Whip-poor-wills have made their appearance. The note of the Night Hawk, is a short, sharp squeak. During the breeding season this bird has a curious habit, when flying, of falling through the air with a loud booming sound, which as Nuttall has truly said, resembles the noise produced by blowing into the bung-hole of an empty hog's head. This peculiar booming or whirring sound, which can be heard oftentimes to the distance of a quarter of a mile or over, is produced, it is stated, by the air rushing through the stiff wing feathers. The Night Hawk never breeds in woods or thickets, but deposits her two eggs on the bare ground or rocks in open situations; the favorite breeding places are barren and rocky lands, though sometimes they have been known to deposit their eggs on roofs of buildings in large cities and towns, over which these birds all day long may be seen or heard flying in pursuit of their favorite insect prey.

The eggs, elliptical in shape and about the same size as those of the Whip-poor-will, so closely resemble the ground or pieces of rock on which they are deposited, that they are frequently overlooked by persons who are accustomed to searching for them. The Night Hawk, like the Whip-poor-will, manifests great affection for her eggs and

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*The Chuck-will's-widow (Antrostomus carolinensis) (Gmel.), inhabits the south Atlantic and Gulf States, "and lower Mississippi Valley, north to the Carolinas and southern Illinois." said to winter chiefly south of United States, in Mexico, Central America, etc. April, 1855, I found this species breeding in Orange and Volusia counties, Florida, where these birds are abundant. In February and March I neither saw nor heard them, and residents of Florida assured me that the "Chuck-will," as the bird is there known, was found in that State only as a summer resident.
young, and will resort to numerous devices to induce you to follow her, when these treasurers are approached or discovered. It is stated that birds of this family have a common habit, when their eggs or young are disturbed, of removing them in their capacious mouths, to different localities. I have known the Night Hawk to move its eggs a distance of over two hundred yards, in less than one hour after I had examined them. In the breeding season especially, these birds are frequently seen sitting lengthwise on fences and on the limbs of high trees, in the vicinity of their breeding grounds. Several pairs of Night Hawks may often be found breeding within a few yards of each other. The Night Hawk, although oftentimes observed flying about during the daytime, is particularly active in the afternoon, and in cloudy weather. This bird when on the wing, if not too distant, can easily be recognized by the white spot on the primaries, which is commonly spoken of as a "hole in the wing." During the latter part of August, these birds collect in large bands and leisurely proceed to winter quarters in Mexico, Central America, and portions of South America, etc.

The somewhat prevalent idea that Night Hawks are destroyers of young poultry is simply absurd, as it requires only a careless examination of a specimen to prove conclusively that it would be physically impossible for them to capture such prey.

The great mistake of applying improper vernacular names to birds, was clearly demonstrated during the enforcement of the scalp act of 1885, when commissioners, of whom I have knowledge, took the stand that they were obliged to allow bounty on the Night Hawk, because it was known as a "hawk."

Audubon writing of this species states that the food consists entirely of insects, especially beetles, although they also feed on moths and caterpillars, and are very expert at catching crickets and grasshoppers, with which they sometimes gorge themselves, as they fly over the ground with great rapidity. "When flying closely over the water they occasionally drink in the manner of swallows."

<table>
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<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>May 5, 1879</td>
<td>Chester county, Pa.</td>
<td>Flies and other insects</td>
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<tr>
<td>2</td>
<td>July 20, 1879</td>
<td>Delaware county, Pa.</td>
<td>Grasshoppers</td>
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<td>May 30, 1880</td>
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<td>Beetles and larvae</td>
</tr>
<tr>
<td>4</td>
<td>August 13, 1880</td>
<td>Chester county, Pa.</td>
<td>Many crickets, etc.</td>
</tr>
<tr>
<td>5</td>
<td>August 13, 1880</td>
<td>Chester county, Pa.</td>
<td>Many crickets, etc.</td>
</tr>
<tr>
<td>6</td>
<td>August 13, 1880</td>
<td>Chester county, Pa.</td>
<td>Many crickets, etc.</td>
</tr>
<tr>
<td>7</td>
<td>May 20, 1883</td>
<td>Chester county, Pa.</td>
<td>Water beetles</td>
</tr>
<tr>
<td>8</td>
<td>May 23, 1883</td>
<td>Chester county, Pa.</td>
<td>Beetles and two lime-like-masses</td>
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<td>9</td>
<td>April —, 1883</td>
<td>Orange county, Fla.</td>
<td>Various insects</td>
</tr>
<tr>
<td>10</td>
<td>April —, 1883</td>
<td>Orange county, Fla.</td>
<td>Beetles and large flies</td>
</tr>
<tr>
<td>11</td>
<td>June 1, 1886</td>
<td>Chester county, Pa.</td>
<td>Various insects</td>
</tr>
</tbody>
</table>
Suborder Cypseli. Swifts.

Family Micropodidae. Swifts.

Subfamily Chæturinae. Spine-tailed Swifts.

Genus Chætura. Stephens.

423. Chætura pelagica (Linn.).

Chimney Swift.

Description.

Tail slightly rounded and spiny; of a sooty brown all over, except on the throat, which becomes considerably lighter from the breast to the bill; above with a greenish tinge; the rump a little paler. Length, 5.25 inches; wing, 5.10; tail, 2.15.

Hab.—Eastern North America, north to Labrador and the fur countries, west to the plains, and passing south of the United States in winter.

The Chimney-bird, unless resting on its nest or clinging to the sooty chimney sides, is always seen flying. In Pennsylvania these birds are generally first observed about the last week in April. In the early autumn they collect in large flocks before retiring to their winter resorts. I have observed birds of this species in Chester county (Pa.) as late as the 20th of October. In this locality the nest of the Chimney-Swift, or Swallow, as it is mostly called, is composed of small twigs, which are glued together and to the sooty walls of unused chimneys, with the birds’ saliva.* The twigs used in constructing nests are broken off of trees by these birds when on the wing. The eggs, four to six in number, are white and unspotted. They measure about three-fourths of an inch in length and about half an inch in width.

Food.

These birds subsist entirely on various kinds of insects which they collect during the night as well as in daylight.

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>June 8, 1880</td>
<td>Chester county, Pa.</td>
<td>Beetles and other small-winged insects.</td>
</tr>
<tr>
<td>2</td>
<td>June 8, 1880</td>
<td>Chester county, Pa.</td>
<td>Remains of beetles and other insects.</td>
</tr>
<tr>
<td>3</td>
<td>June 8, 1880</td>
<td>Chester county, Pa.</td>
<td>Dipterous insects.</td>
</tr>
<tr>
<td>4</td>
<td>June 8, 1880</td>
<td>Chester county, Pa.</td>
<td>Fragments of beetles and other insects.</td>
</tr>
<tr>
<td>5</td>
<td>May 1, 1880</td>
<td>Chester county, Pa.</td>
<td>Beetles.</td>
</tr>
<tr>
<td>6</td>
<td>May 1, 1880</td>
<td>Chester county, Pa.</td>
<td>Beetles and small-winged insects.</td>
</tr>
<tr>
<td>7</td>
<td>June 8, 1883</td>
<td>Newark, Delaware,</td>
<td>Beetles and caterpillar.</td>
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<td>Newark, Delaware,</td>
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</tr>
<tr>
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<td>June 8, 1883</td>
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</tr>
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<td>10</td>
<td>June 8, 1883</td>
<td>Newark, Delaware,</td>
<td>Beetles and dipterous insects.</td>
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<tr>
<td>11</td>
<td>June 2, 1884</td>
<td>Chester county, Pa.</td>
<td>Larvae and flies.</td>
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</table>

*A writer in a recent scientific journal, which I have mislaid, says: "In the case of our own Chimney-Swifts it has lately been shown that the gelatinous matter with which the twigs are fastened together is of a vegetable and not an animal character, and in a particular case recently investigated by a scientist, the gum was found to have come from a cherry tree."
Suborder Trochil. Hummingbirds.

Family Trochilidae. Hummingbirds.

Genus Trochilus. Linnæus.

428. Trochilus colubris Linn.

Ruby-throated Hummingbird.

Description.

Male.—Tail deeply forked, the feathers all narrow and pointed; uniform metallic green above; sides of body greenish; below white; ruby-red gorget; wings and tail purplish-black.

Female.—Metallic green of upper parts duller than in male; tail double rounded; its feathers pointed but broader than in male; no red on throat; the tail feathers banded with black; the lateral ones broadly tipped with white.

Young Male.—Very similar to adult female, but throat more or less streaked with dark, tail also more forked than in female. Nearly all specimens show a trace of metallic red on throat.

Young Female.—Throat white, without streaks or specks; tail less forked, otherwise similar to young male. Irides in old and young brown. Length about 3.25 inches; extent of wings about 5 inches.

Hab.—Eastern North America to the Plains, north to the fur countries, and south, in winter, to Cuba and Veragua.

Although fifteen distinct species of Hummingbirds are given by Dr. Elliott Coues, as occurring within the limits of the United States, only one—the Ruby-throat—is found east of the Mississippi river. Hummingbirds, as Dr. Coues observes, are peculiar to America. Species are found from Alaska to Patagonia. In tropical South America, particularly New Granada, these beautiful feathered gems are most abundant. There are, it is stated, over four hundred different species of Hummers known to scientists.

The Ruby-throated Hummingbirds, the smallest of all our feathered visitants, arrive in Pennsylvania about the first week in May and remains until about the middle of September, when they migrate south. This species is common during the winter in Florida, where they also, it is said, breed. During the months of February, March and until about the 20th of April, I found these birds to be quite numerous in the orange orchards along the St. John's river. Although Hummingbirds cannot be called gregarious, it is not at all uncommon, especially in the spring, to see a flock of twenty or more of these birds feeding among the flowers of some favorite tree. I have, at one time, counted thirty odd Hummers, feeding, fighting and pluming themselves, among the flowers of a single horse-chestnut tree. The Hummingbird never alights on the ground, though it often rests on twigs and branches. When sitting in trees or bushes it may frequently be observed to spread out one wing and draw the quill-feathers through its bill. The
nest, a beautiful cup-shaped structure, is composed of downy substances, chiefly of a vegetable character, covered externally with lichens "which are glued on with the viscid saliva of the little workers;" in many instances the lichen coverings are strengthened by strands of cobwebs. This bird is not at all particular as to the situation which it chooses for nest-building. Sometimes it builds in a honeysuckle vine or a rose bush; at other times it erects a domicile in an apple or pear tree, usually, however, the nest is built on an oak or beech tree in the woods, and is placed mostly on the upper side of a horizontal limb. It is constructed by the united labor of both birds, who complete the work in five or six days. In this locality the nest is generally built about the last week in May. A nest now before me measures a little over one inch and a half in height and one inch and a half in diameter; the cavity is three-quarters of an inch wide and the same in depth. This nest was built on the upright limb of a beech tree, where for three consecutive years a pair of Hummers regularly nested, each season building a new nest over the few remaining fragments of their abode of the previous year. The white eggs, never more than two in number, are elliptical in shape, equally obtuse at both ends and measure .50 by .33 of an inch. The period of incubation is about ten days. Occasionally, though rarely I think, two broods are reared in one season. Although these birds feed among the flowers of various plants, they prefer those of the horse chestnut, honeysuckle and trumpet vine. From the fact that these diminutive creatures are generally observed about flowering plants, the popular yet erroneous belief has arisen that they subsist entirely on the sweets of flowers. Audubon writing of this species, says: "Their food consists principally of insects, generally of the coleopterous order, these, together with some equally diminutive flies, being commonly found in their stomachs. The first are procured within the flowers, but many of the latter on the wing. The Hummingbird might therefore be looked upon as an expert fly-catcher. The nectar or honey which they sip from the different flowers, being of itself insufficient to support them, is used more as if to allay their thirst. I have seen many of these birds kept in partial confinement when they were supplied with artificial flowers made for the purpose, in the corallas of which water with honey or sugar dissolved in it was placed. The birds were fed on these substances exclusively, but seldom lived many months, and on being examined after death, were found to be extremely emaciated. Others, on the contrary, which were supplied twice a day with fresh flowers from the woods or garden, placed in a room with windows merely closed with gange netting, through which minute insects were able to enter, lived twelve months, at the expiration of which time they were liberated."
In addition to Audubon's observations on the food habits and my own examinations given in the above table, it might be added that in March and April, 1885, I shot seventeen of these birds in the Florida orange orchards and found that all had only insects in their viscera. May 14, 1886, I received from Mr. George Hartman, of West Chester, Pa., fifteen Hummers which had been captured while feeding among the flowers of a horse-chestnut tree. The stomachs of these birds, which were kindly examined for me by Prof. C. V. Riley, entomologist, United States Department of Agriculture, Washington, D. C., showed chiefly the remains of small spiders and some few coleopterous insects.

ORDER PASSERES. PERCHING BIRDS.

SUBORDER CLAMATORES. SONGLESS PERCHING BIRDS.

FAMILY TYRANNIDÆ. TYRANT FLYCATCHERS.†

* Those seventeen birds were all killed when feeding in horse-chestnut trees.

† Of the several species of this highly beneficial family which occur in Pennsylvania as summer residents or passing visitant but two, viz: the King-bird and and common Pewee, are generally known to those who are not interested in ornithological pursuits. Both of these birds are common breeders about the habitations of man, and unlike most others of their kin are not shy or difficult to approach. Although at times some of the Flycatchers descend to the earth for food, it is safe to say that these birds, collectively considered, are seldom observed on the ground feeding. "The structure of the bill is admirably adapted for the capture of winged insects; the broad and deeply cup-shaped mandibles form a capacious mouth, while the long bristles are of service in entangling the creatures in a trap and restraining their struggles to escape. The shape of the wings and tail confers the power of rapid and varied aerial evolutions necessary for the successful pursuit of active flying insects. A little practice in field ornithology will enable one to recognize the Flycatchers from their habit of perching in wait for their prey upon

10 BIRDS.
some prominent out-post, in a peculiar attitude, with the wings and tail drooped and vibrating in readiness for instant action, and of dashing into the air, seizing the passing insect with a quick movement and a click of the bill, and then returning to their stand. Although certain Genuses have somewhat the same habit, these pursuit insects move place to place, instead of perching in wait at a particular spot, and their forays are not made with such admirable elan. Depending entirely upon insect food, the Flycatchers are necessarily migratory in our latitude. They appear with great regularity in spring and depart on the approach of cold weather in the fall. The voice, susceptible of little modulation, is usually harsh and strident, though some species have no unmusical whistle or twitter.״—Cates' Key, page 429.

Genus *TYRANNUS*. Cuvier.

444. *Tyrannus*, *tyrannus* (Linn.).

Kingbird; Beebird.

(Plate 24.)

Length about 8½ inches; extent about 14½ inches; bill and feet black; iris brown; above blackish-ash; top of head quite black; crown with a concealed patch of orange red; lower parts pure white, tinged with pale bluish-ash on the sides of the throat and across the breast; sides of breast and under the wings similar to, but rather lighter than, the back; axillaries pale grayish-brown tipped with lighter; the wings dark-brown, darkest toward the end of the quills; the greater coverts and quills edged with white, most so on the tertials; the lesser coverts edged with paler; upper tail coverts and upper surface of the tail glossy black, the latter very dark brown beneath; all the feathers tipped, and the exterior margined externally with white, forming a conspicuous terminal band about .25 of an inch broad.

**Young.**—Very similar but colors generally duller; the concealed colored patch on the crown wanting; the tail and wings in some specimens often edged with rusty.

**Hab.**—Eastern North America, from British Provinces south to Central and South America. Rare west of the Rocky mountains (Utah, Nevada, Washington Territory, etc.).

This well known bird is a common summer resident in Pennsylvania, where it arrives usually about the 25th of April. The males precede the females in their arrival by some three or four days. These birds generally, I think, migrate singly; I have never observed them in the spring in small flocks. During the month of February and until the 20th of March, 1885, I saw no Kingbirds in various localities along the St. John's river, Florida, but from the 20th of March and until quite late in April these birds (in that State called Field Martins) were oftentimes met with.

The technical name *tyrannus* given to the subject of this present sketch is particularly appropriate, as this bird during the breeding season is ever on the alert, and seemingly anxious to attack his feathered neighbors. Whenever a hawk or crow is observed flying, even at a considerable distance, this little warrior immediately starts in pursuit, and by his rapid flight speedily overtakes the object of his wrath and uttering almost continually his sharp and rapid twitter, is seen to mount above his adversary and make repeated and violent assaults on the head of his flying victim, who, frequently, to escape further persecution makes a precipitate retreat to a tree, bushes or the ground.
Plate 24.

\[\frac{1}{2}\text{ of natural size.}\]

1. Male; 2. Female.

*Tyrant Flycatcher, or King Bird.*

1. Male; 2. Female.
The nest, a rather bulky and loosely made structure, is composed of grasses, weeds, roots, etc., and is built generally on the limb of an apple or pear tree in an orchard; sometimes, however, nests are placed in oak and other trees. It is built by the joint labor of both birds, who complete this work in about five days. The eggs, usually four or five in number, are creamy-white spotted conspicuously with different shades of brown and indistinct spots of bluish-gray. The eggs vary greatly in size; a large one measures an inch in length and \( \frac{3}{4} \) of an inch in width. The period of incubation is about fourteen days. From his favorite perch either on a stake, the top of a tree or a high weed in the field, the Kingbird watches for his insect prey; at other times he is observed flying over a field in a manner similar to that of the Sparrow Hawk, watching for grasshoppers, crickets or other insects. As Wilson observes, he sometimes hovers over a river or pond, darting after insects that frequent such places, snatching them from the surface of the water, and diving about in the air like a swallow. Some few years ago I saw a Kingbird dart down to the water in a shallow pond and fly off with a shining object in his bill, that at the time I thought appeared like a small fish, but never having seen or heard of this species feeding on fishes, but little notice was taken of the bird, which flew to a tree some two hundred yards distant. From an article published in the *Forest and Stream*, September 2, 1882, and written by Milton P. Peirce, it appears that Kingbirds sometimes feed on fishes. Mr. Peirce writes: "These birds are very abundant about my premises, nesting in some cases within a few feet of my residence * * * I have often noticed them striking the surface of the water in my fish ponds, but supposed they were either taking a bath or else catching insects which were flying near the surface of the water. When I constructed my bass pond, a few years ago, I stocked it with minnows to afford ample food for the bass. At times the entire surface of the pond seems alive with them. A few days ago I observed at least a half dozen Kingbirds perched on trees and bushes, near the margin of the pond, and almost every moment some of them would dive into the water precisely like a Kingfisher, and I concluded they were catching bugs or other insects, which were floating upon the surface of the water. Watching them closely, I soon saw one of them leave the water with something perceptibly shining in its bill. It alighted on a tree about fifty yards from where I was sitting, and acted precisely as a Kingfisher does when killing a fish. Taking a telescope, I also took an observation and discovered that the Kingbird had a minnow not less than three inches long. I continued my observations for about fifteen minutes, and during that time these birds caught several small minnows and ate them." Notwithstanding the benefits which this bird confers, de-
stroying, as Dr. Cones remarks, a thousand noxious insects for every bee it eats, many farmers and others who keep honey-bees, are ever ready to slay every Kingbird which visits their premises. Although it is believed by some that these birds take only drone bees, such is not the case, as I have found both drone and working-bees in their stomachs: Mr. Gentry also in speaking of the bee-eating habit states that the Kingbird is no respecter of kinds. Nuttall writing of this bird says: As insects approach him, or as he darts after them, the snapping of his bills is heard, like the shutting of a watch-case, and is the certain grave of his prey. Beetles, grasshoppers, crickets and winged insects of all descriptions form his principal summer food; at times canker worms from the elm are also collected. Towards autumn, as various kinds of berries ripen, these constitute a very considerable and favorite part of his subsistence; but with the exception of currants (of which he only eats perhaps when confined), he refuses all exotic productions, contenting himself with blackberries, whortleberries, those of the sassafras, elder and poke. The same writer further says: "Raisins, foreign currants, grapes, cherries, peaches, pears and apples were never even tasted, when offered to a bird of this kind, which I had many months as my pensioner; of the last when roasted, sometimes, however, a few mouthfuls were relished, in the absence of other more agreeable diet. Berries he always swallowed whole, grasshoppers, if too large, were pounded and broken on the floor, as he held them in his bill. To manage the larger beetles was not so easy; these he struck repeatedly against the ground and then turned them from side to side, by throwing them dexterously into the air, and the insect was uniformly caught reversed as it descended, with the agility of a practiced cup-and-ball player. At length the pieces of the beetle were swallowed, and he remained still to digest his morsel, tasting it distinctly soon after it entered the stomach, as became obvious by the ruminating motion of his mandibles. When the soluble portion was taken up, large pellets of the indigestible legs, wings and shells, as likewise the skins and seeds of berries, were, in half an hour or less, brought up and ejected from the mouth in the manner of Hawks and Owls. When other food failed, he appeared very well satisfied with fresh minced meat, and drank water frequently, even during the severe frosts of January. * * * Some very cold evenings he had the sagacity to retire under the shelter of a depending bed-quilt." The few examinations which I have made are given in the following table:
Genus Myiarchus. Cabanis.

452. Myiarchus crinitus (Linn.).

Crested Flycatcher.

Description.

Length, about 8 3/4 inches; extent, about 13 1/4 inches; head with a depressed crest; upper parts dull greenish-olive, with the feathers of the crown, and to some extent of the back, showing their brown centres; upper tail coverts turning to pale rusty-brown; small feathers at the base of the bill, sides of the head as high as the upper eyelid, sides of the neck, throat, and forepart of the breast, bluish-ashy; the rest of the lower parts, including axillaries and lower wing coverts, bright sulphur-yellow; a pale ring round the eyes; sides of the breast and body tinged with olivaceous; the wings brown, the first and second rows of coverts, with the secondary and tertial quills, margined externally with dull-white, or on the latter slightly tinged with olivaceous-yellow; primaries margined externally for more than half their length from the base with ferruginous, great portion of the inner webs of all the quills very pale-ferruginous; the two middle tail feathers light brown, shafts paler, the rest have the outer web and a narrow line on the inner sides of the shaft brown, pale olivaceous on the outer edge, the remainder ferruginous to the very tip; outer web of exterior feather dull brownish-yellow; feet black; bill dark-brown above and at the tip below, paler towards the base; iris brown.

Hab.—Eastern United States and southern Canada, west to the Plains, south through eastern Mexico to Costa Rica.

The Crested Flycatcher, although probably not as abundant as the preceding species, is a common summer resident in Pennsylvania. I have seen these birds in the southern portions of this State as early as the 23d of April, usually, however, they arrive about the first of May, and remain until late in September, when they migrate southward and winter it is stated beyond the southern borders of the United States. Although this species sometimes nests in orchards and other places near houses, it is chiefly found in wooded districts. Unlike all other of our Flycatchers, these birds build their nests in holes of trees, and occasionally in hollow fence rails or posts. I have examined nine nests of the Crested Flycatcher, which were found in Chester county, and in six of this number discovered the remains of cast off skins of
snakes. The eggs,* usually five, are of a creamy brown ground color with numerous dark brownish blotches or spots and lines, the latter generally of a purplish tint appear as traced with a pen. The nest of this bird is constructed of various materials, such as feathers, hay, leaves, etc. Mr. Gentry some few years ago found a nest of this species, near Germantown, which was placed between the bifurcated branch of an apple tree. "It was composed almost entirely of feathers of our common Gallus, which were held together by long grasses." The note of this bird is a harsh squeak or kind of whistle, exceedingly unpleasant to the ear, and which can be heard to a considerable distance. The food of this species is mainly of an insectivorous nature; in the late summer and autumn different kinds of berries are oftentimes fed upon. Some writers state that the Crested Flycatchers like the Kingbirds, are equally fond of honey-bees. Mr. Gentry says: "From the vast numbers of ground-beetles, which have been noticed in the numerous stomachs which we have examined, it is obvious that the species leads almost wholly a terrestrial existence for a week or so after its arrival. As the season advances, and the higher types of insects swarm into existence, it becomes more exclusively arboreal, and aerial, so to speak. We have watched these birds for hours, while perched upon a dead branch of a tree, in the active enjoyment of procuring a full meal. Their movements are perfectly ludicrous. There they sit, bobbing the head this way and then that way, now up and then down, ever on the alert for caitiffs, which form their appropriate diet. Hosts of lepidoptera, both larvae and imagoes, are greedily devoured."

In the following table will be found the results of the few examinations which I have made of the Crested Flycatcher:

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>May 17, 1880</td>
<td>Chester county, Pa.</td>
<td>Large flies</td>
</tr>
<tr>
<td>2</td>
<td>May 17, 1880</td>
<td>Chester county, Pa.</td>
<td>Beetles</td>
</tr>
<tr>
<td>3</td>
<td>May 30, 1881</td>
<td>Chester county, Pa.</td>
<td>Beetles and flies</td>
</tr>
<tr>
<td>4</td>
<td>May 14, 1882</td>
<td>Chester county, Pa.</td>
<td>Beetles and larvae</td>
</tr>
<tr>
<td>5</td>
<td>June 8, 1883</td>
<td>New Castle, Delaware</td>
<td>Larvae</td>
</tr>
<tr>
<td>6</td>
<td>June 8, 1883</td>
<td>New Castle, Delaware</td>
<td>Butterflies</td>
</tr>
<tr>
<td>7</td>
<td>June 8, 1883</td>
<td>New Castle, Delaware</td>
<td>Beetles</td>
</tr>
<tr>
<td>8</td>
<td>Sept. 12, 1883</td>
<td>Chester county, Pa.</td>
<td>Berries and beetles</td>
</tr>
<tr>
<td>9</td>
<td>Aug. 7, 1884</td>
<td>Chester county, Pa.</td>
<td>Seeds and pulp of berries</td>
</tr>
</tbody>
</table>

*The eggs measure about .86 long by .65 wide.
Genus SAYORNIS. Bonaparte.

456. Sayornis phoebe (Lath.).

Phoebe; Pewee.

Description.

Sides of breast and upper parts dull olive-brown, fading slightly toward the tail; top and sides of head dark-brown: a few dull-white feathers on the eyelids; lower parts dull yellowish-white, mixed with brown on the chin, and in some individuals across the breast; quills brown, the outer primary, secondaries, and tertials edged with dull white; in some individuals the greater coverts faintly edged with dull-white; tail brown, outer edge of lateral feather dull-white, outer edges of the rest like the back; tibiae brown; bill and feet black; bill slender, edges nearly straight; tail rather broad, and slightly forked, third quill longest, second and fourth nearly equal, the first shorter than sixth.

In autumn, and occasionally in early spring the colors are much clearer and brighter. Whole lower parts sometimes bright sulphur-yellow, above greenish-olive, top and sides of the head tinged with sooty; in the young of the year, the colors are much duller; all the wing coverts broadly tipped with light-ferruginous, as also the extreme ends of the wings and tail feathers: the brown is prevalent on the whole throat and breast; the hind part of the back, rump, and tail, strongly ferruginous. Length about 7 inches; extent about 11 inches.

Hab.—Eastern North America, from the British Provinces south to Eastern Mexico and Cuba, wintering from the South Atlantic and Gulf States southward.

The Phoebe bird or Pewee, so named from its note, is one of our earliest spring migrants; it arrives in Pennsylvania mostly about the middle of March, and continues in this region until about the 15th of October. A few individuals sometimes linger as late as the first of November. In the early part of February, 1883, I saw Mr. C. D. Wood, of Philadelphia, skinning a Pewee which had been shot on the 22d of January, 1883, at Spring City, Chester county, Pa.

In Cecil county, Maryland, and the southern portion, of Delaware, I have on different occasions seen these birds as late as the 25th of November. During the latter part of February, 1885, when camping at Drayton Island, in Lake George, Florida, I obtained five of these Flycatchers, and found that all had fed chiefly on Palmetto berries. The nest is generally built under a bridge or shelving rocks: oftentimes, however, this species is found breeding about barns and other buildings. Although the Pewee seldom breeds in the woods, it occasionally builds its nests against the dirt-covered roots of trees which have been blown over; I have twice found their nests, in forests, placed in these situations. Both sexes engage in building their nest, which is completed in about six days. The materials used in its construction are mosses, grasses, fine roots, mud, feathers, etc. The eggs, usually five in number, are pure white and unspotted, sometimes, however, they are faintly spotted with reddish brown. They measure about .80 of an inch in length, and .55 of an inch in width. Incubation, which is engaged in only by the female, lasts for a period of about twelve days.
During the late summer, autumn and winter, I have noticed that these birds, in addition to various insects, feed to a considerable extent on different kinds of fruits, such as those of the raspberry, blackberry, poke, wild-grape and cedar. The young of this species are fed exclusively on insects.

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Material</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Sept. 11, 1880</td>
<td>East Bradford, Pa.,</td>
<td>Various insects ( principals diptera)</td>
</tr>
<tr>
<td>5</td>
<td>Oct. 2, 1880</td>
<td>East Bradford, Pa.,</td>
<td>Flies and remains of beetles.</td>
</tr>
<tr>
<td>7</td>
<td>Oct. 6, 1880</td>
<td>Willistown, Pa.,</td>
<td>Flies and small berries.</td>
</tr>
<tr>
<td>8</td>
<td>Oct. 6, 1880</td>
<td>Willistown, Pa.,</td>
<td>Flies and beetles.*</td>
</tr>
<tr>
<td>9</td>
<td>Oct. 6, 1880</td>
<td>Willistown, Pa.,</td>
<td>Small worms and remains of beetles.*</td>
</tr>
<tr>
<td>10</td>
<td>Oct. 6, 1880</td>
<td>Willistown, Pa.,</td>
<td>Grasshoppers and flies.*</td>
</tr>
<tr>
<td>11</td>
<td>Oct. 6, 1880</td>
<td>Willistown, Pa.,</td>
<td>Several large yellow wasp-like insects.*</td>
</tr>
<tr>
<td>12</td>
<td>Oct. 7, 1880</td>
<td>Willistown, Pa.,</td>
<td>Numerous flies.*</td>
</tr>
<tr>
<td>13</td>
<td>Oct. 7, 1880</td>
<td>Willistown, Pa.,</td>
<td>Large wasp-like insect.*</td>
</tr>
<tr>
<td>14</td>
<td>Sept. 30, 1882</td>
<td>Chester county, Pa.,</td>
<td>Large wasp-like insect.*</td>
</tr>
<tr>
<td>15</td>
<td>Sept. 30, 1882</td>
<td>Chester county, Pa.,</td>
<td>Beetles, grasshoppers and crickets.</td>
</tr>
<tr>
<td>16</td>
<td>Sept. 30, 1882</td>
<td>Chester county, Pa.,</td>
<td>Beetles and flies.</td>
</tr>
</tbody>
</table>

**Genus **CONTOPUS. Cabanis.**

**461. Contopus virens (Linn.).**

**Wood Pewee.**

**Description.**

Feet black; iris brown; the upper parts, sides of the head, neck and breast, dark olivaceous-brown, the latter rather paler, the head darker; a narrow white ring round the eye; the lower parts pale-yellowish, deepest on the abdomen; across the breast tinged with ash; this pale ash sometimes occupies the whole of the breast, and even occasionally extends up to the chin; it is also sometimes glossed with olivaceous; the wings and tail dark brown, generally deeper than in *S. phoebe*; two narrow bands across the wing, the outer edge of first primary and of the secondaries and tertials dull-white; the edges of the tail feathers like the back, the outer one scarcely lighter; upper mandible black, the lower yellow, but brown at the tip. Length about 6.25; extent about 10 inches.

_Hab._—Eastern North America to the plains, and from southern Canada southward.

The Wood Pewee, a common summer resident, arrives in Pennsylvania early in May and continues with us until about September 20th. This bird is found commonly in forests or the shady retreats of apple orchards. During the breeding season, particularly, the Wood Pewee when perched on the dead branches of trees, watching for his insect prey, utters a peculiar plaintive drawing note—"pē-ā-wē, ā-pēe-wē!"—which once heard is rarely forgotten. A writer has very properly

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*Taken in the morning's feeding near a small pond.*
said that these notes in the latter part of the summer are almost the only ones heard in the woods. The thin-bottomed, thick-walled and somewhat saucer-shaped nest, built usually on a thick, horizontal tree limb, is composed, internally, of grass stems. fine fibres of roots or other soft substances, and covered externally with lichens, which are held in place by cobwebs or "glued to the other materials by the bird’s saliva.” The eggs, four or five in number, are yellowish-white, with reddish-brown and lilac spots, generally in a ring about the larger end. They measure about .75 of inch in length, and a little over .50 of an inch in width. I have never found Wood Pewees feeding on small fruits, but have always observed that they feed exclusively on insects. Audubon, however, states during the winter months he has observed these birds in Florida, Louisiana and other of the Southern States, feeding on "different berries, as well as insects."

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>May 19, 1880</td>
<td>Chester county, Pa.</td>
<td>Beetles and flies</td>
</tr>
<tr>
<td>2</td>
<td>Sept. 22, 1880</td>
<td>Chester county, Pa.</td>
<td>Flies</td>
</tr>
<tr>
<td>3</td>
<td>Sept. 25, 1880</td>
<td>Chester county, Pa.</td>
<td>Beetles</td>
</tr>
<tr>
<td>4</td>
<td>May 25, 1884</td>
<td>Chester county, Pa.</td>
<td>Butterfly</td>
</tr>
</tbody>
</table>

Genus **Empidonax**. Cabanis.

463. **Empidonax flaviventris**. Baird.

Yellow-bellied Flycatcher.

**Description.**

Above olive-green (very similar to the back of **Vireo noceboracensis**); crown rather darker; a broad yellow ring around the eye; the sides of the head, breast and body, and a band across the breast like the back, but lighter; the rest of the lower parts bright sulphur yellow; no white or ashy anywhere on the body; quills dark brown; two bands on the wing formed by tips of the primary and secondary coverts, the outer edge of the first primary and of the secondaries and tertials pale yellow, or greenish yellow. Tail feathers brown, with the exterior edges like the back; upper mandible dark brown; lower mandible yellow; legs and feet black; iris brown. In the autumn the colors are purer, the yellow is deeper, and the markings on the wings of an ochry tint.

*Dimensions* of a female: Length, $5\frac{1}{2}$ inches; extent, $8\frac{1}{2}$; wing, $2\frac{1}{2}$ inches.

*Hab.*—Eastern North America to the plains, and from southern Labrador south through eastern Mexico to Panama, breeding from the northern States northward.

The Yellow-bellied Flycatcher, according to my observation, is found in eastern Pennsylvania as a rather rare spring and autumnal visitant. It arrives, in this locality, from its southern winter resorts about the last of April, and after remaining a few days, frequenting chiefly wooded districts, passes northward to breed. This Flycatcher, about the 20th of September, again makes its appearance in our
Birds of Pennsylvania.

woods, and remains until, occasionally, as late as the first of October. The note as described by Dr. Cones is a low soft *pe-a*, uttered slowly. The Yellow-bellied Flycatcher is usually seen perched on the low limbs of trees or bushes, along the borders of streams or ponds in the woods. I have never observed it on the high branches of trees. According to Mr. Gentry it is occasionally observed on the ground, in active pursuit of insects, which contribute to its bill-of-fare. In the few examinations which I have made of this species the following insects were found:

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sept. 22, 1880</td>
<td>Chester county, Pa.</td>
<td>Beetles.</td>
</tr>
<tr>
<td>2</td>
<td>Sept. 24, 1880</td>
<td>Chester county, Pa.</td>
<td>Small flies</td>
</tr>
</tbody>
</table>

465. *Empidonax acadicus* (Gmel.).

Acadian Flycatcher.

**Description.**

The upper parts, with sides of the head and neck, olive-green, the crown very little if any darker; a yellowish-white ring around the eye; the sides of the body under the wings like the back, but fainter olive, a tinge of the same across the breast; the chin, throat, and middle of the belly white; the abdomen, lower tail and wing coverts, and sides of the body not covered by the wings, pale greenish-yellow; edges of the first primary, secondaries, and tertials margined with dull yellowish-white, most broadly on the latter; two transverse bands of pale-yellowish across the wings, formed by the tips of the secondary and primary coverts, succeeded by a brown one; tail light-brown, margined externally like the back; upper mandible light-brown above, pale-yellow beneath. In autumn the lower parts are more yellow; iris brown.

Length about 6 inches; extent about 9 inches.

*Hab.*—Eastern United States, chiefly southward, west to the plains, south to Cuba and Costa Rica.

For a period of about five months, or from early in May until late in September, the Acadian Flycatcher is a common resident in Pennsylvania, frequenting chiefly woodlands. This species is somewhat shy and difficult to approach, and like the Cuckoo or Yellow-breasted Chat, is oftener heard than seen. The shallow, saucer-shaped and loosely-made nest, is placed usually on a drooping and forked branch of a tree in the forest, a dog-wood, beech or hickory generally being selected. It is composed of blossoms, grasses, fine rootlets or fine pieces of bark. The majority of nests which I have found in the vicinity of West Chester, Pa., were built entirely of blossoms. The nests are rarely more than eight or ten feet from the ground, and are so open at the bottom that the eggs can readily be seen from below.
The eggs, usually four in number, are very similar in size, etc., to those of the Wood Pewee—they are creamy-white, spotted with reddish-brown. During the late summer and autumn months this species subsists to a limited extent on various kinds of berries.

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>May 10, 1879</td>
<td>Chester county, Pa.</td>
<td>Beetles</td>
</tr>
<tr>
<td>2</td>
<td>June 11, 1880</td>
<td>Chester county, Pa.</td>
<td>Large flies and larvae.</td>
</tr>
<tr>
<td>3</td>
<td>June 20, 1880</td>
<td>Chester county, Pa.</td>
<td>Various insects.</td>
</tr>
<tr>
<td>7</td>
<td>May 20, 1883</td>
<td>Chester county, Pa.</td>
<td>Beetles.</td>
</tr>
</tbody>
</table>

466a. Empidonax pusillus traillii (Aud.).

Traills' Flycatcher.

Description.

Upper parts dark olive-green, lighter under the wings, and duller and more tinged with ash on nape and sides of the neck; center of the crown feathers brown; a pale yellowish-white ring (in some specimens altogether white) round the eye; lateral feathers mixed with white; chin and throat white; the breast and sides of throat light-ash tinged with olive, its intensity varying in individuals, the former sometimes faintly tinged with olive; sides of the breast much like the back; middle of the belly nearly white; sides of the belly, abdomen, and the lower tail coverts sulphur-yellow; the quills and tail-feathers dark-brown, as dark (if not more so) as these parts in C. viridis; two olivaceous yellow-white bands on the wing, formed by the tips of the first and second coverts, succeeded by a brown one, the edge of the first primary and of secondaries and tertials a little lighter shade of the same; the outer edge of the tail feathers like the back, that of the lateral one rather lighter; bill above dark-brown, dull-brownish beneath; iris brown.

Length nearly 6 inches; extent about 8,75 inches.

Hab.—Eastern North America, breeding from the Middle States (southern Illinois and Missouri) northward; in winter south to Central America.

Traills' Flycatcher, a somewhat suspicious frequenter of thickets, near streams or ponds. I have found in Pennsylvania only as a rare spring and autumnal migrant. In the spring it arrives generally early in May; when returning to its winter resorts beyond the southern limits of the United States, it is again seen, but only for a few days, about the twentieth of September. In addition to insects, this species, it is stated, feeds also on different kinds of berries.

467. Empidonax minimus Baird.

Least Flycatcher.

Description.

Above olive-brown darker on the head, becoming paler on the rump and upper tail coverts; the middle of the back most strongly olivaceous; the nape (in some individuals) and sides of the head tinged with ash; a ring round the eye, and some of the lateral feathers white, the chin and throat white; the sides of the throat and across
the breast dull-ash, the color on the latter sometimes nearly obsolete; sides of the breast similar to the back, but of a lighter tint; middle of the belly very pale yellowish-white, turning to pale sulphur-yellow on the sides of the belly, abdomen, and lower tail coverts; wings brown two narrow white bands on wing, formed by the tips of the first and second coverts, succeeded by one of brown; the edge of the first primary, and of the secondaries and tertials, white; tail rather lighter brown, edged externally like the back feathers narrow, not acuminate, with the ends rather blunt. In autumn, the white parts are strongly tinted with yellow.

Length about 5½ inches; extent about 8 inches.

Hab.—Eastern North America, south in winter to Central America. Breeds from the Northern States northward.

From personal observation I am unable to give any information of this species. The following remarks relative to it are taken from Mr. Gentry’s interesting account in *Life Histories of Birds*.

This Flycatcher is rather rare in eastern Pennsylvania, arriving during the last week of April, and occasionally, as late as the first week of May. Its stay is rarely, if ever, prolonged beyond a week. At the expiration of this time, it seeks more northern latitudes, for the purposes of breeding. Unlike the species last described, it is far from being unnecessarily shy, and seemingly courts rather than shuns the society of man. It delights in open grounds, and will not hesitate to visit gardens in close proximity to houses, when in quest of food. The borders of small streams are also favorite resorting places. During its short stay, we have never noticed the slightest indication of the quarrelsome disposition which is so strikingly characteristic of *academicus* and in a less degree, of *trallii*. When foraging, our smaller species are permitted to approach without the least fear of being molested. Its habits of feeding, in some particulars, resemble those of *trallii*. It will perch upon a dead limb overhanging a stream of water, or in an open field or garden upon a weed or the fence, and awaits its prey with the most commendable patience. Its feeding is performed almost in silence, being now and then interrupted by a simple *twit*. The food consists mainly of beetles and diptera.

**Suborder OSCINES. Song Birds.**

**Family ALAUDIDÆ. Larks.**

**Genus OTOCORIS. Bonaparte.**

474. Octocoris alpestris (Linn.).

**Horned Lark.**

**Description.**

Above grayish-brown or pinkish-brown, the feathers of the back streaked with dusky. A broad band across the crown, extending backwards along the lateral tufts; a crescentic patch from the bill below the eye and along the side of the head; a jugular crescent, and the tail feathers, (except middle pair which are reddish brown) black. A frontal band extending over the eye, and under parts, with outer
Blue Jay.

1. Male; 2 and 3. Female.
edge of wings and tail white. Chin and throat yellow; more or less yellow on sides of head, and line over eye in some specimens yellowish. Bill and feet dark; iris brown. Length about 7½ inches; extent about 13½ inches. Female rather smaller.  

_Hab._—North-eastern North America, Greenland, and northern parts of the Old World; in winter south in the eastern United States to the Carolinas, Illinois, etc.  

The Horned Lark is a somewhat common winter resident in eastern Pennsylvania. It arrives in this region, from its northern breeding grounds early in November, and remains until about the last week in February. These birds during their residence with us, are usually found in small parties of twelve or twenty, occasionally, however, flocks of a hundred or more are seen. The Horned Larks frequent fields, or other similar open situations, where seeds of different weeds and grasses are procurable. When deep snows cover their favorite feeding grounds, they oftentimes are observed in public roads, throughout the country districts, searching for food; they also at times when driven by hunger visit barnyards.  

According to Nuttall their food consists of various kinds of seeds which remain on the grass and weeds, and the eggs and dormant larvæ of insects, when they fall in their way. In the stomachs of thirteen of these birds, taken in Chester and Delaware counties (Pa.), I found that eleven had fed on different kinds of small seeds; two, in addition to small seeds had fed on grain (particles of corn and oats).

**Family CORVIDÆ. Crows and Jays.**

**Subfamily GARRULINÆ. Jays.**

**Genus CYANOCITTA. Strickland.**

477 Cyanocitta cristata. (Linn.).

**Blue Jay.**

_Description._ (Plate 25.)

Crest about one-third longer than the bill; tail much graduated; general color above, light purplish-blue; wings and tail feathers ultramarine-blue; the secondaries and tertials, the greater wing coverts, and the exposed surface of the tail, sharply banded with black, and broadly tipped with white, except on the central tail feathers; beneath white; tinged with purplish-blue on the throat, and with bluish-brown on the sides; a black crescent on the forepart of the breast, the horns passing forward and connecting with a half-collar on the back of the neck; a narrow frontal line and loral region black; feathers on the base of the bill blue, like the crown. Female rather duller in color, and a little smaller; iris, brown. Bill, legs and feet black. Length about 12 inches; extent about 16½ inches.  

_Hab._—Eastern North America to the plains, and from the fur countries south to Florida and eastern Texas.

The Blue Jay is found in Pennsylvania, during all seasons of the year, but in the autumn and summer months, this species is much more plentiful than at other periods. This beautiful bird is an inhab...
itant chiefly of forests. During the breeding season the Jays associate in pairs, but in the late summer and autumn it is not unusual to find them in small flocks. I have seen, on several occasions, as many as twenty-five of these birds feeding in beech, chestnut or cedar trees. Both sexes engage in nest-building, which, in this latitude, is begun about the 20th of April. A nest which I saw the birds building, was completed in five days. The nest, a strong bulky structure, composed chiefly of twigs and fine roots, is placed commonly in a tree in the woods; sometimes, though rarely, in this locality, nests are built in low bushes. The eggs four to six in number, mostly five, are greenish or brownish-gray, spotted with brown. Length about 1.15 inches, width .84 of an inch. In Florida, the Blue Jay* nests some five or six weeks earlier than in this latitude, at least I suppose this to be the case, as I have seen these birds collecting sticks, etc., as early as the first week in March. The Blue Jay and also the "Scrub Jay" (Phe-
locoma floridana), are in bad repute among the Florida farmers, from the fact that they (particularly the "Scrub Jay") suck the eggs of chickens.

Audubon writing of the Blue Jay says:

"It robs every nest it can find, sucks the eggs like the Crow, or tears to pieces and devours the young birds. A friend once wounded a Grouse (Bonasa umbellus), and marked the direction which it followed, but had not proceeded two hundred yards in pursuit, when he heard something fluttering in the bushes, and found his bird belabored by two Blue Jays, who were picking out its eyes. The same person once put a Flying Squirrel into the cage of one of these birds, merely to preserve it for one night; but on looking into the cage about eleven o'clock next day, he found the mammal partly eaten. A Blue Jay at Charleston destroyed all the birds of an aviary. One after another had been killed, and the rats were supposed to have been the culprits, but no crevice could be seen large enough to admit one. Then the mice were accused, and war was waged against them, but still the birds continued to be killed, first the smaller, then the larger, until at length the Keywest Pigeons; when it was discovered that a Jay which had been raised in the aviary was the depredator. He was taken out, and placed in a cage, with a quantity of corn, flour and several small birds which he had just killed. The birds he soon devoured, but the flour he would not condescend to eat, and refusing every other kind of food, soon died. In the north, it is fond of ripe chestnuts, and in visiting the trees is sure to select the choicest. When these fail, it attacks the beech nuts, acorns, peas, apples and green corn. In Louisiana, they are so abundant as to prove a nuisance.

* The Florida Blue Jay, a local race technically styled Cyanocitta cristata florincola, is smaller and has less white on tips of secondary and tail feathers than C. cristata.
to the farmers, picking the newly planted corn, the peas, and the sweet potatoes, attacking every fruit tree, and even destroying the eggs of pigeons and domestic fowls. The planters are in the habit of occasionally soaking some corn in a solution of arsenic, and scattering the seeds over the ground, in consequence of which many Jays are found dead about the fields and gardens. The Thrush, the Mocking Bird and many others, although inferior in strength, never allow him to approach their nest with impunity; and the Jay, to be even with them, creeps silently to it in their absence, and devours their eggs and young whenever he finds an opportunity. I have seen one go its round from one nest to another every day, and suck the newly-laid eggs of the different birds in the neighborhood, with as much regularity and composure as a physician would call on his patients. Mr. Gentry says: "The Jay possesses one trait which detracts largely from its general good character. It has a propensity to destroy the eggs and young of small birds. The good which it accomplishes in the destruction of insects, outweighs tenfold the mischief which it commits, and should encourage us to desist our persecutions, and accord to it a most generous welcome. The depredations which it commits upon the garden or the farm, are too trivial to mention." To give our readers some idea of the good which this species has accomplished in some portions of the country, we cannot do better than to give substantially Dr. Kirtland's estimate of its character as given by Dr. Brewer in North American Birds. "When he first settled upon his farm, he observed that every wild cherry and apple was well nigh denuded of its leaves, by the larvae of *Cisicampa americana*. The evil was so widespread that all efforts to counteract it seemed utter hopelessness. "At this crisis the Jays made their appearance, and established colonies. The tent-caterpillar constituted a ready diet for their young, and was preyed upon so extensively, that in two or three years afterwards, not an individual was to be seen in the vicinage."

—*Gentry*.

In reference to the food of this species, Mr. E. A. Samuels* writes as follows: "Its food is more varied than that of almost any other bird that we have. In winter, the berries of the cedar, barberry or black-thorn, with the few eggs or cocoons of insects that it is able to find, constitute its chief sustenance. In early spring, the opening buds of shrubs, caterpillars, and other insects, afford it a meagre diet. Later in the spring, and through the greater part of summer, the eggs and young of the smaller birds constitute its chief food, varied by a few insects and early berries. Later in the summer, and in early autumn, berries, small fruits, grains, and a few insects, afford it a bountiful provender: and later in the autumn, when the frosts have

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* Our Northern and Eastern Birds, p. 365.
burst open the burrs of chestnuts and beechnuts, and exposed the brown, ripe fruit to view, these forms palatable and acceptable food, and a large share of these delicious nuts fall to the portion of these busy and garrulous birds.  

The food materials of Jays which I have examined are given in the following table:

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>October, 1880</td>
<td>Chester county, Pa.</td>
<td>Acorns.</td>
</tr>
<tr>
<td>2</td>
<td>October, 1880</td>
<td>Chester county, Pa.</td>
<td>Acorns.</td>
</tr>
<tr>
<td>3</td>
<td>October, 1880</td>
<td>Chester county, Pa.</td>
<td>Acorns.</td>
</tr>
<tr>
<td>4</td>
<td>October, 1880</td>
<td>Chester county, Pa.</td>
<td>Acorns.</td>
</tr>
<tr>
<td>5</td>
<td>October, 1880</td>
<td>New Castle, Delaware</td>
<td>Beetles and sand.</td>
</tr>
<tr>
<td>6</td>
<td>May 10, 1880</td>
<td>New Castle, Delaware</td>
<td>Corn.</td>
</tr>
<tr>
<td>7</td>
<td>May 10, 1880</td>
<td>New Castle, Delaware</td>
<td>Beetles and berries.</td>
</tr>
<tr>
<td>8</td>
<td>June 11, 1880</td>
<td>New Castle, Delaware</td>
<td>Indian corn and beeches.</td>
</tr>
<tr>
<td>9</td>
<td>Sept. 28, 1882</td>
<td>Chester county, Pa.</td>
<td>Indian corn and acorns.</td>
</tr>
<tr>
<td>10</td>
<td>Sept. 21, 1882</td>
<td>Chester county, Pa.</td>
<td>Vegetable matter, not determined.</td>
</tr>
<tr>
<td>13</td>
<td>May 25, 1883</td>
<td>Chester county, Pa.</td>
<td>Black colored beeches, sand and small shells.</td>
</tr>
<tr>
<td>14</td>
<td>May 25, 1883</td>
<td>Chester county, Pa.</td>
<td>&quot;June bugs&quot; and few other insects.</td>
</tr>
<tr>
<td>15</td>
<td>May 25, 1883</td>
<td>Chester county, Pa.</td>
<td>&quot;June bugs.&quot;</td>
</tr>
<tr>
<td>16</td>
<td>May 25, 1883</td>
<td>Chester county, Pa.</td>
<td>&quot;June bugs,&quot;</td>
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<tr>
<td>17</td>
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<td>Chester county, Pa.</td>
<td>&quot;June bugs.&quot;</td>
</tr>
<tr>
<td>18</td>
<td>May 25, 1883</td>
<td>Chester county, Pa.</td>
<td>&quot;June bugs.&quot;</td>
</tr>
<tr>
<td>19</td>
<td>May 25, 1883</td>
<td>Chester county, Pa.</td>
<td>&quot;June bugs.&quot;</td>
</tr>
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<td>20</td>
<td>May 25, 1883</td>
<td>Chester county, Pa.</td>
<td>&quot;June bugs.&quot;</td>
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<tr>
<td>21</td>
<td>May 12, 1883</td>
<td>Chester county, Pa.</td>
<td>Beetles.</td>
</tr>
<tr>
<td>22</td>
<td>May 12, 1883</td>
<td>Chester county, Pa.</td>
<td>Beetles.</td>
</tr>
<tr>
<td>23</td>
<td>May 8, 1883</td>
<td>Chester county, Pa.</td>
<td>Chieflty Indian corn, few beeches.</td>
</tr>
</tbody>
</table>

Subfamily Corvinæ. Crows.

Genus Corvus. Linneus.

488. Corvus americanus, Aud.

American Crow.

Description.

Bill, legs and feet black; iris brown; plumage glossy black with violet reflections, brightest on wing-coverts, tail and back; top of head frequently without metallic tint—young usually dull black. The male is larger than the female, and measures about 19 inches in length and 38 inches in extent.

Hab.—North America from the fur countries to Mexico.

The Crow, readily recognized by its large size and glossy black plumage, is a common resident in Pennsylvania during all months of the year. This species ranges throughout different portions of North America, but is found chiefly in the eastern United States. In this locality the Crow commences nest-building in the latter part of April; both sexes engage in this work which is completed in from three to five days. The nest, a very bulky structure, measuring about 20 inches
in diameter and 10 inches in depth, is made up of sticks, twigs, bark, leaves, etc. It is built usually in an oak, chestnut or other tree, in an unfrequented woods; nests are sometimes placed in low trees or bushes in cedar thickets. The eggs vary greatly in size and color; four to six in number; length about 1.65 by 1.19 inches in width; light-greenish, spotted-brown and black with purplish tints. The note of this well-known bird is a loud, harsh caw. During the early spring, fall and winter months this species is gregarious; flocks numbering from fifty to several hundred individuals are frequently observed scattered over the fields, meadows, along the highways, or in the woods searching for food. At night these birds resort in great numbers to favorite roosting-places, such as pine forests or cedar thickets. In the late spring and summer Crows are particularly destructive to young poultry, the eggs and young of small birds, and frequently nests of the domestic fowls, especially Guineas and Turkeys that often wander to a considerable distance from the farm house to lay, are also pillaged. These birds, as every farmer is well aware, commit more or less mischief in the cornfields.

Although the crow will rob the nest of any small bird which he can get at, the nests of the Robin, Wood Thrush, Catbird and Dove are the ones I have usually seen disturbed. The injury which the Crow occasions by his egg-sucking, bird-devouring habit, is, it is affirmed by eminent authorities, more than compensated for by the large numbers of noxious insects and mammals which he devours. Twelve of these birds taken in winter and examined by me had in their stomachs only vegetable materials, viz: Corn, oats, acorns, small seeds and berries. From such limited investigations I am unable to say whether the crow is a friend or an enemy to the farmer.

Audubon, writing of the food-habits of this species, says:

"The crow devours myriads of grubs every day of the year, that might lay waste the farmers' fields; it destroys quadrupeds innumerable, every one of which is an enemy to his poultry and his flocks. Why then should the farmer be so ungrateful, when he sees such services rendered to him by a providential friend, as to persecute that friend even to death?

"Omnivorous like the raven, the crow feeds on fruits, seeds and vegetables of almost every kind; it is equally fond of snakes, frogs, lizards and other small reptiles; it looks upon various species of worms, grubs and insects as dainties. and if hard pressed by hunger, it will alight upon and devour even putrid carrion. It is as fond of the eggs of other birds as is the Cuckoo, and, like the Titmouse, it will, during a paroxysm of anger, break in the skull of a weak or wounded bird. * * * The most remarkable feat of the Crow is the nicety with which it, like the Jay, pierces an egg with its bill in order to carry it
off and eat it with security. In this manner I have seen it steal, one after another, all the eggs of a Wild Turkey's nest. You will perceive, reader, that I endeavor to speak of the Crow with all due impartiality, not wishing by any means to conceal its faults, nor withholding my testimony to its merits, which are such as I can well assure the farmer, that were it not for its race, thousands of corn-stalks would every year fall prostrate in consequence of being cut over close to the ground by the destructive grubs which are called cut-worms."


**Fish Crow.**

**Description.**

Smaller than *C. americanus*. Glossy black with green and violet reflections; the gloss of head, neck and belly greenish; a small space at base of lower mandible, on each side bare?; bill and feet black; iris brown. Length, 14 to 16 inches; extent, about 32 inches.

*Hab.*—Atlantic coast, from Long Island to Florida.

The Fish Crow is a common and abundant resident, during all seasons, about the maritime districts of most and probably all of the Southern States. According to Audubon they migrate northward in April and ascend the Delaware river in Pennsylvania, nearly to its source, but return to the south at the approach of cold weather. Mr. J. Hoopes Matlack, informs me that some few years ago, he found a nest and eggs of this bird along the Brandywine creek, some two or three miles from the borough of West Chester. Mr. Gentry writing in 1877, says he has observed it during the past five or six years nesting along the water courses in the neighborhood of Philadelphia. This bird, like the preceding species, builds in trees. The nests and eggs of the Fish Crow, although smaller, cannot with absolute certainty be distinguished from those of the American Crow. The voice of the Fish Crow, according to Wilson, is very different from that of the Common Crow, being more hoarse and gutteral, uttered as if something had lodged in the throat. The common note of this bird, Audubon says, resembles the syllables *ha, hae* frequently repeated. In referring to the food of this species, Audubon writes substantially as follows: While searching for food, these birds hover at a moderate height over the water; but when they rise in the air, to amuse themselves, they often reach a great elevation. Like the Common Crow, the Fish Crow robs other birds of their eggs and young. I have observed this particularly on the Florida Keys, where they plundered the nests of Cormorants and White Ibises. They also prey upon the fiddler-crab, which they pursue and dig out of the muddy burrows into which they retire at the approach of danger. Small fry are easily secured with their claws as they fly close over the water's
Plate 26.

½ natural size.

1. Male; 2. Female.

**Wood-hird—**Bobolink
surface, from which they also pick up any sort of garbage suited to their appetite; sometimes they pursue and attack the small terns and gulls, to force them to disgorge the small fish that they have captured. They are able to capture live fish with considerable dexterity, but cannot feed on the wing; occasionally these birds alight on the backs of cattle, to search there for the larvae which frequently harbor in their skin. During the winter and spring, the Fish Crows are very fond of feeding on many kinds of berries. As spring advances, and the early fruits ripen the Fish Crows become fond of the mulberry, and select the choicest of the ripe figs, more especially when they are feeding their young. A dozen are often seen at a time, searching for the tree which has the best figs, and so troublesome do they become in the immediate vicinity of Charleston, that it is found necessary to station a man near a fig tree with a gun. They also eat pears, as well as various kinds of huckleberries.

**Family Icteridae. Blackbirds, Orioles, Etc.**

**Genus Dolichonyx. Swainson.**

494. *Dolichonyx oryzivorus* (Linnaeus).

**Bobolink. Reed Bird.**

**Description.** *(Plate 26 male and female in Spring).*

Bill short, stout, conical and much shorter than head; tail feathers sharp-pointed and stiff, quite like a woodpecker's; claws all very large; middle toe very long, measuring with claw 1.25 inches; bill dark, lighter at base of lower mandible; legs and feet (freshly killed specimens) brownish-yellow; iris brown. General color of male in spring and during breeding season (June and July) black; some of the black feathers are usually more or less edged with yellowish; the nape brownish-cream color; a patch on the side of the breast, the scapulars and rump white, shading into light ash on the upper tail covers and the back below the interscapular region, the outer primaries sharply margined with yellowish-white, the tertials less abruptly; the tail feathers margined at the tips with pale brownish ash. In autumn similar to the female. In the early autumn males are often seen with black feathers (sometimes though seldom in patches) on the breast.

*Female,* yellowish beneath; two stripes on the top of the head, and the upper parts throughout, except the back of the neck and rump, and including all the wing feathers generally, dark-brown, all edged with brownish-yellow; which becomes whiter nearer the tips of the quills; the sides sparsely streaked with dark-brown, and a similar stripe behind the eye; there is a superciliary and a median band of yellow on the head.

Length of male about 7.25 inches; extent about 12.25 inches. Female averages a little smaller.

**Hab.**—Eastern North America to the Great Plains; north to southern Canada; south in winter, to the West Indies and South America. Breeds from the Middle States northward, and winters south of the United States.

Bobolinks are known by a variety of common names. The terms "Bobolink" and "Meadow Wink" are applied in imitation of its voice;
the appellation "Skunk-blackbird" notes, as Dr. Cones remarks, the resemblance in color to the obnoxious quadruped. When the Bobolink has shed his showy dress of black, white and yellow, he frequents chiefly the reedy marshes of tide-rivers, and is known as "Reed-bird," in the Carolinas, Georgia and elsewhere in the South, they congregate in great numbers on the rice-fields, where they are called "Rice-birds." In the West Indies, these birds, from their excessive fatness, are known as "Butterbirds." "The name 'Ortolan,' applied by some gunners and restaurateurs to this bird, as well as to the Carolina Rail (Porzana carolina) is in either case a strange misnomer, the Ortolan being a fringilline bird of Europe, Emberiza hortulana, Linn."—Cones. Notwithstanding the fact that the Reed-bird is much larger than the English sparrow, many game dealers are in the habit of "bunching" the two species and disposing of them as "Reed-birds." The Reed-bird, however, can easily be recognized by the pointed tail feathers, long legs and claws; the tail feathers of the sparrow are not pointed, and the legs and claws are short. Even when both birds are picked and their legs and heads cut off, the Reed-bird can mostly be distinguished by its plump, yellow and oily body; the carcase of a fat sparrow is never uniformly yellow, but is dark colored, with narrow streaks of yellow. The Bobolinks arrive in Pennsylvania in flocks of from eight to twenty-five individuals, from May 5 to 20. The males generally make their appearance, about the fields, meadows and orchards, several days in advance of the females; they also appear to proceed much more leisurely, on their vernal migrations, than the females. Both sexes migrate chiefly at night when their "mellow metallic chink" may be heard both in spring and fall. The song of the Bobolink, is a peculiar, rapid jingling, indescribable medley of sounds, started first by one bird, quickly followed by another, and another, until the whole flock are engaged, when suddenly, without any apparent reason, they all at the same instance stop their vocal concert. When the male assumes the livery of the female, he appears to loose his vocal powers, and is only heard to utter a sharp clinking note, like that of the female. These birds, according to my experience, occur in eastern and southern Pennsylvania mainly as passing visitants,* during the spring and fall, when they are common. Mr. Edward Ricksecker, of Nazareth, Pa., however, informs me that the Bobolink breeds in Northampton county, of this State. The nests and eggs are described by Dr. Cones as follows: "The Bobolink makes a rude and flimsy nest of dried grass on the ground, and lays four or five eggs, 0.85 long by about 0.63 broad, dull bluish-white, sometimes brownish-white, spotted and blotched with dark chocolate or blackish-brown surface marks, and others of paler hue

*Nests of this species, it is said, have on one or two occasions been found in Chester county and young unable to fly have once been taken in Delaware county, Pa.
in the shell. The nests are cunningly hidden, and often further screened from threatened observation by ingenious devices of the parents." *From Birds of North west.* The food of these birds, during their spring sojourn in Pennsylvania is composed chiefly of different kinds of terrestrial insects, also the seeds of various weeds, grasses, etc. I have examined the stomach contents of twenty-seven Bobolinks (captured in Chester county, Pa., May, 1879–80–82 and 83), and found that eighteen had fed exclusively on beetles, larvae, ants and a few earth-worms; five, in addition to insects and larvae, showed small seeds, and particles of green vegetable materials, apparently leaves of plants; the four remaining birds revealed only small black and yellow colored seeds. After the breeding season, the Reed-birds (both sexes), about the middle of August, again make their appearance in our meadows and grain fields. At this time, although various forms of insects are abundant, they subsist almost entirely on a vegetable diet. They visit the corn fields, and in company with the English Sparrow, prey to a more or less extent on the corn; like the Sparrow they tear open the tops of the husk and eat the milky grain. Fields of Hungarian grass are resorted to and the seed eagerly devoured. The different seeds of weeds and grasses which grow so luxuriantly in the marshy swamps and meadows are likewise fed upon with avidity.

The following interesting remarks, relative to the Ricebirds, are taken from the annual report of the Agricultural Department, for the year 1886, by Dr. C. Hart Merriam, ornithologist, United States Department of Agriculture Washington, D. C.

"One of the most important industries of the Southern States, the cultivation of rice, is crippled and made precarious by the bi-annual attacks of birds. Many kinds of birds feed upon rice, but the bird which does more injury than all the rest is the Bobolink (Dolichonyx oryzivorus). * * * The name of "Ricebird" is familiar to most persons in the north, but the magnitude of its depredations is hardly known outside of the narrow belt of rice fields along the coasts of a few of the Southern States. Innumerable hosts of these birds visit the fields at the time of planting in spring, devouring the seed-grain before the fields are flooded, and again at harvest-time in the fall, when if maturing grain is 'in the milk,' they feed upon it to a ruinous extent. "To prevent total destruction of the crop during the periods of bird invasion, thousands of men and boys, called 'bird-minders,' are employed, hundreds of thousands of pounds of gunpowder are burned, and millions of birds are killed. Still the number of birds invading the rice fields each year seems in no way diminished, and the aggregate annual loss they occasion is about $2,000,000.
Extracts from a letter from Capt. William Miles Hazzard, of Annan
dale, S. C., one of the largest ricegrowers in the State.

"The Bobolinks make their appearance here during the latter part of April. At that season their plumage is white and black, and they sing merrily when at rest. Their flight is always at night. In the evening there are none. In the morning their appearance is heralded by the popping of whips and firing of musketry by the bird-minders in their efforts to keep the birds from pulling up the young rice. This warfare is kept up incessantly until about the 25th of May, when they suddenly disappear at night. Their next appearance is in a dark-yellow plumage, as the Ricebird. There is no song at this time, but instead a chirp, which means ruin to any rice found in milk. My plantation record will show that for the past ten years, except when prevented by stormy south or south-west winds, the Ricebirds have come punctually on the night of the 21st of August, apparently coming from seaward. All night their chirp can be heard passing over our summer homes on South Island, which island is situated six miles to the east of our rice plantations, in full view of the ocean. Curious to say, we have never seen this flight during the day. During the nights of August 21, 22, 23 and 24, millions of these birds make their appearance and settle in the rice fields. From the 21st of August to the 25th of September our every effort is to save the crop. Men, boys, and women are posted with guns and ammunition to every four or five acres, and shoot daily an average of about one quart of powder to the gun. This firing commences at first dawn of day and is kept up until sunset. After all this expense and trouble our loss of rice per acre seldom falls under five bushels, and if from any cause there is a check to the crop during the growth, which prevents the grain from being hard, but in milky condition, the destruction of such fields is complete, it not paying to cut and bring the rice out of the field. We have tried every plan to keep these pests off our crops at less expense and manual labor than we now incur, but have been unsuccessful. Our present mode is expensive, imperfect, and thoroughly unsatisfactory, yet it is the best we can do. I consider these birds as destructive to rice as the caterpillar is to cotton, with this difference, that these Ricebirds never fail to come. If the Government could devise some means to aid us in keeping off these birds it would render us great assistance. The loss by birds and the expense of minding them off in order to make anything renders the cultivation of rice a dangerous speculation. During the bird season we employ about one hundred bird-minders, who shoot from three to five kegs of powder daily, of twenty-five pounds each; add to this shot and caps, and you will have some idea what these birds costs one planter."
495. Molothrus ater (Bodd.).

Cowbird; Cow Bunting; Cow Blackbird.

Description.

Bill, short, stout, about two-thirds as long as head; tail nearly even or very slightly rounded; bill and feet black; iris brown: male with the head, neck and anterior half of breast deep brown, with slight purplish gloss; rest of body lustrous black, with a violet purple gloss, next to the brown, of steel blue on the back, and of green elsewhere. Female: Plain grayish-brown, lighter on the under parts. Young: Dull dusky-brown above, feathers edged with grayish, lower parts light brownish gray more or less streaked or spotted with darker markings. In the late summer and early autumn the young male can often be distinguished by the conspicuous black patches on the body. The female is smaller than the male. An adult male measures about 8 inches in length and $13\frac{1}{2}$ inches in extent.

Hab.—United States, from the Atlantic to the Pacific, north into southern British America, south, in winter, into Mexico.

This well known bird is a common summer resident in Pennsylvania. It arrives here late in March or early in April, and migrates southward about the middle of October. These polygamous birds, at all times, are gregarious. In the autumn these birds, frequently in company with the Crow Blackbirds and Robins, collect in large flocks in thickets, where they roost during the night. When "coming in" to these roosting places the flocks of Cowbirds do not scatter and alight in the surrounding trees and bushes, as the Crow Blackbirds are accustomed to do. They fly in a compact body directly to the thick bushy covert, where they remain, and unless disturbed are seldom heard to utter their harsh, rattling chuckle. The Cowbird builds no nest, nor does she attempt to rear her young; when desirous of laying, she quietly slips away from her companions, and finding a nest deposits her egg, and flies off to join her comrades feeding in the fields, or perhaps assembled in a treetop. Although the Cowbird generally selects the nests of small birds, she never gains access to the same by force, but pays her visit when the owners are absent. Sometimes birds whose homes have been invaded by these feathered parasites abandon their nests, mostly, however (particularly if one or more of their own eggs have been deposited), they submit to the imposition and rear the young Cowbirds. The Yellow Warbler, occasionally, will build a new nest about that in which the unwelcome egg is deposited. I have twice found broken eggs of Cowbirds on the ground near nests of the Yellow-breasted Chat, and on three occasions have discovered the shattered remains of these eggs directly beneath the pendant nests of Baltimore Orioles. It may be that these two species, sometimes at least, toss out the alien eggs. While it is mostly observed that the Cowbird lays in the nests of birds much smaller
than herself; she also, at times, drops eggs in nests of larger species. Dr. Cones mentions among the Cowbird’s larger foster-parents, the Wood Thrush, Yellow-breasted Chat, Kingbird and Towhee Bunting; on one occasion I saw two eggs in the nest of a Cardinal Grosbeak, and have twice seen eggs in nests of Wood Thrushes. Both nests of the species last named were, however, abandoned. From the fact that one Cowbird’s egg is usually seen in a nest, I judge that this bird only deposits a single egg in a nest. I, of course, am well aware that sometimes two, three or more Cowbird eggs may be discovered in a single nest, yet this is no evidence that these eggs were deposited by one bird. The number of eggs which this bird lays is unknown; they are white, speckled or blotched with brown; vary greatly in size, but average, probably, about .88 in length and .65 in width. In addition to the species previously named, I have found Cowbirds’ eggs or young in charge of the following named birds: Red and White Eyed Vireos, Ovenbird, Maryland Yellow-throat, Scarlet Tanager, Song and Chipping Sparrows, Indigobird, Worm-eating Warbler, Acadian Flycatcher and Baltimore Oriole. This species frequents ploughed fields, woods and pasture grounds, mingles freely among cattle and may often be observed perched on their backs. The food of these birds consists of seeds, grains, berries and insects. Although Cowbirds subsist to a small extent on wheat and rye, they never, I think, like the English Sparrow, attack these cereals when growing. The seeds of clover, timothy, fox-tailed grass, bitter-weed, etc., are included in their bill of fare; blackberries, huckleberries, cedar-berries, wild cherries and the summer grape (Vitis astivalis, Mz.) are eaten. They subsist to a very great extent, however, on insects; large numbers of grasshoppers, beetles, grubs and “worms” are eagerly devoured.

Genus AGELAIUS. Vieillot.

498. Agelaius phœniceus (Linn.).

Red-winged Blackbird; Swamp Blackbird.

Description. (Plate 27.)

Bill, legs and feet (dried specimens) black; iris brown; male larger than female.
Adult male.—General color uniform lustrous velvet-black, shoulders and lesser wing coverts of a bright crimson or vermilion-red; middle coverts brownish-yellow; in autumn and winter the back and scapular feathers, particularly, are conspicuously bordered with rusty. Florida specimens are smaller and more glossy than Pennsylvania specimens.

Adult female.—Brown above, the feathers edged or streaked with rufous-brown and yellowish; beneath whitish, streaked with brown; stripe on crown and over the eye strongly tinged with brownish-yellow; throat, chin, edge of wing, tinged with pink
Plate 27.

Red-winged Blackbird.
or yellowish, but mostly pink, in the spring and summer at least. The female differs greatly in appearance; the prevailing color above is brownish-black, all the feathers margined with reddish-brown; some of those on the back with brownish-yellow, which, on the medium and greater wing coverts, forms two bands; the under parts are dull-whitish, each feather broadly streaked centrally with dark-brown; the chin and throat yellowish; and but little streaked; there is a distinct whitish superciliary streak alongside the head, tinged anteriorly with brownish-yellow, and another less distinct in the medium line of the crown. The young male, at first very similar to the female, may soon be recognized by the black feathers appearing singly or in patches; immature males exhibit every possible condition of coloration between that of the old male and of the female.

Male measures about $9\frac{1}{2}$ inches in length and 15.25 inches in extent.

_Hab._—North America in general, from Great Slave Lake south to Costa Rica.

The Swamp or Red-winged Blackbird, as this well-known species is usually designated, is a common summer resident in Pennsylvania. Arrives in small flocks about March 20; males come a few days in advance of females; both sexes in company leave during the latter part of September. These birds, mainly terrestrial when feeding frequent principally meadows, fields and swamps. Nests, built early in May and also in July (two broods being sometimes raised in this locality), are placed in tussocks of grass or low bushes preferably along the borders of streams or ponds. Nest, bulky, composed chiefly of coarse grasses, lined with finer grass; those built on bushes are mostly very compact, others are generally loose and carelessly constructed. The eggs, four to six, a little less than an inch long, and not quite three-fourths of an inch broad, are light bluish, spotted, blotched and lined with black and purplish brown. Sometimes several females, with only one male will be found breeding in a swamp or field, at other times the male appears to devote his exclusive attention to one female. A dozen or more nests may frequently be seen in close proximity to each other, and their owners always appear on friendly terms; when these nesting-places are approached the Red-wings hover over your head and utter sharp piteous cries.

Although Swamp Blackbirds sometimes visit corn-fields during the planting season, and also again when the corn is in the milky state, the amount of grain which they take or injure is so small, that the farmer is seldom heard to utter a complaint against this species, which in the agricultural districts of Pennsylvania, receives, as it justly merits, universal protection.

The following twenty odd records will suffice to show the general nature of the food during the months of March, April and May:
The Red-wing, like the Crow Blackbird, destroys large numbers of "cut-worms." I have taken from the stomach of a single Swamp Blackbird as many as twenty-eight "cut-worms." In addition to the insects, etc., mentioned above, these birds also, during their residence with us, feed on earth worms, grasshoppers, crickets and plant-lice, and various larvae, so destructive at times in the field and garden. During the summer season, fruits of the blackberry, raspberry, wild strawberry, and wild cherry are eaten to a more or less extent. The young, while under parental care, are fed exclusively on an insect diet.

Dr. Coues, writing of this species, says: "From its general dispersion in low or wet thickets or fields, swamps and marshes, the blackbird collects in August and September in immense flocks, thronging the extensive tracts of wild oats and other aquatic plants in marshes and along water-courses, also visiting and doing much damage to grain-fields. Thousands are destroyed by boys and pot-hunters, but the hosts scarcely diminish, and every known artifice fails to protect the crops from invasion of the dusky hordes. At other seasons the 'maize-thief' is innocuous, if not positively beneficial, as it destroys its share of insects."—Coues' Key, p. 404. In the rice-growing States the Red-winged Blackbird ranks next to the Reed-bird in its ravages on the rice fields. Theo. S. Wilkinson, Myrtle-grove plantation, lower
Meadow Lark.
1. Males; 2. Female.
coast, Louisiana, writes as follows in the annual report (1886), issued by Ornithologist Dr. C. Hart Merriam, U. S. Dept. of Agr., Washington, D. C.: "The rice crop in Louisiana, from the time the rice is in the milk till harvest time and during harvesting, is much damaged by birds, principally the Red-shouldered Blackbird. Shooting is the only remedy thus far resorted to which is at all effective, and it is only partially so. I have known rice crops to be destroyed to the extent of over 50 per cent., which is a loss of say $13 per acre. While this is an extreme case, a damage and expense of from $5 to $10 per acre is very common.

The average yield per acre is about 30 bushels, worth now (March 12, 1886) about 80 cents per bushel."

Genus STURNELLA. Vieillot.

501.  

**Sturnella magna** (Linn.).

**Meadow Lark.**

*Description.*  
(Plate 28.)

Thick and stout body; legs large; toes reach beyond the tail; hind toe long, its claw twice as long as middle one; upper mandible (dried specimens) dark brown; lower bill lighter at base, dark towards the point; tarsus and feet light brownish; claws darker; iris brown. Feathers of head stiffish, tipped with bristles. Throat, sides of breast, spot from nostrils to eye, edge of wing and abdomen bright yellow; breast with a large black crescent, the horns of which go half way up side of neck; the feathers above dark brown; exposed portions of wings and tail with transverse dark-brown bars which on the middle tail feathers are confluent along the shaft; strong shade of bluish ash on lesser wing coverts; several lateral tail feathers partly white; sides, under tail coverts and tibiae pale reddish brown, streaked with blackish; a light stripe extends from base of upper mandible over crown; and a similar one over sides of top of head; a faint black streak above the eye, and a brood over behind it. Sexes alike but female usually duller than male. Birds in the autumn have black breast spot more or less obscured with grayish or brownish. Southern birds are smaller than Northern. Male, length about 10½ inches; extent about 16½ inches. The female is smaller.

*Hab.*—Eastern United States, and southern Canada to the Plains.

The Meadow Lark occurs in Pennsylvania during all months of the year, but in the spring, summer, and particularly in the autumn, is much more common than throughout the dreary months of winter. These birds are gregarious, at least they generally, when not engaged in breeding are to be found in small flocks, which wander about from place to place, and only discontinue this nomadic life when they engage in housekeeping. These well-known rovers, rendered so conspicuous by their yellow shirts and black bosoms, collect usually in parties of from twelve to thirty individuals; in the fall, however, it is not uncommon to find a hundred, and sometimes more, of these birds scattered about a field or meadow. Meadow Larks—generally quite shy and difficult of approach—frequent at all seasons, principally
grassy fields and meadows, but during the winter when deep snows cover their common feeding grounds, they often visit the barnyards, and, if not molested will become rather tame. They also, at these periods of snow inundation, assemble in the public highways and glean a scanty subsistence from the droppings of horses. Although Larks frequently alight on trees, they never, I think, are seen to feed in such places, their food is collected from the ground. In spring the flocks break up and these birds are observed singly or in pairs. Nest-building, in this latitude, is begun late in April or early in May. Both sexes engage in constructing their nest, composed of dried grass, placed on the ground, and most ingeniously concealed in a thick tuft of grass. The nests are built in meadows and grass fields, and frequently, though not always rest in a concavity of the earth.

The oval, white eggs, usually five in number, are spotted with reddish-brown; they vary considerably in size, but average about 1.16 inches long by .50 of an inch wide. Their food consists of various forms of insects, among which may be mentioned beetles, grasshoppers, larva, earthworms, ants, etc. The Lark, like the Red-winged Blackbird, is fond of "cut-worms," he also subsists on the seeds of various grasses, weeds, etc., and according to Mr. Gentry they sometimes feed on wild cherries, wild strawberries and blackberries. Although this species will sometimes eat the grains of wheat, oats, rye or particles of corn which they find scattered on the ground in fields or other places, they rarely disturb these cereals when growing, and never commit in grain fields any depredations at or about the season of harvest. Seventeen Meadow Larks, which I captured (March and April, 1885), in the open pine woods of Florida, were found to have fed only on insects, chiefly beetles. In December, 1886, I killed seven of these birds in Chester county, Pa., their stomachs were all gorged with grasshoppers. In the Carolinas, Audubon says, many planters agree in denouncing the Lark as a depredator, "alleging that it scratches up oat seeds, when sown early in spring, and is fond of plucking up the young corn, wheat, rye or rice."

**Genus Icterus.** Brisson.

506. *Icterus spurius* (Linn.).

*Orchard Oriole.*

**Description.**

Bill slender, very acute and somewhat decurved; bill and feet bluish black; iris brown. *Adult male*—Head and neck all round, upper portion of breast and back, scapulars, tail and wings (except middle and lesser coverts, which are chestnut) deep black with slight gloss, particularly about head and throat; lateral tail feathers with white tips. Rest of under parts, lower part of back, upper tail coverts dark chestnut brown, deepest on breast; greater wing coverts black, edged with white,
forming a wing-bar; secondaries and sometimes primaries, edged with whitish or pale chestnut. Adult female—Above yellowish olive, darkest on back, clearest on head, tail and rump; below light olive yellow; wings dusky, with two bars of white. Young male in late summer and autumn similar to female, though somewhat larger. I have never seen young males in spring without some black feathers on throat or lateral space, or some chestnut colored feathers, and I have taken young males when just able to fly with a few black feathers on chin and throat—Warren. Young male in spring—Similar to female, but with face and throat black. From this last described condition males are found in all stages until the full adult plumage is assumed. The chestnut and black appears in streaks and patches. A young male (nine months old) now before me, is in full adult plumage, with the following exceptions: Occiput and crown with a few dark yellowish feathers; feathers of lower hind neck and inter-scapular region deep black but edged with rusty; a few yellow feathers mixed with the light chestnut of abdomen; sides slightly tinged with yellowish which is generally on tips of chestnut feathers; edge of wing yellow and chestnut; middle coverts of one wing margined with greenish yellow, on the other wing these feathers same as in adult; greater coverts (both wings) edged with pale chestnut—Warren. Length, about 7 inches; extent, about 10 inches; female trifle smaller.

Hab.—United States, west to the plains, south, in winter, to Panama.

The Orchard Oriole, as its vernacular name would indicate, is a common inhabitant of orchards, particularly apple orchards.

Late in April or early in May, usually a few days after the shrill notes of the Baltimore Oriole have been heard, the subject of this present sketch arrives from his winter retreats in tropical America. This species appears to arrive singly or in pairs, the males come at least two or three days before the females. The Orchard Oriole is of a rather shy disposition, and although he is a common frequenter of the fruit and shade trees—both in town and country—he prefers to shelter his body in the thickest portion of the leafy branches, from which his peculiar—somewhat harsh and rattling though not unmusical—notes are frequently heard when the vivacious little minstrel is entirely hidden from view. Sometimes, however, he will, like the Indigobird or Brown Thrush, perch on the topmost limbs and sing with the greatest energy. As soon as the young are hatched his rapid and confused song ceases. The firm and somewhat long-cup-shaped nest, constructed of fine green-grass stems most beautifully interwoven and lined on the bottom with downy substances, is usually placed among the upright twigs of an apple, pear or maple limb. When such a sight is selected the nest is not penisle; on two occasions, however, I have found nests which were suspended from small bifurcated branches. The nests before the eggs are hatched have an odor similar to that of new hay. The eggs, mostly five, are bluish-white, indistinctly dotted with bluish-gray, and conspicuously spotted (sometimes lined) with brown and black. They measure about .56 by .58. In the late summer, preparatory to migrating south, these birds collect in flocks* of from fifteen to thirty, seldom more, and are frequently

*These flocks, I think, are composed entirely of young of the first year.
to be seen flitting through the bushes and trees along the roadside or about the borders of woods and clearings.

The food of this species consists chiefly of insects. They destroy great quantities of caterpillars, as well as other destructive larvae. Immense numbers of noxious beetles, numerous plant-lice, many spiders and flies are captured during their foraging expeditions in the orchard, field and garden. "Rose-slugs," "cabbage-worms" and grasshoppers are eagerly devoured by Orchard Orioles. They subsist to a small extent on soft fruits (strawberries, mulberries and raspberries) when the same are in season, and occasionally feed on apple and pear blossoms, their depredations, however, in these directions are very unimportant. At a meeting of the Philadelphia Academy of Natural Sciences, held June 2, 1874, Mr. Thomas Meehan, Botanist of the State Board of Agriculture, stated, "that he was not familiar with latest knowledge in ornithology, that not being a special study with him; but if Wilson's Ornithology contained all that was known of the habits of the Orchard Oriole, he might say that the bird did not confine itself solely to insect food. He had on his grounds a large specimen of the Staphylea trifolia, which, when in bloom, was a favorite resort with bumblebees and Humming-birds, and the Oriole took its share of honey from the flowers as well. It did not rest on the wing as the Hummingbird did, but sought a lower branch from which it could leisurely extract the sweets from the flowers above. He had thought it possible that the bird was in search of insects among the flowers, but a careful examination proved otherwise."—From Gentry's Life Histories of Birds.

<table>
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<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
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<tr>
<td>2</td>
<td>May 15, 1880</td>
<td>Chester county, Pa.</td>
<td>Small &quot;worms&quot; and beetles.</td>
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<td>4</td>
<td>May 17, 1880</td>
<td>Chester county, Pa.</td>
<td>Vegetable matter (not determined).</td>
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<td>6</td>
<td>May 6, 1881</td>
<td>Chester county, Pa.</td>
<td>Beetles and few small seeds.</td>
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<td>7</td>
<td>May 8, 1883</td>
<td>Chester county, Pa.</td>
<td>Caterpillars and beetles.</td>
</tr>
<tr>
<td>8</td>
<td>May 13, 1883</td>
<td>Chester county, Pa.</td>
<td>Small green worms and beetles.</td>
</tr>
<tr>
<td>9</td>
<td>May 17, 1883</td>
<td>Chester county, Pa.</td>
<td>Beetles and larvae.</td>
</tr>
<tr>
<td>10</td>
<td>May 17, 1883</td>
<td>Chester county, Pa.</td>
<td>Numerous small green-colored beetles.</td>
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<td>11</td>
<td>May 21, 1883</td>
<td>Chester county, Pa.</td>
<td>Caterpillar, beetles and some little vegetable matter.</td>
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<tr>
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<td>June 10, 1880</td>
<td>Newark, Delaware.</td>
<td>Beetles and flies.</td>
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<td>13</td>
<td>June 1, 1883</td>
<td>Chester county, Pa.</td>
<td>Caterpillar and vegetable matter.</td>
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<td>June 4, 1884</td>
<td>Chester county, Pa.</td>
<td>Small worms and beetles.</td>
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<td>15</td>
<td>June 7, 1884</td>
<td>Chester county, Pa.</td>
<td>Caterpillars, small green beetles and other insects.</td>
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* American Bladder-nut.
Baltimore Oriole, or Hang nest.
1. Male Adult. 2. Young Male; 3. Female.
507. Icterus galbula (Linn.)

Baltimore Oriole; Hangingbird.

(Plate 29.)

The adults and young vary greatly in plumage. The adult female and young male frequently can only be distinguished by dissection.

Length about 8 inches; extent about 12½ inches; female smaller.

Hab.—Eastern United States; west nearly to the Rocky Mountains.

The Baltimore Oriole is quite plentifully distributed throughout Pennsylvania as a summer resident. This well-known and beautiful species winters, it is stated, in Cuba, Mexico and Central America, and in the spring migrates northward, arriving in this latitude from April 25 to May 1. The males come mostly a few days in advance of the females, and appear usually in parties of five or eight, sometimes, though rarely, flocks of fifteen or twenty individuals are observed. These birds at first, and particularly if several should be together, are generally found frequenting forests; especially do they delight in gleaning among the branches of the hickory, maple and oak trees. The Baltimore Oriole, like the preceding species, is a common frequenter about the habitations of man. This bird is known by a variety of names, most of which have reference to his showy dress. The appellation "Baltimore," Dr. Coues writes, "is not from the city of that name, but from the title of Sir George Calvert, first baron of Baltimore; the colors of the bird being chosen for his livery, or resembling those of his coat-of-arms."—Key to N. A. Birds, p. 408. The terms Golden-robin, Firebird and Red-bird, are in allusion to the orange coloration, brightest on the breast, but varying in amount as well as brilliancy with age and season. He is also called Hang-nest and Hangingbird, from the fact that he, assisted by his mate, constructs a most elaborate pensile nest, so frequently seen swinging in the pendant branches of the drooping willow, the spreading elm, the stately poplar or the tall sycamore. Nest building, in this locality, is begun late in May or early in June. The male devotes himself, principally, to collecting the building materials, while upon the female, Mr. Gentry states, "devolves the duty of weaving the ingredients together, which is the labor of a week of almost steady application." The nest, composed of various materials, such as strings, pieces of lint, rags, plant-fibres, hair, etc., which are capable of being woven together, is always suspended from the pendulous branches of a tree either in an orchard, lawn or woods. The bottom of this swaying, cylindric and pouch-like abode is lined with different downy substances. The nests are generally so placed that they are sheltered by a bunch of leaves hanging from above, sometimes, however, when insufficient protection is thus furnished by nature, these weaver-birds, to shield their
hidden treasures from sun and rain, will construct a canopy of strings, etc., above the top of their house. The eggs, commonly five in number, are a little larger than those of the Orchard Oriole. They are whitish, dotted, blotched, spotted and sinuously lined with black and brown.

The Baltimore Oriole feeds chiefly on various forms of insect-life. The destructive apple-tree caterpillars, as well as other caterpillars, are destroyed in great quantities by these birds, who not only subsist to a considerable extent on these and other larvae, but likewise, Nuttall states, feed their young principally on soft caterpillars. The Orioles also capture large numbers of beetles, flies, spiders, etc., in the fruit and forest trees. They occasionally feed on the blossoms of the apple, pear, maple and other trees. A juicy cherry is relished, and different kinds of small berries are fed upon to a more or less extent.

Mr. Gentry in relation to this species says: "This Oriole deserves our favor and esteem for the numerous insects of an injurious character which it destroys, which thus compensate for the trifling injuries which it commits in the destruction of the succulent pea and the blossoms of the cherry and apple which it rifles of their stamens and ovaries."

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality.</th>
<th>Food-Materials.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>May 4, 1880</td>
<td>Chester county, Pa.,</td>
<td>Beetles and blossoms.</td>
</tr>
<tr>
<td>2</td>
<td>May 10, 1880</td>
<td>Chester county, Pa.,</td>
<td>Beetles and diptera.</td>
</tr>
<tr>
<td>3</td>
<td>May 6, 1880</td>
<td>Chester county, Pa.,</td>
<td>Vegetable matter, apparently blossoms.</td>
</tr>
<tr>
<td>4</td>
<td>May 6, 1880</td>
<td>Chester county, Pa.,</td>
<td>Beetles and vegetable matter.</td>
</tr>
<tr>
<td>5</td>
<td>May 10, 1880</td>
<td>Chester county, Pa.,</td>
<td>Beetles and vegetable matter.</td>
</tr>
<tr>
<td>6</td>
<td>May 11, 1880</td>
<td>Chester county, Pa.,</td>
<td>Caterpillars, fragments of beetles, small green worms and leaves.</td>
</tr>
<tr>
<td>7</td>
<td>June 6, 1880</td>
<td>New Castle Co., Del.,</td>
<td>Beetles.</td>
</tr>
<tr>
<td>8</td>
<td>June 11, 1880</td>
<td>New Castle Co., Del.,</td>
<td>Beetles and vegetable matter (blossoms).</td>
</tr>
<tr>
<td>9</td>
<td>May 19, 1882</td>
<td>Chester county, Pa.,</td>
<td>Larvae, diptera and beetles.*</td>
</tr>
<tr>
<td>10</td>
<td>May 19, 1882</td>
<td>Chester county, Pa.,</td>
<td>Larvae, diptera and beetles.*</td>
</tr>
<tr>
<td>11</td>
<td>May 19, 1882</td>
<td>Chester county, Pa.,</td>
<td>Beetles and flies.*</td>
</tr>
<tr>
<td>12</td>
<td>May 19, 1882</td>
<td>Chester county, Pa.,</td>
<td>Beetles and flies.*</td>
</tr>
<tr>
<td>13</td>
<td>May 7, 1883</td>
<td>Chester county, Pa.,</td>
<td>Larvae and beetles (on apple tree)</td>
</tr>
<tr>
<td>14</td>
<td>May 7, 1883</td>
<td>Chester county, Pa.,</td>
<td>Beetles and diptera.*</td>
</tr>
<tr>
<td>15</td>
<td>May 7, 1883</td>
<td>Chester county, Pa.,</td>
<td>Beetles and diptera.*</td>
</tr>
<tr>
<td>16</td>
<td>May 7, 1883</td>
<td>Chester county, Pa.,</td>
<td>Black beetles.*</td>
</tr>
<tr>
<td>17</td>
<td>May 13, 1883</td>
<td>Chester county, Pa.,</td>
<td>Small black beetles (on apple tree).</td>
</tr>
<tr>
<td>18</td>
<td>May 13, 1883</td>
<td>Chester county, Pa.,</td>
<td>Small black beetles (on apple tree).</td>
</tr>
<tr>
<td>19</td>
<td>May 14, 1883</td>
<td>Chester county, Pa.,</td>
<td>Larvae, beetles and traces of vegetable matter.*</td>
</tr>
<tr>
<td>20</td>
<td>May 14, 1883</td>
<td>Chester county, Pa.,</td>
<td>Larvae.*</td>
</tr>
<tr>
<td>21</td>
<td>May 14, 1883</td>
<td>Chester county, Pa.,</td>
<td>Beetles.*</td>
</tr>
<tr>
<td>22</td>
<td>May 14, 1883</td>
<td>Chester county, Pa.,</td>
<td>Larvae and beetles.*</td>
</tr>
<tr>
<td>23</td>
<td>May 21, 1883</td>
<td>Chester county, Pa.,</td>
<td>Larvae.</td>
</tr>
<tr>
<td>24</td>
<td>May 21, 1883</td>
<td>Chester county, Pa.,</td>
<td>Larvae.</td>
</tr>
<tr>
<td>25</td>
<td>May 25, 1883</td>
<td>Chester county, Pa.,</td>
<td>Beetles and larva.</td>
</tr>
<tr>
<td>26</td>
<td>June 1, 1883</td>
<td>Chester county, Pa.,</td>
<td>Beetles and larva.</td>
</tr>
</tbody>
</table>

* Feeding on Hickory trees.
Genus *Scolecophasus*. Swainson.

509. *Scolecophasus carolinus* (Mull.).

**Rusty Blackbird.**

**Description.**

Bill shorter than head and rather slender; legs and feet dark; iris pale-straw color; light line over eye.

*Male.*—General color black and somewhat glossy; feathers of upper part very rusty; lower parts rusty but lighter.

*Female.*—Brownish-slate color, more or less rusty. Length about 9¾ inches; extent about 15 inches; female little smaller.


The Rusty Grackle, the least numerous of all our Blackbirds and the only Blackbird occurring in Pennsylvania which does not breed in this Commonwealth, can readily be recognized from other species by its ferruginous plumage and yellow or light-colored eyes. The Rusty Blackbirds winter in the Southern States, passing southward as far as Florida, where I have observed them in February and March. When journeying to their breeding grounds, from the northern New England States to Labrador, etc., this species, according to my observation, migrates singly or in pairs, but never in flocks. These birds arrive in Pennsylvania, occasionally as early as March 1, and some seasons they are not observed before April 1; they usually, however, come about the middle of March, and frequent chiefly during their brief sojourn bushy and marshy situations generally. After having reared their young they again make their appearance in this State about the middle of October (sometimes as early as the first of October), and often are seen as late as the 20th of November. In the autumn the Rusty Blackbirds are observed in flocks of from eight to a dozen or fifteen (seldom more) individuals. At this time they inhabit the same localities that were resorted to in spring, and visit also corn and other grain fields; like the Cowbirds, that depart usually by the time their rusty-coated relatives arrive, they often frequent pasture grounds among the cattle. I have never seen these birds alight on the backs of cattle as Crows and Cowbirds sometimes are in the habit of doing. The only note I have ever heard this bird utter is a short and rather low *chuck*. The food of this species consists largely of beetles, grasshoppers, snails and earthworms. They feed to considerable extent on the seeds of various plants; different kinds of small berries are added to their *menu*; the scattered grains of wheat, rye or other cereals, which are to be found in the fields and meadows, are likewise eaten. When in corn-fields they sometimes perch on the shocks and pick from the ears a few grains, the damage, however, which they do in this way is but of little importance.

12 Birds.
Genus QUISCALUS. Vieillot.

511. Quisalcus quiscula (Linn.).

Purple Grackle; Common Crow Blackbird.

Description.

Bill stout, about as long as head; bill and feet black; iris yellow. In life may be recognized by the V-shaped tail, so conspicuous when flying. Head and neck all well defined steel-blue, the rest of the body with varied reflections of bronze, golden, green, copper and purple, the latter most conspicuous, especially on tail, the tail-coverts and wings.

Female.—Similar, but smaller and duller, with more green on the head.

Young.—Very similar to female. The eyes of young birds are brown.

Male.—Measures about 13 inches long and 18 inches in extent.

Hab.—Atlantic States, from Florida to Long Island.

It can safely be said, that of the numerous representatives of the Avian tribes abounding throughout this great Commonwealth, no species is more abundant or familiarly known than is the subject of this article. Early in the month of March this species arrives in Pennsylvania in large-sized flocks from their wintering resorts, viz: Virginia, the Carolinas, Georgia and other of the Southern States.

During mild winters, however, I have frequently observed them, in limited numbers, in this section (Chester county), also in the county of New Castle, Delaware; correctly speaking, however, we cannot properly regard these birds as winter residents of the Keystone State.

For a period of about one month following their vernal arrival they roam over the country, frequenting chiefly meadows, low lands and plowed fields. On the approach of night they collect in large numbers in some favorite roosting-place, commonly cedar or pine trees.

Nest-building is usually begun about the middle of April, although on two or three occasions I have found nests, with full complements of eggs, as early as the first week in April.

In colonies of from ten to twenty, seldom more, individuals they locate themselves for the purpose of nidification and reproduction. In this locality (Chester county) their favorite breeding resorts are apple orchards; the fruit and other trees commonly about the habitations of man. The nest is bulky and rudely constructed externally of rootlets, small twigs, dry plants, bits of corn-blades, etc., somewhat loosely but quite firmly bound together. Mud or muddied materials frequently enter into the construction of the nest, but this is not always the case; the interior is lined usually with fine grass; occasionally I have seen leaves and feathers constituting the internal lamina. The construction of the nest occupies about one week; both sexes engage themselves in its erection. It is built at the junction of two or more large-sized limbs or among the sprouts and matted twigs.
The nests vary somewhat in size, but the one now before me—about the average—gives the following dimensions: Height, 6½ inches; diameter, 7½ inches; depth of cavity, 3 inches. Gentry observes that the female begins to deposit her eggs, one ovum per day, the day following the completion of the nest. Such may be the case, but my observation has been that oviposition often does not take place until three or even five days subsequent to the completion of the nest. The complement of eggs is commonly spoken of as six; generally, however, I have found five, and regard this number as the full quota. The eggs are light greenish (sometimes pale rusty brown), spotted, blotched and lined with black and dark brown; they measure about 1½ inches long and .90 of an inch wide. The period of incubation is from fourteen to fifteen days. The parent birds evince marked solicitude for their nest and its contents.

It is evident from the writings of various authorities that the nesting sites of this species vary considerably. By Nuttall and others we are informed that they sometimes build in bushes. From the works of Audubon it is learned that in the South they build chiefly in hollow trees.

Wilson, in speaking of the Crow Blackbird, says: "A singular attachment frequently takes place between this bird and the Fish Hawk. The nest of the latter is of very large dimensions, often three or four feet in breadth and from four to five feet high, composed, externally, of large sticks or faggots, among the interstices of which, sometimes, three or four pairs of Crow Blackbirds will construct their nests while the Hawk is sitting or hatching above. Here each pursues the duties of incubation and of rearing their young, living in the greatest harmony and mutually watching and protecting each others' property from depredators."

I have found these birds building in common house ivy (Hedera helix) but never in bushes, and only on two occasions have I discovered their nests in hollow trees; both of these nests were built in apple trees. One was constructed in a limb about seven feet from the ground, the other was placed about twenty feet from the earth, neither of these differed materially in their make up from the average nest.

Food.

To our agriculturists this is a subject worthy of some consideration. It appears to be the prevailing opinion among many farmers—the majority, in fact—that Crow Blackbirds are in many ways detrimental, and in no particular are they beneficial. This belief, evidently handed down from one generation to another, is taken in its full meaning, widely at variance with positive fact. Among the first of our vernal migrants come the Crow Blackbirds in large flocks which disperse
themselves over the country, frequenting, principally, as previously stated, meadow lands and humid grounds in quest chiefly of insect diet, that is only occasionally diversified by a grain of corn, wheat or oats, and such seeds as may be found in seeking the hidden insect.

In the wake of the plowman, as he turns the crumbling earth, closely follow the argus-eyed Grackles. Ever on the alert to seize the wriggling worm, the agile beetle, or the glistening grub, and the numerous larva thrown out as each furrow is turned. Certainly, at this season our sable acquaintances are engaged only in that which will prove of utility to the cultivator when his crops are growing. We repeatedly hear of how the Blackbirds tear up and devour the young and growing corn. This, unquestionably, is sometimes the case, but I am confident that the destruction thus done is much exaggerated. I am aware that on more than one occasion I have seen the tender blades of corn lying on the ground where were actively at work Crow Blackbirds, a number of which were shot, and on post-mortem dissection their stomachs revealed almost entirely insects. Some four years ago I was visiting a friend who had thirty odd acres of corn (maize) planted. Quite a number of “blackies,” as he styled them, were plying themselves with great activity about the growing cereal. We shot thirty-one of these birds feeding in the corn field. Of this number nineteen showed only cut worms in their stomachs. The number of cut worms in each, of course, varied, but as many as twenty-two were taken from one stomach. In seven some corn was found, in connection with a very large excess of insects, to-wit: Beetles, earth worms, and cut worms. The remaining five showed chiefly beetles.

Comment is frequently made with regard to the Purple Grackles pillaging the cherry trees. To some extent this is true, but certainly the amount of fruit taken is small, far less than that injured by the well-known Cedar or Cherry Bird (Ampelis cedrorum.)

Strawberries, blackberries, and other fruits are fed upon, but to a very limited extent, by this species. The diet of the young birds, while under parental care, is almost exclusively insectivorous, consisting mainly of caterpillars and grubs.

It is a well-established fact that they are given to pillaging the eggs of other birds, especially the common Robin. Gentry, however, states that they destroy the young of birds, a fact, as yet, unobserved by the writer.

In referring to this species, Wilson very aptly remarks: “As some consolation to the industrious cultivator, I can assure him that were I placed in his situation, I should hesitate whether to consider these birds most as friends or enemies, as they are particularly destructive to almost all the noxious worms, grubs, and caterpillars that infest his fields, which, were they allowed to multiply unmolested, would
soon consume nine-tenths of all the productions of his labor, and desolate the country with the miseries of famine.”

In concluding, attention is called to several series of stomach examinations, made at different periods during the past five years, and from such work the reader can draw his own conclusions.

March—Twenty-nine examined. They showed chiefly insects and seed; in five corn was present, and in four wheat and oats were found. All of these grains, however, were in connection with an excess of insect food.

April—Thirty-three examined. They revealed chiefly insects, with but a small amount of vegetable matter.

May—Eighty-two examined. Almost entirely insects. cut-worms being especially frequent.

June—Forty-three examined. Showed generally insects, cut worms in abundance; fruits and berries present, but to very small extent.

July—Twenty-four examined. Showed mainly insects; berries present in limited amount.

August—Twenty-three examined. Showed chiefly insects, berries, and corn.

September—Eighteen examined. Showed insects, berries, corn and seeds.

October—During this month (1882), the writer made repeated visits to roosting-resorts, where these birds were collected in great number, and shot three hundred and seventy-eight, which were examined. Of this number the following is the result of examinations, in detail, of one hundred and eleven stomachs:

Thirty, corn and coleoptera (beetles); twenty-seven, corn only; fifteen, orthoptera (grasshoppers); eleven, corn and seeds; eleven, corn and orthoptera; seven, coleoptera; three, coleoptera and orthoptera; three, wheat and coleoptera; two, wheat and corn; one, wheat; one, diptera.

The remaining two hundred and sixty-seven birds were taken from the 10th to the 31st of the month, and their food was found to consist almost entirely of corn.

These examinations show that late in the fall, when insect food is scarce, corn is especially preyed upon by these birds, but during the previous periods of their residence with us, insects form a large portion of their diet.

In the West Chester (Pa.) Daily News, June 15, 1880, the following mention of the Crow Blackbird was made on the authority of David Euen, Esq., of Phoenixville, Pa.: “A day or two since, while Edward Entwisle and another resident (David Euen) of Phoenixville were walking along French creek in that town, they saw a common Crow Blackbird fly to the water’s edge and take therefrom a minnow,
which it swallowed." The fish-eating habit of the Crow Blackbird, in Pennsylvania, is of rare occurrence, and beyond the record above given by Mr. Euen there are no records, known to me, showing a piscivorous desire on the part of the species in this Commonwealth. At various times in the past eight years, I have examined the stomach contents of some seven hundred Crow Blackbirds, captured in Pennsylvania and Delaware, yet in this large number nothing was found to lead one to suspect a fish-eating habit. In Florida, the Grackle, according to my investigations, takes most kindly to a fish diet. Since the latter part of February, 1885, I have dissected the alimentary tracts of forty-four of this species, seventeen of which were secured in Florida, along the St. John’s river. These seventeen examples, obtained at various periods from March 1 to May 7, 1885, showed generally an insect-food preference—beetles, principally. Six of the number, however, revealed unmistakable evidences of having taken as nourishment fishes, as will be seen by this table:

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>March 3, 1885</td>
<td>Volusia county, Florida, Orange county, Florida</td>
<td>Five small fishes, beetles and grub, Three fishes, beetles and mulberries,</td>
</tr>
<tr>
<td>2</td>
<td>April 21, 1885</td>
<td>Orange county, Florida</td>
<td>Remains of fishes, beetles, small seeds, etc.</td>
</tr>
<tr>
<td>3</td>
<td>April 10, 1885</td>
<td>Orange county, Florida</td>
<td>Remains of fishes, beetle, oats and corn.</td>
</tr>
<tr>
<td>4</td>
<td>March 14, 1885</td>
<td>Volusia county, Florida</td>
<td>Craw-fish, minnow and different insects.</td>
</tr>
<tr>
<td>5</td>
<td>April 29, 1885</td>
<td>Volusia county, Florida</td>
<td>Remains of fishes and green-colored beetle.</td>
</tr>
<tr>
<td>6</td>
<td>May —, 1885</td>
<td>Volusia county, Florida</td>
<td></td>
</tr>
</tbody>
</table>

Of the forty birds above mentioned, twenty-seven were taken in Chester county, Pa., during May, June and July, feeding chiefly along the fertile banks of the Brandywine creek. In this series, however, not a single individual was found to possess a trace which would show in the northern birds a fish-food want. A Florida fisherman, during the early part of April, 1885, caught a number of “perch” which spoiled before a market could be found for them. The decaying carcases were tossed into the river, to float away or to be “gobbled up” by the voracious “catties.” Several of these defunct fishes lodged among the shell rocks lining the banks. Probably an hour after the cast-aways had lain along the riverside, three Crow Blackbirds were seen—quoting the phraseology of a “cracker” who was present at the time—“to jine de fish and feast ’emselves to plum fulness.” After the departure of the sable visitants, an inspection of the feeding-place revealed that the birds had picked out the eyes of seven, or all but one of the fishes, three of which were considerably torn about the abdominal regions. The mutilated condition of the belly muscles is
1. 2. **Purple Finch.** Male and Female.

3. **Chipping Sparrow.** Male. 4. **Song Sparrow.**
mainly attributed to the fact that the fish had been eviscerated before having been thrown away, hence these incised parts were more accessible to mandibular action than other and unbroken parts of the scaly anatomy. Certainly, there is no obvious reason why the abdominal and neighboring pectoral portions of a "perch" should be more palatable to the sprightly "White-eyed Jackdaw," as the native Floridians are accustomed to term the species.

**Family FRINGILLIDÆ. Finches, Sparrows, Etc.**

**Genus CARPODACUS.** Kaup.

517. *Carpodacus purpureus* (Gmel.).

*Purple Finch*: Crimson Finch.

*(Plate 30. Figs. 1 and 2.)*

Young very similar to female adult, but duller, some individuals slightly red. 
*Hab.*—Eastern North America, from the Atlantic coast to the Plains. Breeds from the Middle States northward.

The Crimson Finch, so-called from the crimson-colored dress of the adult male, is about as large as the common English Sparrow. This species, although said to breed occasionally in Pennsylvania, does not, according to my observations, occur in eastern Pennsylvania during the summer months. I have found these birds to be much more numerous in the spring than during the autumn and winter. They are found chiefly in forests, though it is not unusual to see them about houses, which they sometimes visit in company with other species of Sparrows. These birds are mostly observed in flocks; in winter, however, it is not uncommon to find them singly or in pairs. In the spring I have noticed that their brown and cone-shaped bills are usually covered with particles of buds or other succulent vegetable substances, on which they mainly subsist at this season; the feathers of the forehead and throat are also more or less discolored by the juices of their plant food. The food of the Crimson Finch is made up chiefly of vegetable materials, particularly the buds and blossoms of different forest, fruit and shade trees. Various kinds of small seeds, as well as berries and some few insects are also eaten. I have examined the stomach contents of twenty-one Purple Finches captured in Chester county, Pa., in the latter part of March, during April and from May 1 to 15. Sixteen of these birds had fed exclusively on buds and blossoms; three, small seeds; two, beetles and flies in addition to vegetable matter. In this locality the buds of the beech and maple trees constitute a very large proportion of their diet. Wilson writing of this species says: "This is a winter bird of passage, coming to us in large flocks from the north in September and October; great
numbers remaining with us in Pennsylvania during the whole winter, feeding on the seeds of the poplar, buttonwood, juniper, cedar and on those of many rank weeds that flourish in rich bottoms and along the margins of creeks. When the season is very severe, they proceed to the south as far at least as Georgia, returning north early in April. They now frequent the elm trees, feeding on the slender but sweet covering of the flowers; and, as soon as the cherries put out their blossoms, feed almost exclusively on the stamens of the flowers; afterwards, the apple blossoms are attacked in the same manner; and their depredations on these continue till they disappear, which is usually about the 10th or middle of May."

Genus LOXIA. LINNÆUS.

521. Loxia curvirostra minor (Brehm.).

American Crossbill.

Description.

Bill, feet and iris dark-brown; both mandibles sickle-shaped; points of upper and lower mandibles cross on the right and left. **Male**, dull-red; darkest across the back; wings and tail dark, blackish-brown. **Female**, dull, greenish-olive above each feather with a dusky center; rump and crown bright, greenish-yellow; beneath greenish; tinged, especially on the sides of body, with greenish-yellow. The immature birds exhibit all imaginable combinations of the colors of the male and female. They all agree in the entire absence of white wing bands. **Length** about 6 inches, extent about 11 inches.

**Hab.**—Northern North America, resident sparingly south in the eastern United States to Maryland and Tennessee and in the Alleghanies; irregularly abundant in winter; resident south in the Rocky Mountains to Colorado.

Two species and one geographical race,* of the genus *Loxia* are found in North America. Both species occur in Pennsylvania. Crossbills, as the name would indicate, can, by their bill alone, be known from all other of our feathered visitants. The American Crossbill and the Whitewing species (*Loxia leucoptera*, Gmel.) may be distinguished without difficulty, if you remember that the first-named never has white bands on the wings and the other species, whether in adult or immature plumage, has, as its specific name signifies, white wing marks. The Crossbills, inhabitants chiefly of pine forests, are frequently met with, during autumn and winter months, in various sections of this Commonwealth. The American Crossbill breeds in the mountainous regions of Pennsylvania; its nests and eggs, Mr. Samuel Ladd, of West Chester, informs me, have been found early in the month of March near Pittston, Pa., by Dr. Livingston Hartman.

*The Mexican Crossbill (*Loxia curvirostra stratlandii*, Ridgw.), found in Colorado, southern Arizona and the table lands of Mexico, is said to differ from the American Crossbill in being brighter in color and having a slightly larger bill; the lower mandible especially is heavier than that of *L. c. minor*. 
The nest of this bird is said to be built usually in a coniferous tree and composed of twigs, strips and fibres of bark, hair, small roots, grasses, etc.; "eggs 3-4, 0.75 by 0.57, pale-greenish, spotted and dotted about larger end with dark, purplish-brown, with lavender shell-markings."—Counes. The Whitewing Crossbill, from all the information I can obtain, does not build in this State, and as a winter visitant it is quite rare. Crossbills are nearly always to be found in flocks. "Their food consists principally of seeds contained in the cones of different species of the pine and fir. In the pine forests of Pennsylvania I saw them feeding on those of the white pine, the hemlock and the spruce, as well as on various kinds of fruits. Wherever an apple tree bore fruit, the Crossbills were sure to be on it, cutting the apples to pieces in order to get at the seeds, in the manner of our Parakeet of the south. Nothing can exceed the dexterity with which they extricate the seeds from the cones with their bill, the point of the upper mandible, which they employ as a hook, placing it at the base of the seed and drawing it up with a sudden jerk of the head. They frequently stand on one foot only and employ the other in conveying the food to their bill, in the manner of Parrots. They are fond of all saline matter."—Audubon.

Genus ACANTHIS. Bechstein.

528. ACANTHIS LINARIA (Lin.).

Redpoll. Description.

The small and very acute bill is yellow, a dusky streak extends backward from point of each mandible; legs, feet, claws and iris dark; tail deeply forked. Adult male. Above brownish-yellow, each feather streaked with dark-brown and margined with grayish; tail and wings dusky edged with whitish; two white-wing bars; a narrow fronted space, throat patch and bores dull black (feathers of frontal region sometimes whitish). Top of head red; breast and sides more or less colored with red; rump and upper tail coverts streaked with white and dusky, and in some specimens tinged with pinkish; lower parts generally white but sides and under tail coverts have dusky streaks. Female.—Very similar to male, but breast is usually of a yellowish tint and not red; top of head red but not as bright as in male. The red on top of head of young male is often of a coppery hue. Length about 5½ inches; extent about 9 inches.

Hab.—Northern portions of Northern Hemisphere, south irregularly in winter, in North America, to the Middle United States (Washington, D. C., Kansas, southeastern Oregon).

The Redpoll, a native of high northern latitudes, occurs in Pennsylvania only as an irregular and occasional winter visitant. Redpolls were exceedingly abundant in Eastern Pennsylvania in the winter of 1878-79, at which time they were observed about fields and houses in flocks of from 20 to 200 or more. Since the date above mentioned I have not seen this species in this locality. The note of
the Redpoll is very similar to that of American Goldfinch (*Spinus tristis*, Linn.). The food, during their sojourn with us, consists almost entirely of seeds of various grasses and weeds; the buds of different trees and some few insects are also eaten.

**Genus SPINUS.** Koch.

529. *Spinus tristis* (Linn.).

**American Goldfinch:** Salad-bird; Wild-canary; Yellow-bird; Thistle-bird.

**Description.** *(Plate 31. Fig. 1, adult male in summer.)*

Legs, feet and bill flesh color; iris brown. The male in early autumn loses his black cap, and his bright yellow upper and lower parts change to a dull brownish or greenish yellow, similar to the general plumage of the female. The male in winter may often be distinguished by the darker tail and wing feathers with their more conspicuous white or whitish markings.

*Female.*—No black cap; upper parts olivaceous; wings and tail dusky, marked with whitish as in male; lower parts whitish, more or less tinged with yellowish.

*Young.*—Like winter adults, but duller in color. Length about 5½ inches; extent about 9 inches.

*Hab.*—North America generally, breeding southward to the middle districts of the United States (to about the Potomac and Ohio rivers, Kansas and California), and wintering mostly south of the northern boundary of the United States.

The American Goldfinch is a common resident in Pennsylvania during all seasons. These birds are usually observed in flocks which move from one locality to another as their food diminishes. Even in the breeding season (June, July and August), it is not uncommon to find several families nesting within a short distance of each other. The males in summer frequently associate in small flocks. The nest, an exceedingly neat and beautiful cup-shaped structure, is composed externally of various pliant plant substances, and lined inside with downy materials chiefly of a vegetable character; it is placed usually in the crotch of a small tree in the orchard, garden, or along the roadside. I have mostly found their nests in the vicinity of West Chester, in small hickory and maple trees. Eggs commonly five, white, with faint bluish tint, .66 by .50. This Goldfinch, particularized by naturalists as *tristis*, from its low and plaintive notes, is known by a number of common names which have reference either to his color or the seeds, etc., of plants on which he feeds. These birds subsist mainly on vegetable materials, particularly different kinds of small seeds of grass, weeds, cultivated flowers, etc. The Salad-bird, like the Crimson Finch, is fond of feasting on the blossoms of apple, cherry and maple trees; the seeds of the dandelion, thistle and sunflower enter largely into their bill of fare. During the summer months, especially when they have young, the food consists principally of insects, such as small
1. American Goldfinch.
2. Pine Finch.
3. Fox Sparrow.

Males.
beetles, plant-llice, different species of flies and small grasshoppers; also small larvae.

533. Spinus pinus (Wils.).

Pine Siskin; Pine Finch.

(Plate 31. Fig. 2. Male.)

Bill very acute; bill, feet and iris brown; tail forked; above brownish-olive; beneath whitish, every feather streaked distinctly with dusky; concealed bases of tail feathers and quills, together with their inner edges, sulphur-yellow; outer edges of quills and tail feathers yellowish-green; two brownish-white bands on the wing; a bright yellow spot in some specimens back of posterior wing-band.

Young.—Similar to adults but more rusty-brown. Length about 4.80 inches; extent about 8.75 inches.

Hab.—North America generally, breeding mostly north of the United States and in the Rocky Mountain region; in winter south to the Gulf States and Mexico.

The Pine Finch is a common winter resident in Pennsylvania. It arrives in this region early in October and departs usually in April. These birds are found mostly in flocks of twenty to thirty each; sometimes solitary individuals or pairs are seen in company with Snow-birds and different species of Sparrows. As its specific name would indicate it delights especially to dwell in pine forests. They feed on small seeds, cones of different pines, small berries, some few insects, and also, to a small extent, on buds of maple and other trees.

Genus PLECTROPHENAX. Stejneger.

534. Plectrophenax nivalis (Linn.).

Snowflake; Snow Bunting.

Description.

Colors, in full plumage, entirely black and white; middle of back between scapulars, terminal half of primaries and tertiaries, and two innermost tail feathers, black; elsewhere pure-white; legs black at all seasons; bill black. In winter dress white beneath; the head and rump yellowish-brown, as also some blotches on the side of the breast; middle of back brown, streaked with black; white on wings and tail much more restricted; bill brownish yellow, darker at point; iris brown.

This species varies much in color; and the male in full plumage is seldom, if ever, seen within the limits of the United States.

Length, about 7 inches; extent, about 12½ inches; female smaller.

Hab.—Northern parts of the Northern Hemisphere, breeding in the Arctic regions; in North America, south in winter into the northern United States, irregularly to Georgia, southern Illinois and Kansas.

This beautiful bird, readily recognized by its white and rusty plumage occurs in Pennsylvania only as an occasional winter visitant. When found in this latitude Snow Buntings are usually seen in flocks, which sometimes number a hundred or over. The Snow Bunting during its stay in this region subsists mainly on seeds of various weeds, grasses, etc., which it finds in fields and meadows.
Genus **POOCÆTES.** Baird.

540. **Poocætes gramineus** (Gmel.).

**Vesper Sparrow; Grass Finch; Bay-winged Bunting.**

*(Plate 32, Fig. 1.)*

Length, about 6 inches; extent, about 10 inches.

*Hab.*—Eastern North America to the Plains, from Nova Scotia and Ontario southward; breeds from Virginia, Kentucky, and Missouri northward.

The Bay-winged Bunting is a common summer resident in Pennsylvania, and during the winter months is quite frequently to be met with in the southern portions of the State. This plainly attired songster may readily be recognized from other of the *Fringillidae* by the bright chestnut colored lesser-wing coverts and the white lateral tail feathers,—the latter being most conspicuous when the bird is flying. These birds inhabit chiefly dry pasture fields and meadows; they visit plowed grounds, and are frequently to be observed perched on fence-rails in fields or along the roadsides, and as Nuttall remarks, they are fond of dusting themselves and basking in dry places. Although the Vesper Sparrow is mainly terrestrial in habits, he may often be seen searching most industriously in apple trees for various forms of insect-life. These birds, when not engaged in breeding, are more or less gregarious and are often seen in company with other sparrows. The nest, composed of dried grasses, is built in a depression in the ground. The top of the nest is generally on a level with the hollow in which it rests; sometimes it is partly concealed by overhanging grasses; eggs, four to five, grayish-white or rusty brown, spotted, lined and blotched with brown and black; about .83 of an inch long and .60 of an inch wide.

Bay-winged Buntings subsist principally on seeds of grasses, weeds and other plants. During the summer they feed to a considerable extent on beetles, flies, spiders, earthworms, and various larvae; they likewise eat strawberries, mulberries, blackberries, and according to Mr. Gentry, the fruit of the wild choke-cherry. The buds of apple, beech and maple trees are also occasionally fed upon.

Genus **AMMODRAMUS.** Swainson.

542a. **Ammodramus sandwichensis savanna** (Wils.).

**Savanna Sparrow.**

Description.

Feathers of the upper parts generally with a central streak of blackish-brown; the streaks of the back with a slight rufous suffusion laterally; the feathers edged with gray, which is lightest on the scapulars; crown with a broad median stripe of yellowish-gray; a superciliary streak from the bill to the back of the head, eyelids, and
1. Vesper Sparrow.

2. Field Sparrow.

edge of the wing, yellow; a yellowish-white maxillary stripe curving behind the ear coverts, and margined above and below by brown; the lower margin is a series of thickly crowded spots on the sides of the throat, which are also found on the sides of the neck, across the upper part of the breast, and on the sides of the body; a few spots on the throat and chin; rest of under parts white; tarsus flesh color; feet brown; iris dark brown. Length about 5.25 inches; extent about 8.75.

Hab.—Eastern Province of North America, breeding from the northern United States to Labrador and Hudson's Bay Territory.

The Savanna Sparrow is a moderately abundant spring and fall migrant in eastern Pennsylvania. During mild winters it is not unusual to find this species in the southern portions of this State; ordinarily, however, these birds arrive in Pennsylvania about April 1, and in pairs or parties of five or six, may be found frequenting chiefly low, damp ground in open fields (along fences), meadows, and the borders of grassy ponds and pools. I have never observed this sparrow, in the spring, later than April 25. This bird is seldom seen to perch on trees or bushes, sometimes, though not often, he may be observed to alight on the lowermost rails of fences. When passing southward the Savanna Sparrows make their appearance in this locality about the middle of September. Their food consists principally of different kinds of small seeds, also small beetles, grasshoppers, spiders, ants and small mollusks.

546. Ammodramus savannarum passerinus (Wils.).

Grasshopper Sparrow; Yellow-winged Sparrow.

Description. (Plate 23, Fig. 3, male.)

Bill stout; legs flesh color; iris brown; tail double-rounded. Above brownish-rufous, margined narrowly and abruptly with ash color; reddest on lower part of back and rump; the feathers all abruptly black in the central portion; this color visible on the interscapular region, where the rufous is more restricted; crown blackish, with a central and superciliary stripe of yellowish tinged with brown, brightest in front of the eye; bend of the wing bright yellow; lesser coverts tinged with greenish-yellow; quills and tail feathers edged with whitish; tertaries much variegated; lower parts brownish-yellow; belly white or nearly so; feathers of upper breast and sides of body with absolutely darker centers.

Young.—Very similar to adult; upper part of breast streaked with dark brown, much more distinct than in the adult, and exhibiting a close resemblance to A. henslowii. Feathers of upper parts with less brownish rufous but more ashy edgings. Length about 5 inches; extent about 8 inches.

Hab.—Eastern United States and southern Canada to the plams, south to Florida, Cuba, Porto Rico and coast of Central America.

This bird is irregularly distributed. In the southern and southeastern portions of our State it is quite common from about May 1 to the middle of September. In Crawford and Erie counties, or in the extreme north-western part of this Commonwealth Mr. Geo. B. Sennett has found it to be a rare summer sojourner. It is reported to be a somewhat common summer resident in central Pennsylvania. The
name Grasshopper Sparrow is given because its note bears a very close resemblance to that of the grasshopper. In Chester and the neighboring counties, this bird is a common frequenter of dry sandy meadows, clover and grass fields, about which it may often be seen perched on the top of low weeds or on posts and fence rails. This is one of the Sparrows, to be seen in the summer time perched on the fences along the roadsides. I have never observed a bird of this species alight in a tree, and it rarely is seen to perch on bushes. The nest is built on the ground, and is usually concealed by a tuft of grass or a bunch of weeds. It is composed of dry grasses, horse hair and fine roots; eggs, 4 or 5, white with reddish-brown spots, .72 length by .61 breadth.

The Yellow-winged Sparrow, during its residence with us, feeds principally on different kinds of insect life; the small seeds of various plants, grasses and weeds are also taken. Beetles, grasshoppers, flies, earthworms, etc., are eaten in large numbers; the young, when in charge of the parents, are fed chiefly on spiders and larvae.

Genus ZONOTRICHIA. Swainson.

558. Zonotrichia albicollis (Gmel.).

White-throated Sparrow.

Description.

Two black stripes on the crown separated by a median one of white; a broad superciliary stripe from the base of the mandible to the occiput, yellow as far as the middle of the eye and white behind this; a broad black streak on the side of the head from behind the eye; chin white, abruptly defined against the dark ash of the sides of the head and upper part of the breast, fading into white on the belly, and margined by a narrow black maxillary line; edge of wing and axillaries yellow; lack and edges of secondaries rufous-brown, the former streaked with dark-brown; two narrow white bands across the wing coverts; iris brown; legs light-brown.

Female smaller, and the colors rather duller. Immature and winter specimens have the white chin-patch less abruptly defined; the white markings on the top and sides of the head tinged with brown.

Young.—Black stripes of head replaced by brown; median stripe dull whitish or brownish; line over eye brownish; little or no yellow over and in front of eye; throat indistinctly whitish; conspicuous dusky lines on breast and sides. Length about 7 inches; extent about 9½.

Hab.—Eastern North America, west to the plains, north to Labrador and the fur countries. Breeds in northern Michigan, northern New York and northern New England, and winters from the Middle States southward.

This beautiful Sparrow, one of our most common spring and fall migrants, is found usually in small flocks about woods, apple orchards, gardens and shrubbery. In the spring, particularly in April and the early part of May, the White-throats subsist largely, indeed chiefly, on the buds and blossoms of the apple, beech and maple trees. During their vernal migrations they may be observed, singly or in flocks,
devouring the tender growths of beech trees, along the edges of woods, particularly those in the neighborhood of running streams. While it is true that the buds and blossoms of apple, maple and some few other trees are eaten, I am quite certain that their favorite articles of diet, in the way of buds and blossoms, are those of the beech trees. The damage which these birds do to apple or other fruit trees is so trifling that the farmer or fruit grower should not be prejudiced against them. This species feeds also on various small seeds and different insects.

**Genus SPIZELLA. Bonaparte.**

559. *Spizella monticola* (Gmel.).

**Tree Sparrow.**

**Description.**

Middle of back with the feathers dark-brown centrally, then rufous, and edged with pale-fulvous (sometimes with whitish). Crown and upper part of nape continuous chestnut; the crown feathers are sometimes bordered with gray; a line of chestnut from behind the eye; sides of head and neck ashy; a broad light supercilialy band; beneath whitish, with a small circular blotch of brownish in the middle of the breast; edges of tail feathers, primary quills and two bands across the tips of the secondaries, white; tertiaries nearly black; edged externally with rufous, turning to white near the tips; upper bill dark brown, lower yellow; legs and eyes brown; toes black. Length about 6 inches; extent about 9½ inches.

**Hab.**—Eastern North America, westward to the plains, and from the Arctic ocean south; in winter, to the Carolinas, Kentucky and eastern Kansas. Breeds north of the United States, east of the Rocky Mountains.

This hardy Sparrow, the largest of the genus, is an abundant winter resident from late in October to about the middle of April. We find them in flocks, often in company with Snowbirds and other Sparrows, frequenting briery thickets, shrubbery, old fields where various weeds abound, and about hedge rows. Weedy spots near the edge of woods, or similar situations in or near briery places along the borders of small creeks are also favorite feeding grounds for them. The food of this species during its stay with us, consists almost entirely of the seeds of various weeds, grasses, etc.; cedar berries and wild grapes are also sometimes fed upon. I have never known the Tree Sparrow to disturb the buds or blossoms of any trees or bushes, as some writers assert, it is accustomed to do in the spring before migrating northward. The name of Tree Sparrow is given, not because the bird is always found in trees or bushes, but from its common habit of flying from the ground or thickets into trees when disturbed. This bird not only frequently nests on the ground, but likewise collects the greater portion of its food from the earth.
560. Spizella socialis (Wils.).

Chipping Sparrow.

**Description.** (Plate 39: Fig. 3, male.)

Rump, back of neck, and sides of neck and head, ash; interscapular region with black streaks, margined with pale-rufous; crown continuous and uniform chestnut; forehead black, separated in the middle by white; a white streak over the eye, and a black one from the base of the bill through and behind the eye; under parts unspotted whitish, tinged with ashy, especially across the upper breast; tail feathers and primaries edged with paler, not white; two narrow white bands across the wing coverts; bill dark brown or black; legs light brown; eyes brown.

**Young.**—Crown brownish, streaked with blackish, streak over eye yellowish white; breast and sides with dusky lines; bill light brown. Length about 5½ inches; extent about 8½ inches.

**Hab.**—Eastern North America, west to the Rocky Mountains, north to Great Slave Lake, and south to eastern Mexico.

The Chipping Sparrow, so named from its note, is an abundant summer resident from early in April to the latter part of October. In the spring these birds are generally seen singly or in pairs; in the late summer and fall the adults and young collect together and are to be found in flocks in company with other species, especially the Field and Vesper Sparrows. Chipping Sparrows are common frequenters about the habitations of man during the breeding season, but after rearing their young they repair to fields and bushes preparatory to migrating southward. The nest which is built in trees, or shrubbery, is made up of dried grasses, or other fine vegetable materials, and lined with horse hair. The bluish-green eggs, 4 or 5 in number, are marked, usually on the larger end with a ring of purplish and blackish-brown spots. They measure about .70 by .55 of an inch.

This species, in the early spring and autumn, subsists principally on the small seeds of different weeds and grasses; in the summer months both the adults and young feed mainly on an insect diet, small beetles, ants, flies, spiders and numerous small "worms" are eagerly devoured. Pieces of bread, cake, or small particles of meat, are also eaten with apparent relish.

563. Spizella pusilla (Wils.).

Field Sparrow.

**Description.** (Plate 33: Fig. 2, male.)

Bill light reddish-brown; legs pale brown; iris brown; crown dull chestnut; back somewhat similar, streaked with blackish; sides of head and neck (including a superciliary stripe) ashy; ear coverts rufous; beneath white, tinged with yellowish anteriorly; tail feathers and quills faintly edged with white; two white bands across the wing coverts. This species is about the size of the Chipping Sparrow, but is more rufous above; lacks the black forehead and eye-stripe; has chestnut ears instead of ash; the bill is reddish instead of blackish; lacks the clear ash of the rump; has the tail longer. It is much smaller than the Tree Sparrow which it approaches in colors but lacks the breast spot and predominance of white on the wings.
Plate 33. 

1, 2. English Sparrow. 3, 4. Snow Bird.

Male and Female. Male and Female.
Young.—Colors similar to adult but duller, breast and sides more or less streaked with dusky. Length about 5½ inches; extent about 8 inches.

Hab.—Eastern United States and southern Canada, west to the plains.

Common summer resident from April to November, and during mild winters a few of these birds are sometimes found with us. The Field Sparrow as its name signifies is a frequenter of fields; it delights especially to inhabit sandy weed-grown fields or other uncultivated areas where numerous small bushes particularly wild roses are growing. Its somewhat mournful, yet sweet and entertaining song may be heard at all times of the day. The nest is built on the ground or in low bushes, and is composed chiefly of grasses, leaves and hair; eggs, 4 or 5; white, spotted with reddish brown, measure about .70 by .50 of an inch. In the early spring, fall and winter months, this species feeds mainly on small seeds of various weeds and grasses. In summer the old and young subsist largely on different forms of insect life, such as small beetles, flies, ants, spiders, grasshoppers, crickets, earthworms, and different larvae. They also feed on raspberries, blackberries, and other similar soft fruits; it is not uncommon to see the bill and feathers about the head and neck of this bird more or less discolored by the juices of such fruit.

Genus JUNCO. Wagler.

567. Junco hyemalis (Linn.).

State-colored Snowbird.

Description. (Plate 33: Figs. 3 and 4, male and female.)

Everywhere of a grayish or dark ashy-black, deepest anteriorly; the middle of the breast behind and of the belly, the under tail coverts, and first and second external tail feathers, white; the third tail feather white; legs light brown; bill flesh-color, with black tip; iris brown. In the female and immature birds, taken in the fall and winter, the upper parts are more or less tinged with brownish. Length, about 6½ inches; extent, about 9½ inches.

Hab.—North America at large, but chiefly east of the Rocky Mountains, breeding from the higher parts of the Alleghenies and northern New York and northern New England northward. South in winter to the Gulf States.

The Snowbird is found generally throughout this State as a common winter resident from early in October until the latter part of April. It breeds sparingly in some sections of the northern and north-western parts of Pennsylvania. This well-known species can readily be recognized by its whitish bill, the dark colored head, neck, back and throat, its white under parts and the white lateral tail feathers, the latter being most conspicuous when the bird is flying. Although these birds are found in all places, they are most plentiful in bushes, along the banks of streams, old weed-grown fields, fence-rows and bushy tracts about the margins of woods. The nest, composed of dried 13 Birds.
grasses, roots, etc., lined with various soft materials, is placed on the
ground. The eggs, according to Dr. Cones, number "four or six,
white, sprinkled with reddish and darker brown dots, about .80 by .60." 
During the fall, winter and spring Snowbirds feed almost entirely on
seeds of divers weeds and grasses. Like the Chippy, this bird often
is seen about houses, ready to pick up crumbs, etc., which are thrown
out.

Genus PASSER. Brisson.

— Passer domesticus (Linn.).

English Sparrow; European House Sparrow.

Description. (Plate 32: Figs. 1 and 2, male and female.)

Male.—Bill black, legs, feet and eyes brown; above reddish brown, the back
streaked with black; crown and under parts brownish ash; chin and throat black;
white wing-bar; a large patch of chestnut on each side of head, commencing over
and back of eyes and spreading backwards to sides of neck; lesser wing covert
bright chestnut.

Female.—Duller colored and lacking the black on chin and throat; pale brown
stirpo back of eyes; bill dark brown, lower mandible yellowish at base.

Young.—Very similar to female but often recognizable by a few black patches on
throat and chin.

Hab.—Europe, etc. Introduced about twenty years ago into the United States,
where it has become naturalized in nearly all inhabited districts.

Abundant resident about buildings. Nests in bird boxes, holes in
trees, on branches of trees, in vines and in various places about houses
and other buildings. The nest is composed of dried grasses, pieces of
string, etc., lined with an abundance of feathers. The dull-whitish
eggs, from four to seven in number, are thickly spotted and streaked
with different shades of brown. They measure about .90 by .62 of an
inch. In this locality at least two, and probably more, broods are
reared in a season. The English Sparrow, as this species is commonly
known throughout the United States, is universally despised by
farmers, fruit-growers and naturalists because of its pernicious habits.
in the spring it feeds largely on the fruit buds of trees, bushes and
vines, chief among which may be mentioned the pear, apple, peach,
plum, cherry, currant and grape. Different garden products, such as
lettuce, beans, peas, cabbage, berries, pears, apples and grapes are
greedily fed upon. The Sparrow greatly damages the corn crop,
tearing open the husks, devouring the tender part of the ear and ex-
posing the remainder to the ravages of insects and to atmospheric
changes. It alights on fields of wheat, oats and barley, consuming
a large quantity, and, by swaying to and fro on the slender stalks and
flapping its wings, showers the remainder on the ground. In addition
to a much varied vegetable diet, the Sparrow has been known to kill
and devour the young of other small birds. Our native song and insectivorous birds, viz: the Robin, Bluebird, Wren, Chippy, Song Sparrow, Red-eyed Vireos and some few others, which were formerly plentiful residents in our lawns, parks and gardens, have rapidly and steadily diminished since the hosts of pugnacious Sparrows have appeared. This species is more or less gregarious at all seasons of the year. When not engaged in rearing their young they are always observed in flocks. In the late summer and autumn, they assemble in flocks of hundreds and daily repair to the wheat and corn fields in the vicinity of cities and towns, where they commit serious depredations, that are only checked by harvesting the crops. In 1883, the members of the West Chester Microscopical Society, and several farmers’ clubs of Chester, Delaware and Lancaster counties, recognizing the great injury which was being done by this feathered pest, passed resolutions and petitioned our Legislature, then in session, to repeal that portion of the act of Assembly which made it a misdemeanor to kill the English Sparrow. Through the prompt and energetic efforts of Senators A. D. Harlan, of Chester county, and Thomas V. Cooper, of Delaware county, the law was so amended that the killing of English Sparrows, and the destroying of their nests, eggs or young at all seasons of the year, is now legalized.

**Genus MELOSPIZA.** Baird.

**581. Melospiza fasciata** (Gmel.).

**Song Sparrow.**

**Description.** (Plate 30; Fig. 4, male.)

Bill, legs, feet and eyes brown; general tint of upper parts rufous-brown, streaked with dark-brown and ashy-gray; the crown is rufous, with a superciliary and median stripe of dull-gray, the former lighter; nearly white anteriorly, where it has a faint shade of yellow; each feather of the crown with a narrow streak of dark-brown; interscapulars dark-brown in the center, then rufous, then grayish on the margin; rump grayer than than upper tail coverts, both with obsolete dark streaks; there is a whitish maxillary stripe, bordered above and below by one of dark rufous-brown, with a similar one from behind the eye; the under parts are white; the breast and sides of body and throat streaked with dark-rufous, with a still darker center line; on the middle of the breast these marks are rather aggregated so as to form a spot; no distinct white on tail or wings. Young differ from the adults chiefly in having the under parts more or less yellowish. Length, about 6½ inches; extent, about 8½ inches.

**Hab.**—Eastern United States to the plains, breeding from Virginia and the northern portion of the Lake States northward.

Common resident, but never seen in flocks. Frequent in the summer, fence-rows, sh ubbery in swamps, fields and gardens. Although this species is found during the summer about bushy, briery and weed-grown places along streams, ponds, ditches, etc., it is most abundant in these last named localities during the winter. The
Birds of Pennsylvania.

appellation Song Sparrow is given because it is one of our most pleasing songsters. In the dreary winter months the melodious voice of this little minstrel is about the only bird-melody one is apt to hear. The nest, composed chiefly of grasses, leaves, weeds, etc., lined with fine grasses and weeds, is built on the ground or in a low bush. The eggs, mostly five, vary greatly both in size and markings; they are greenish or dull bluish white, variously spotted with different shades of brown, and measure about .82 by .60 of an inch. Two, and sometime three, broods are raised in a season. During the breeding season this species feeds to a more or less extent on different forms of insects; at other times they subsist principally on the seeds of grasses, weeds, etc.

Genus PASSERELLA. Swainson.

585. Passerella iliaca (Merr.).

Fox Sparrow.

Description. (Plate 31; Fig. 3, male.)

Upper mandible dark, lower chiefly yellow; legs and eyes brown. Readily distinguished by its rusty red or ferruginous colors, brightest on the wings, rump and tail; below white; upper part of breast, sides of throat and body with triangular rusty spots, darkest and most conspicuous on middle of upper part of chest; tips of middle and greater coverts forming two whitish wing bars. Length about 7¼ inches; extent about 11½.

Hab.—Eastern North America, west to the plains and Alaska (Valley of the Yukon to the Pacific), and from the Arctic coast south to the Gulf States. Breeds north of the United States; winters chiefly south of the Potomac and Ohio rivers.

The summer home of this large and rusty-coated Sparrow is in the dreary wilds of British America, from Labrador to Alaska. Their nests, we are reliably informed, have never been obtained in the United States, where these birds occur only during the spring, fall and winter months. With us this species is found as a common migrant in March, April, October and November. Occasionally only are small parties, or straggling birds, met with during mild winters in our southern counties. While sojourning here they may be observed in flocks, of from eight to twenty each, inhabiting humid grounds in bushy places along the roadside, the edges of woods, banks of streams, ponds, etc., where they diligently ply themselves in searching among the fallen leaves, dead wood and decaying grass for seeds and insects.

Genus PIPILO. Vieillot.

587. Pipilo erythrophthalmus (Linn.).

Towhee.

Description.

Male.—Upper parts generally, head, neck, throat and chest black; belly white; sides chestnut; under tail coverts similar to sides but paler; edges of outer six pri-
Cardinal Grosbeak.
1. Male; 2. Female.
Birds of Pennsylvania.

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mares with white at the base and on the middle of the outer web; inner two tertiares also edged externally with white; tail feathers black; outer web of first, with the ends of the first to the third white, decreasing from the exterior one. Bill black; legs brown; iris bright red. Female.—Smaller than male, with black replaced by brown; bill dusky brown; iris brownish or reddish amber. Young.—Head, neck, back and breast dull brownish yellow and black; below whitish with brownish tinge and in some specimens streaked with dusky; eyes brownish, yellowish or whitish. Length—Male, about 8½ inches; extent, about 11½.

Hab.—Eastern United States and southern Canada, west to the plains.

Common summer resident from April to November; rare winter resident in the southern counties, where a few individuals are occasionally seen. This somewhat shy and retiring bird inhabits thickets, clearings and woodland undergrowth; during migrations it also often visits lawns and gardens of towns and villages. When migrating southward these birds go in small detached flocks; in the spring they come singly or in pairs, the males arriving usually a few days in advance of the females. The rather bulky nest made up of leaves, fine twigs, grasses, etc., is generally built on the ground in a grass tuft or at the base of thick bushes, and so artfully is it hidden that it can oftentimes only be discovered by a most careful search. The 4 or 5 white and reddish spotted eggs measure each about .95 by .72 of an inch. The several terms, Towhee, Chewink, Juree and Shewink, by which this bird is known, are applied in imitation of it sharp, quick and rather petulant cry. From its terrestrial habits and conspicuous chestnut colored sides, has arisen the name of Ground Robin, which, although much less appropriate than any of those previously mentioned, is nevertheless the one by which it is best known in Eastern Pennsylvania. The Towhee, an indefatigable seed and insect hunter, spends most of his time on the ground, in thickets and brush piles, hunting among the withered leaves and dead twigs. Its rustling scratch is often the only indication one will have of its presence. In addition to various small seeds and insects, Chewinks feed, also, more or less, in the late summer, autumn and winter, on different kinds of small fruits and berries. Occasionally, it is said, they visit potato vines and other plants on which the destructive Colorado potato beetle feeds, and devour many of these troublesome "bugs."

Genus CARDINALIS. Bonaparte.

593. Cardinalis cardinalis (Linn.).

Cardinal.

Description. (Plate 34.)

Both sexes have long and conspicuous crests and brown eyes and legs. Adult male.—Bill, in life, bright red; body generally light vermillion red, darker on the upper parts; feathers of hind neck, back, rump and upper tail coverts edged with ashy; feathers in front of eyes, around base of bill, chin and throat deep black.
Birds of Pennsylvania.

**Female.**—Bill yellowish-red; elongated feathers on head and feathers of tail and wings red; above light-olive, tinged with yellowish on head; lower parts brownish-yellow, brightest on breast and gradually becoming darker on sides; feathers around bill and on throat indistinct ashy-black.

**Young.**—Bill blackish; colors duller; otherwise very similar to adult female. The young male soon attains his bright coat. Length about 9 inches; extent about 12.

**Hab.**—Eastern United States, north to New Jersey and the Ohio valley (casually farther) west to the plains.

The Cardinal or Winter Redbird, as it is here generally called, is a rather plentiful resident in the lower half of Pennsylvania, but in other sections of our State it is found only as a rare or occasional visitor. The showy dress, the fine and varied vocal powers of this shy and vivacious whistler, are such that it is one of our most common and entertaining cage birds. Although usually found inhabiting briery thickets and wooded districts in the vicinage of rivers, ponds and swampy localities, these birds, mostly in winter, when pressed by hunger, and also occasionally in summer when in a measure they lack their usual vigilance and shyness, come about our yards, houses and barns in search of food, or to cheer and enliven us with their bright presence and pleasing notes. In the southern States and elsewhere where Redbirds are much more numerous than in Pennsylvania, they at times assemble in large companies during the winter in swampy thickets; in midwinter, with us, parties of a dozen or fifteen individuals are sometimes observed in similar situations. This species is generally seen in pairs, though in the late summer and fall the adults and young of the year of a single family are frequently found together. The nest, a loosely-built structure composed of twigs, weed stems, fibres of grape vine bark, grasses or other vegetable materials, is built in bushes, vines and low trees. I have never found a nest situated over six or eight feet from the ground. The eggs, 2 to 4 in number (usually 3), are white or bluish white, spotted with different shades of brown. They measure about 1 inch in length by $\frac{3}{4}$ of an inch in width. Feeds on seeds of numerous plants, especially rank seeds and grasses; corn, wheat, rye and oats are also eaten. They feed more or less on insects, chief among which are beetles, grasshoppers, crickets, ants, flies and numerous larval forms. Fruits of the cedar and mulberry trees, also strawberries, blackberries, raspberries, wild grapes and other small fruits may be included among their favorite articles of diet. This bird, with its large and powerful bill, operated by strong muscles of its head, can readily break into fragments the hard grains of maize, as well as the large seeds of different kinds on which it subsists. Its known ability in this particular has earned for it, in some places, the local name of Red Corncracker.
Rose-breasted Grosbeak.
1. Males; 2. Female; 3. Young Male.
595. *Habia ludovici*ana (*Linn.*).

**Rose-breasted Grosbeak.**

*(Plate 35. Adults and young.)*

Length, about 8 inches; extent, about 13 inches.

*Hab.*—Eastern United States and southern Canada, west to the eastern border of the plains, in winter, to Cuba, Central America, and northern South America.

In eastern Pennsylvania the Rose-breasted Grosbeak, is found as a regular though usually, not a common visitant during migrations in May and September, when this species is mostly seen in small parties, of from five to a dozen each. In the spring while passing northward (they breed for the most part north of Pennsylvania), the males arrive nearly a week in advance of the females, but in the fall both sexes, according to my observation, migrate together. Mr. Benj. M. Everhart, of West Chester, says that twenty-five years ago this species was a rather common summer resident in Chester and Delaware counties, where he has repeatedly found their nests, eggs and young. In both of these districts the Rose-breast's are now rarely found in the summer time. Although these bright-colored and sweet-voiced songsters* have apparently abandoned their summering resorts, in our eastern districts, many of their number find a congenial summer abode in the north-western part of our State, particularly in Crawford and Erie counties, where, my highly esteemed friend, Mr. Geo. B. Sennett, assures me, these birds are regular and rather plentiful summer residents, nesting in low trees and bushes. The nest is a thin, flattened structure, made up of rootlets, small twigs and dried grasses; the dull greenish-white eggs, spotted with brown, are three or four in number and measure about 1 inch by \( \frac{3}{4} \) of an inch. These birds while sojourning here frequent chiefly groves and forests, apple orchards and gardens are also sometimes visited by them. It is said that in some sections of Crawford county where this species resides in summer, many farmers protect them because they are great destroyers of "Potato bugs." A gentleman residing, I think, near Meadville, stated at a recent meeting of our State Board, that he had often seen these birds, in small flocks about his potato-patch, eagerly devouring large numbers of these vexatious insects. Few, if any of our birds are known to feed regularly on the Colorado potato beetle, and if the Rose-breasted Grosbeak has developed a taste in this direction, it should justly rank

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*Two or three years ago, it is said, required before the males acquire their full beauty, and it is also stated that the adult males in the late summer and fall lose much of their black and become more or less streaked with brownish tints.*
as one of the best feathered friends of the farmer. My personal knowledge of the food-habits of this species is limited to examinations, made in May, 1882, when these birds were, to my great surprise, exceedingly abundant in the woods throughout various parts of Chester, Lancaster, Delaware and Philadelphia counties. All the birds examined by me were shot in woods, feeding mostly on hickory and beech trees, in the neighborhood of West Chester, Pa. May 11, six males, on hickory trees, food consisted entirely of blossoms. May 12, thirteen birds, eight males, three on hickory trees, others on beech trees. All showed blossoms; two contained blossoms of the hickory, with those of the beech; the remainder had all fed on beech blossoms, except three birds, which had in their gizzards small black seeds, and some few, flat grayish seeds. May 13, eleven birds, seven males, all contained blossoms of beech, in addition to which, two males revealed remains of beetles and one of them had also eaten a few flies. May 15, eleven birds, ten males, three taken on beech and maple trees had only fed on blossoms; the others were found, when first discovered, feeding on the ground in the woods, the stomach of one contained simply fragments of a beetle; the rest had eaten blossoms and small seeds. May 16, three males, food exclusively blossoms. May 17, four birds, three females, chiefly blossoms and small seeds, with few larvae, and fragments of beetles. May 19, two birds; male, beech blossoms; female had in her gizzard blossoms, remains of beetles, and several wasps. May 20, 23 to 27, inclusive, eleven birds, nine females; two males taken on the 20th had fed chiefly on beetles and a few flat cylindrical seeds; the remaining nine specimens were shot on various dates, the last being taken on the 27th, when they were found to be very scarce. An examination of their viscera showed that in addition to blossoms and small seeds, they all had fed to a small extent on insects, chiefly beetles and flies.

Genus PASSERINA. Vieillot.

598. Passerina cyanea (Linn.).

Indigo Bunting.

(Plate 36.)

Length, about 5\(\frac{1}{2}\) inches; extent, about 8\(\frac{1}{2}\) inches.

Hab. — Eastern United States, south in winter to Veragua.

Very abundant from May to October. When they first come, and also in the autumn before leaving, these birds are sometimes seen in small flocks. The males arrive a few days before the females, and in small parties often visit our gardens and orchards, where, in the
Indigo Bunting.

1, 2, 3. Males in different stages of Plumage; 4. Female.
spring, they are frequently to be observed gleaning insects, or devouring the apple-tree blossoms. These birds, although found in almost every locality, are most numerous in briery thickets, open woodland and in bushy places along fences and roadways. The nest, composed of leaves, dried grasses, etc., is built in low bushes. The eggs are four or five, bluish-white and unspotted; seldom are they pure white, and rarely do we find them spotted or thinly dotted with reddish brown, but whatever may be their coloration, they measure a little less than \( \frac{3}{4} \) of an inch long, and a trifle over a \( \frac{1}{2} \) wide. The female with her plain brown dress, not unlike some members of the human race when attired in "mother-hubbards" and calico gowns, always shy and retiring—seems even anxious to elude observation. The male, however, in his attractive and showy garb of iridescent blues, seemingly is conscious of his beauty, and appears eager to make his presence known. He perches on the tops of high bushes, on the dead twigs and limbs of tall trees, on the telegraph wires and fences, to sing his peculiarly vigorous and rapid song. The sharp chip of the female never, however, fails to quickly call to her side. This vain, noisy yet most devoted partner. Indigobirds feed chiefly on different kinds of small seeds; during the breeding season many insects are eaten. They subsist also to a small extent on apple and some few other blossoms; various kinds of small fruits and berries are not unpalatable to them.

**Family Tanagridæ. Tanagers.**

**Genus Piranga. Vieillot.**

608. _Piranga erythromelas_ Vieill.

_Scarlet Tanager._

(Plate 37).

Length about 7; extent, about 12; wing, about 3; tail, about 3 inches. Bill bluish or brownish yellow; legs and feet lead color; iris, brown.

_Hab._—Eastern United States, west to the plains, and north to Southern Canada. In winter the West Indies, Central America and northern South America.

The Scarlet Tanager, one of the most brilliant of our forest birds, is about the size of the common Bluebird. The wings and tail of the adult male are glossy black; body and other parts bright scarlet. The female is a greenish yellow color, with wing and tail feathers dark brown. This description applies to full plumaged adults as we find them in the spring and early summer. Both sexes are, however, subject to great variations in plumage, and particularly is this variation noticeable in the male birds. It is stated that in the autumn the male
loses his bright feathers and is found in a livery similar to that of the female. While I am not prepared to say that such a transition occurs during the "fall moult," I am inclined to believe that this change does take place. During the late summer and early autumn, or for a period of about six weeks before the Tanagers leave Pennsylvania, I have made repeated and most diligent search to find adult males in which the scarlet feathers predominated, as is invariably the case with the males in spring, but have failed. Although it is true I have seen two or three males early in August with a few scattered feathers or "patches" of scarlet, I have found the plumage of the males in August and September to be the same as that of the females, except that in the males certain of the long wing and tail feathers were black. The presence of these dark primaries or tail feathers will, it is my opinion, with rare exceptions, enable you to determine the sex.*

This species arrives in Pennsylvania sometimes, though rarely, as early as the last week in April; usually it comes about May 9. Tanagers, except when they pay occasional visits to cherry or mulberry trees, on the fruits of which they feed to a limited extent, are seldom found away from favorite retreats in the forests. The forests and groves, particularly oak groves, in which streams of running water are found, are the favorite resorts of this species. The nest, a loosely built structure, composed of twigs, roots or stems of various weeds, is usually placed on the horizontal limb of a small tree, preferably beech (Fagus), about ten or twenty feet from the ground. Eggs 3 to 5, mostly 4; pale greenish blue, spotted with different shades of brown; measure about .95 by .65. While the nests are nearly always built in the depths of the woods, I have observed they frequently are seen overhanging a cart-road or unfrequented path, when such a passage-way exists in the woods. I have often discovered the nests of this species, and notwithstanding the fact that neither the nests or contents were disturbed, have noticed that the birds would always follow me to the edge of the woods, and occasionally some distance beyond, uttering their peculiar chirp churr. When Tanagers thus absent themselves from the nests, it not unfrequently happens that the thieving and omnivorous Blue Jay robs them of their contents. Mr. B. M. Everhart has known instances where the Jays, after devouring the eggs or young Tanagers, have torn up the nests.

Tanagers, during the summer residence with us, feed principally on various forms of insects, and to a very small extent on fruits, such as cherries, strawberries, huckleberries, etc.

*The only proper way to determine sex is by dissection. This is true not only of the Tanager, but all other birds.
Scarlet Tanager.

1. Male; 2. Female.
<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>May 6, 1883</td>
<td>East Bradford, Pa.</td>
<td>Beeltes.*</td>
</tr>
<tr>
<td>2</td>
<td>May 7, 1883</td>
<td>East Bradford, Pa.</td>
<td>Beeltes.*</td>
</tr>
<tr>
<td>4</td>
<td>May 19, 1883</td>
<td>East Bradford, Pa.</td>
<td>Beeltes.*</td>
</tr>
<tr>
<td>5</td>
<td>May 19, 1883</td>
<td>East Bradford, Pa.</td>
<td>Beeltes.*</td>
</tr>
<tr>
<td>12</td>
<td>May 20, 1883</td>
<td>East Bradford, Pa.</td>
<td>Few flies and small worms (taken on cherry tree).</td>
</tr>
<tr>
<td>13</td>
<td>May 12, 1883</td>
<td>East Bradford, Pa.</td>
<td>Beeltes (taken on maple tree).</td>
</tr>
<tr>
<td>14</td>
<td>May 14, 1883</td>
<td>Chester county, Pa.</td>
<td>Beeltes, flies, and few small green worms (on oak tree).</td>
</tr>
<tr>
<td>15</td>
<td>May 14, 1883</td>
<td>Chester county, Pa.</td>
<td>Beeltes chiefly, with traces of other insects.*</td>
</tr>
<tr>
<td>16</td>
<td>May 14, 1883</td>
<td>Chester county, Pa.</td>
<td>Beeltes.*</td>
</tr>
<tr>
<td>17</td>
<td>May 14, 1883</td>
<td>Chester county, Pa.</td>
<td>Beeltes.*</td>
</tr>
<tr>
<td>18</td>
<td>May 14, 1883</td>
<td>Chester county, Pa.</td>
<td>Beeltes.*</td>
</tr>
<tr>
<td>20</td>
<td>May 23, 1883</td>
<td>Willistown, Pa.</td>
<td>Flies and beetles.*</td>
</tr>
<tr>
<td>21</td>
<td>May 23, 1883</td>
<td>Willistown, Pa.</td>
<td>Flies and beetles.*</td>
</tr>
<tr>
<td>22</td>
<td>May 7, 1883</td>
<td>Chester county, Pa.</td>
<td>Beeltes and flies.</td>
</tr>
<tr>
<td>24</td>
<td>June 4, 1884</td>
<td>Chester county, Pa.</td>
<td>Beeltes and other insects.</td>
</tr>
<tr>
<td>25</td>
<td>June 4, 1884</td>
<td>Chester county, Pa.</td>
<td>Unrecognizable insect mass.</td>
</tr>
<tr>
<td>26</td>
<td>June 14, 1884</td>
<td>Chester county, Pa.</td>
<td>Cherries.</td>
</tr>
<tr>
<td>28</td>
<td>June 17, 1884</td>
<td>Chester county, Pa.</td>
<td>Beeltes, flies and butterfly.</td>
</tr>
<tr>
<td>29</td>
<td>June 17, 1884</td>
<td>Chester county, Pa.</td>
<td>Beeltes and other insects.</td>
</tr>
</tbody>
</table>

*All taken on hickory trees.

May 18, 1882, I shot seven adult males feeding in oak (Quercus) and hickory (Carya) trees, and found all to have fed exclusively on coleopterous insects (beeltes). On May 13, 1883, I killed thirteen Tanagers, twelve being adult males, in a large woods on the property of William Williams, Jr., Willistown, Pa. The birds were all shot in the forenoon and while feeding in the maple (Acer) and hickory (Carya) trees. An examination of the stomachs of this series of birds, made by myself and Mr. Williams, showed that black-colored beetles and no other food had been taken.

**Family Hirundinidae. Swallows.**

Note.—Swallows feed exclusively on insects. They consume myriads of flies which so pester our horses and cattle, or sorely vex the tidy housewife. They have a lively and not unmusical twitter, but no song. Swallows are remarkable for their sociability at all times; they migrate in flocks, sometimes numbering thousands, and nest together often in large companies. Living as they do almost constantly on the wing, they visit nearly every locality, generally, however, when feeding and migrating, they frequent mostly ponds, rivers, streams and watery places in fields and meadows, where various kinds of winged insects are so plentiful. They frequently are seen to stop for an instant to drink and bathe when skimming over the
water's surface. In clear weather these birds often ascend to high elevations in the air, but in dull weather, particularly before rains, they fly low and sail close to the ground. With the exception of two species, all our swallows lay pure white and unspotted eggs. The eggs of these two species, the Cliff and Barn Swallows—are white, speckled or spotted with reddish brown, and so alike are the eggs of these two birds, that they cannot with absolute certainty be distinguished apart. The usual complement of eggs of each of our species is five, sometimes six, but very seldom do we find three or a less number deposited when incubation is begun. The Purple Martin builds a nest of hay, straw, leaves, feathers, etc., in boxes provided for them about houses and buildings, occasionally with us this species breeds in holes in trees. Its eggs average a little under one inch in length, and about three-fourths, or a little less in width. The Barn Swallow nests mostly in the interior of barns, where on a beam or rafter, near the top of the roof, it builds a large bowl-shaped nest (not covered over the top as is the Cliff Swallows) of mud, grasses and feathers. The mud used to cover the exterior, and in fact make up the greater part of the nest, is collected by the birds, along the edges of streams, ponds and in muddy places in fields and roads, and conveyed in small rounded masses on the top of the upper bill. The eggs measure about .77 long by .55 of an inch wide. The Cliff Swallow with its nests under the eaves of barns and other out-buildings. It never, I think in this State, breeds about rocks or cliffs, as it does in uninhabited regions. The nest is built of small mud pellets, warmly lined with feathers, or other soft materials, and in this region is hemispherical in shape, with a small hole in front or on the side. The nest of this bird is usually described in books as being retort-shaped or bottle-like in appearance, with the opening built out, often several inches from the body of the nest. I have examined many nests of these birds found in Pennsylvania, but have never yet seen one, which could be called retort-shaped or bottle-like. The eggs are very similar in size to those of the Barn Swallow, from which they are said to differ in being less elongated. The Bank and Rough-winged Swallows excavate holes in sand banks, along streams, deep railroad cuts, wagon roads, etc., in which they build loosely made nests of grasses and feathers. The Rough-winged, with us breeds usually in the interstices of stone abutments of bridges or in the holes of old stone barns or similar structures. The eggs of this last named species are possibly a trifle larger than those of the Bank Swallow, which measure about .70 long and about .50 of an inch in width. The Tree Swallow builds in holes of trees and stumps, or in bird boxes. The nest is similar to those made by Bank and Rough-winged Swallows. Its eggs are about the same size as those of the Rough-winged species.

**Genus PROGNE.** Boie.

611. Progne subis (Linn.).

**Purple Martin.**

**Description.**

Length 8; extent 16 inches; bill black, mouth inside yellow; eyes brown; legs dark brown; closed wings, extend beyond the tail which is decidedly forked. Adult male.—Glossy blue black; wings and tail feathers above black, more or less glossed with blue-black; under portions of wings and tail feathers dark brown. Adult female.—Dull brown above, glossed with blue black, brightest on back of head and middle of back; lorals spaces and auricular, feathers dark brown or black; forehead, and narrow stripe above hind-neck, grayish white; belly and under tail coverts white; rest of under parts dull grayish white, darkest on the sides. Young.—Both sexes quite similar to female, though the males are mostly darker. Immature males, with blue black feathers singly or in patches, are common. About three years, it is believed, are required for the male to attain his full dress. 

*Hab.*—Temperate North America, south to Mexico.
Common resident from early in April to about the middle of August; they arrive in spring, singly, in pairs or small flocks. Late in August these birds collect in flocks (numbering sometimes several hundred each), which for a brief period linger about meadows along rivers or other large bodies of water, and then wend their way southward. Since the advent of the prolific English Sparrow, Martins have abandoned many of their nesting-places in towns and cities. Dr. John R. Everhart, of West Chester, Pa., appreciating that his flock of chattering Martins was rapidly diminishing before the advances of the Sparrows, some few years ago erected in his yard a large pole with cross-pieces, from which were suspended, by brass wire chains, each about eighteen inches long, a number of boxes, in which the Martins, also Wrens and Blue-birds, nest without any trouble from their common feathered enemy. The swaying motion of these pendent boxes appears to frighten the Sparrows, as not one has ever been observed to alight on or enter them.

"The Martin differs from all the rest of our Swallows in the particular prey which he selects. Wasps, bees, beetles, particularly those called by boys Goldsmiths, seem his favorite game. I have taken four of these large beetles from the stomach of a Purple Martin, each of which seemed entire, and even unbruised."—Wilson.

Genus PETROCHELIDON. Cabanis.

612. Petrochelidon lunifrons (Say.).

Cliff Swallow.

Description.

Length about 5½; extent about 12 inches; tail nearly even or very slightly forked; bill black; legs and eyes brown; top and back of head, back and a spot on throat lustrous blue-black; wings and tail blackish, slightly glossed; grayish-brown band on hind neck; forehead white or light-brown; chin, throat and sides of head dark chestnut, rump same, but lighter; breast brownish-yellow, whitening on the belly. Sexes similar: the young, although generally duller in colors, greatly resemble the adults.

Hab.—North America at large, and south to Brazil and Paraguay.

Common summer resident; generally distributed throughout the State. Breeds mostly in colonies of from twenty to forty individuals; sometimes, however, as many as fifty or seventy-five nests are found together. Although I have known these birds to breed, for three consecutive seasons. under the eaves of long sheds in a cow-yard, I am inclined to think that they usually breed but one season in the same place. The Cliff Swallow arrives here about the last week in April and disappears early in September. This bird when flying can easily be distinguished from other swallows by its almost even tail feathers.
and the conspicuous rusty-colored rump. During migrations this species is found in greatest numbers in the vicinity of rivers, ponds and lakes.

**Genus CHELIDON. FORSTER.**

613. *Chelidon erythrogaster* (Bodd.).

**Barn Swallow.**

**Description.**

Length about 6\(\frac{1}{2}\) inches; extent about 12\(\frac{1}{2}\) inches; bill and nails black; eyes very dark brown; legs and feet light brown; above glossy steel-blue, with concealed white on middle of back; wings and tail feathers viewed from above blackish, glossed with greenish and violet hues; tail very deeply forked; inner webs of all tail feathers, except two middle ones, have showy white spots; outer tail feathers much larger and narrower towards the ends than others; imperfect steel-blue color on upper part of breast; forehead, chin, throat and a space under tail coverts, deep chestnut; rest of lower parts lighter reddish-brown.

**Young.**—Duller and paler than the adults; and the lateral pair of tail feathers are also much shorter.

**Hab.**—North America in general, from the fur countries southward to the West Indies, Central America and South America.

The Barn Swallow is so named because it usually nest in barns. This bird, like the preceding species arrives here late in April and departs about September 1. This Swallow, either when at rest or on the wing, may be recognized by its deeply-forked tail, which if viewed from below shows a broad white band, most conspicuous when the bird is flying.

**Genus TACHYCYNETA. CABAINS.**

614. *Tachycineta bicolor* (Vieill.).

**Tree Swallow; White-bellied Swallow.**

**Description.** (Plate 38.)

Length about 6 inches; extent about 13 inches; tail slightly forked; bill black; legs and iris brown; lores black; above glossy metallic-green; wings and tail blackish, with faint greenish gloss; lower parts entirely white.

**Young colors are duller and toes sometimes yellowish.**

**Hab.**—North America at large, from the fur countries southward, in winter, to the West Indies and Central America.

The Tree Swallow, when flying or at rest, can easily be distinguished from all other of our Swallows, by its dark-colored back and pure white under parts. This species arrives here late in March or early in April, and leaves in September. Common and very generally distributed during migrations; as a summer resident is restricted chiefly to localities about rivers.
Plate 38

White-bellied Swallow.
1. Adult Male; 2. Female.
Genus CLIVICOLA. Forster.

616. Clivicola riparia (Linn.).

Bank Swallow.

Description.

Smallest of all our Swallows; length about 5, extent about 12½ inches; bill black; legs brownish; iris dark-brown; tail short and slightly forked; lower part of tarsus feathered behind; above grayish-brown; beneath white, with a broad band across the breast, same color as on back; wings and tail dark brown.

Hab.—Northern hemisphere; in America, south to the West Indies, Central America and northern South America.

Genus STELGIDOPTERYX. Baird.

617. Stelgidopteryx serripennis (Aud.).

Rough-winged Swallow.

Rather larger than the last; bill, legs and eyes same color as the Bank Swallow; above grayish-brown; lower parts similar, though paler, gradually whitening on the belly; edge of first primary rough to the touch, by the outer web being converted into a series of stiff recurved hooks. The design of this peculiar wing structure is not clearly known. It has been suggested that these hooks "assist the birds in crawling into their holes, and in clinging to vertical or overhanging surfaces."

Hab.—United States at large (in the Eastern States north to Connecticut), south to Guatemala.

The Bank and Rough-winged Swallows arrive here about the first week in April and remain with us until about September 1. Both species frequent the same localities, being found generally in the neighborhood of rivers, large creeks and mill-dams. These birds are not only alike in habits, but they also greatly resemble each other in size and colors. The Bank Swallow has a white throat and a dark band across the breast. The Rough-winged has a uniform mouse-colored throat and breast. These throat and breast markings will sometimes enable you to recognize the birds in life. Should you, however, desire to positively determine these two species, my advice would be, take your gun and shoot them. After doing this you will know the Bank Swallow by a tuft of feathers on the tarsus, near the insertion of the hind toe. An adult Rough-wing (particularly if an old male) has the first wing quills furnished with a number of saw-like hooks, from which originate the common name, likewise the technical one serripennis, but as the immature Rough-winged Swallows lack these curious hooks, look at their legs—a Rough-winged Swallow has no feathers on the leg just above the hind toe.
619. Ampelis cedrorum (Vieill.).

Cedar Waxwing.*

Description. (Plate 39.)

Head crested; general color reddish-olive, passing anteriorly on the neck, head and breast into purplish-cinnamon, posteriorly on the upper parts into ash, on the lower into yellow; under tail coverts white; chin dark sooty-black, fading insensibly into the ground-color on the throat; forehead, loral region, space below the eye and a line above it on the side of the head, intense black; quills and tail dark-plum-beans, passing behind into dusky; the tail tipped with yellow; the primaries, except the first, margined with hoary; a white line on side of under jaw; a narrow white stripe bordering black of forehead and lores; lower eyelid white; secondaries sometimes tipped with hoary and red sealing-wax-like appendages; some specimens are occasionally seen with two or three tail feathers, tipped with red hoary appendages. Young duller than adults, and streaked with brownish, especially on breast and sides. Bill, blue-black; legs black; iris brown. Length about 7 inches; extent about 12 inches.

Hab.—North America at large, from fur countries southward. In winter south to Guatemala and the West Indies.

The Cedar or Cherry bird, as this species is best known in Pennsylvania, is an abundant resident. These birds, except in the breeding time (from about the last of June to the first of August)—are always found in flocks, which in many sections seem most numerous in May and the first two weeks in June. The somewhat flat and rather bulky nest, composed of small twigs, roots, grasses, bits of string, feathers or other soft materials is built in trees in groves and orchards, particularly apple orchards. The eggs, usually five in number, are dull bluish-gray spotted and blotched with black and brownish. They measure about .90 by .65 of an inch. Cedarbirds fly in compact flocks, and when they alight huddle close together on the limbs and twigs. They apparently prefer to light on dead branches of trees, and in the spring or when they visit cherry trees, this habit is frequently taken advantage of by the observing farmer, who fastens to a long pole a dead branch, with numerous small twigs, and fixes it in the fruit-tree, so that the entire branch will project above the tree tops, then stationing himself nearby he can shoot the birds as they alight without injuring with shot, the tree or its ripening fruit. Some

* Dr. Coues (Birds of Colorado Valley) referring to the "sealing-wax" appendages of the secondary quills of birds of this genus, says they "have been subjected to chemical and microscopical examination by L. Stieda, and shown to be the enlarged, hardened and peculiarly modified prolongation of the shaft itself of the feather, composed of central and peripheral matters, differing in the shape of the pigment cells, which contain abundance of red and yellow coloring matter."
Cedar Bird, or Cedar Wax-wing
1. Male; 2. Female.
few years ago two farmers, residing near West Chester, killed one day in this manner over one hundred and fifty Cherrybirds, shooting from seven to twenty at each discharge. These birds, as their common names would signify, subsist chiefly on a fruit and berry diet; the many varieties of cultivated cherries, mulberries, whortleberries, wild grapes, berries of the gum, cedar and mountain ash, also the fruit of the poke plant, are its favorite food. In the spring they often visit orchards and gardens to feed on insects or devour portions of the apple blossoms. Cherrybirds are very expert flyatchers and they also destroy great numbers of caterpillars. Nuttall writing of this species says although a small portion of the gardener's cherry crop is destroyed "they fail not to assist in ridding his trees of more deadly enemies which infect them, and the small caterpillars, beetles and various insects now constitute their only food; and for hours at a time they may be seen feeding on the all-despoiling canker-worms, which infest our apple trees and elms. On these occasions, silent and sedate, after plentifully feeding, they sit dressing their feathers, in near contact on the same branch, to the number of five or six; and, as the season of selective attachment approaches, they may be observed pluming each other, and caressing with the most gentle fondness. This friendly trait is carried so far that an eye-witness assures me he has seen one among a row of these birds seated upon a branch dart after an insect and offer it to his associate when caught, who very disinterestedly passed it to the next; and, each delicately declining the offer, the morsel has proceeded backwards and forwards before it was appropriated."

**Family LANIIDÆ. Shrikes.**

**Genus LANIUS. LINNÉUS.**

621. Lanius borealis Vieill.

**Northern Shrike.**

**Description.**

Above light bluish-ash, obscurely soiled with reddish-brown; forehead, sides of the crown, scapulars, and upper tail coverts hoary-white; beneath white, the breast and upper portions of the sides with fine transverse very blackish or grayish lines; wings and tail black, the former with a white patch at base of primaries and tips of small quills, the latter with the lateral feathers tipped with white; bill blackish, brown considerably lighter at the base; eyes dark brown; black stripe from the bill throughout behind the eye, but beneath the latter interrupted by a whitish crescent. Young more or less soiled with brownish. Length about 10; extent about 14 inches.

**Hab.—**Northern North America, south in the winter to the middle portion of the United States (Washington, D. C., Kentucky, Kansas, Colorado, Arizona, etc.).

Although this species is said to breed in some portions of the mountainous regions of Pennsylvania, I have observed it only as an irreg-
ular and tolerably common winter resident from November to April, frequenting briery thickets, thorn hedges and grassy fields near trees and bushes. They sometimes visit towns and prey on English Sparrows. The name of Butcherbird given to members of this genus, arises from the habit they frequently have of impaling their prey on thorns, or sharp-pointed twigs, etc. Shrikes feed chiefly on grasshoppers and beetles, and when these are not easily obtained they subsist on mice and small birds. The Northern Shrike, assassin-like, will conceal himself in bushes and imitate the cries of other birds, and when they come sufficiently near his ambush he will, to their great consternation, fly into their midst and seize one of their number.

**Family VIREONIDÆ Vireos.**

[Note.—The Vireos have the wings pointed or rounded, and equal to or longer than the even or rounded tail. “Primaries apparently only nine, the first being rudimentary or displaced (occasionally quite visible”). The feathers of the upper parts are greenish-olive, of different shades; lower parts whitish or yellowish or both;” eyes brown, except in the Red and White-eyed species, and even the young of these have brown irides. These birds frequent chiefly woods and thickets, yet some, particularly the Red-eyed and Warbling, are common during migrations about yards and gardens in towns. Both of these species also often breed in the trees of parks and gardens. The Vireos are rather plainly attired, and were it not for their delightful and musical notes, they would much oftener escape our notice than they do; few of our woods birds are equal to them as songsters. They live almost constantly in the leafy retreats of trees and shrubbery, rarely, if ever, do they rest on the ground. They subsist almost exclusively on insects, chief among which may be mentioned flies, spiders, beetles and various larvae; in the late summer and autumn some species feed to a small extent on a few kinds of berries. We have in Pennsylvania six species, viz: the Red-eyed, Warbling, Blue-headed, Yellow-throated, White-eyed and Philadelphia Vireos, and all with the exception of the Philadelphia Vireo, are common as summer residents or spring and fall migrants. Their beautiful cup-shaped, or basket-like and pendulous nests, are composed of pieces of bark, lichens, rootlets, fine grass stems, bits of paper, etc., and suspended from forked twigs. Vireos nest in trees and bushes, usually in groves or forests; some build close to the ground; others erect their pensile homes on the highest twigs of tall forest trees. Their elongate-ovate eggs, commonly five, are white, thinly speckled or dotted, usually about the larger end with black or brown. They measure generally a little more than ½ of an inch long, by ¼ an inch wide. The Red and White-eyed Vireos breed very abundantly with us, and in a large proportion of their nests, especially in nests of the Red-eyed species, you will find Cowbirds’ eggs or young.]

**Genus VIREO.** Vieillot.

624. Vireo olivaceus (Linn.).

**Description (Plate 29. Adult male).**

Largest of the genus. Length about 6½, extent about 10½ inches; bill blackish above, below bluish-white; feet and legs lead color; iris red; back, rump, upper parts of wing and tail feathers olive-green; sides of head and neck paler; crown dark-ash, edged with a blackish line; a well-defined whitish line from nostril over the eye and back of it; a dusky stripe through the eye; under parts white, shaded
Red-eyed Vireo.

Male.
on the sides and tail coverts with greenish-yellow, brightest on the under wing coverts and crissum. Tail and wing feathers blackish, edged on the outside with greenish-yellow, with whitish on inside. Young.—Irides plain brown or reddish-brown; ash of crown less distinct; grayish-yellow rather than greenish above, but the sides, under wing and tail coverts are quite brightly colored.

Hab.—Eastern North America, to the Rocky Mountains, north to the Arctic regions.

The Red-eyed Vireo is a common summer resident from late in April to the last of September. In this State it is much more abundant than any other of the Vireos. In summer the voice of this agile, fluent and tireless songster is heard on almost every hand in forests and groves. This bird is a most devoted foster-parent, feeding and guarding the clamorous young Cowbird with the same care and solicitude that it bestows upon its own offspring. Indeed, sometimes it seems that they are even more attentive to the noisy, red-mouthed Cowbirds than they are to their own young. The Red-eyed Vireo, like others of the family, subsists chiefly on insects, which he captures on the wing, or secures while gleaning among the branches and leaves. In the late summer and autumn months he feeds, more or less, on raspberries, mulberries, pokeberries and wild grapes. His white shirt-front is often soiled with the bright juices of the fruits on which he feeds.

**Family MNIOTILTIDÆ. Wood-Warblers.**

Note.—Over thirty species of this large family, which in the number of its species and sub-species, ranks next to the Fringilidae, the largest family of North American birds, are found in Pennsylvania as spring and fall migrants, summer residents or stragglers and accidental visitors. This group, with some few exceptions, are small, averaging about 5 inches in length and 8 inches in extent; eyes are brown and their legs brownish. The usual blackish and in most species, slender, straight and awl-shaped bill, will aid greatly in recognizing a warbler from members of the following families: Fringilidae (bill conical, commissure more or less angulated); Vireonidae (bill distinctly notched and hooked); Tanagridae (bill stout, much like a Sparrow's, with lobe and tooth near middle of commissure); Hirundinidae (bill short, broad, flat and gape reaching to eyes). The Black and White Warbler, Worm-eating Warbler, Blue-winged Yellow Warbler, Yellow Warbler, Ovenbird, Kentucky Warbler, Maryland Yellow-throat, Yellow-breasted Chat and American Redstart, breed generally throughout the State. Some other species* also breed in certain localities, particularly in the mountainous and more northern parts of our Commonwealth. The species of this family, which breed most commonly with us, lay from three to five white eggs, spotted or thinly speckled usually with reddish brown, or both black and brown. Some of these birds nest on the ground, others in trees or bushes. Certain members of this family are remarkable for the melody of their song, many species which migrate north, penetrating, as some do, even the Arctic solitudes to rear their young, are said to possess most exquisite vocal powers. With a view of giving the beginner a general idea where he will be most likely to find the numerous representatives of this group, we will for the sake of brevity and convenience divide the Mniotiltae into three classes, to wit: No. I. Species that live chiefly on the ground. No. II. Species which inhabit trees and bushes, frequenting mainly, when

*See Appendix. List of Birds of Pennsylvania.
with us, tall forest trees and orchards; rarely, if ever, seen on the ground. No. III. Species which are seen in trees and bushes, and which also are often found on the ground.

Class I. Worm-eating Warbler, frequents thickets and bushy places in woods, usually near streams. Nest made up of leaves and hair-moss embedded in the ground. Palm Warbler and Yellow Palm Warbler—Seen mostly on the ground; sometimes may be observed on low limbs of trees or in bushes. Ovenbird—The nest, usually with the top covered over or roofed, is constructed of dead leaves, rootlets, dry grasses, etc., embedded in the ground on hillside or other dry places in woods. This bird particularly when disturbed and often when sing ing perches on the low limbs of trees or bushes. The Water Thrush and Louisi ana Water Thrush—These two species frequent swamps, pools and streams in woods and thickets; their nests composed of leaves, mosses, fine roots and grasses, are generally on the ground under old stumps or logs. Although these two thrushes often perch on low limbs and twigs, they are mainly terrestrial in habits. Kentucky Warbler—Rarely seen in trees, but often in low bushes. He delights to hide among the leaves of Skunk-cabbage in swampy thickets in woods, where, on the ground, its large nest of leaves, fine roots, grasses, etc., is built often among the Skunk-cabbage plants or at the foot of a spice-wood bush. Connecticut Warbler—Found in thickets and bushy places about the edges of woods, usually near streams. Maryland Yellow-throat—Common frequenter of shrubbery and underbrush; nests on the ground or very close to it. During migrations sometimes seen in orchards. Mourning Warbler, inhabits thickets.

Class II. Tennessee Warbler—In the autumn when this species is common, they are mostly found low down in trees or bushes in woods. I have never seen them on the ground. Parula Warbler—Generally seen in the tops of high forest trees. Black-throated Blue Warbler—This species although commonly seen in trees, is often observed in low bushes, and occasionally is seen on the ground. The following species of the genus Dendroica, when with us, frequent for the most part, forest trees and apple orchards, or high bushes. Cape May, Yellow, Myrtle, Magnolia, Cerulean, Chestnut-sided, Bay-breasted, Black-poll, Blackburnian, Yellow-throated (very rare), and Black-throated Green Warblers, also, the American Redstart.

Class III. Black and White Warbler—Like a Nuthatch, this bird may generally be seen, circling around the trunks and larger branches of trees, in woods, swamps and thickets. Nest on the ground usually concealed by dead limbs or roots. The nest is composed mostly of strips of inner bark, lined with hair, mosses, or fine grass. Of the genus Helminthophila, but three species, not included in either of the two previous classes, are generally found here. They are the Blue-winged, Golden-winged and Nashville Warblers. The Blue-winged Warbler, is one of our common summer residents; its nest of dead leaves, fine grass and rootlets, is placed in a depression in the ground, usually in open woods or thickets. The Pine Warbler, though generally seen in trees, sometimes is observed on the ground. Prairie Warbler—Mostly seen in low bushes, or high grasses from which it sometimes flies to the ground to feed. Yellow-breasted Chat—A common inhabitant of thickets, and tangled undergrowth, where it nests; often repairs to high branches of trees to sing its loud and varied song. Three species of the genus Sylvioides are found here, one, the Hooded Warbler, is very rare; the Wilson's Warbler and Canadian Warbler are common during migrations. The species last named is generally seen in trees and bushes. It nests on or near the ground in swampy woods. Most of the species of the genera Helminthophila, Dendroica, Sylvioides and Seiurus, which occur generally throughout Pennsylvania, are found here only as spring and fall migrants, in May and September, when the Warblers are most numerous. The birds of this family, particularly those belonging to the genera Dendroica and Geothlypis, are, with some few exceptions, attired in showy and attractive colors; the prevailing ones being black and yellow, with white patches, streaks and spots; and different shades of blue, olive-green and red. The Black and White Warbler moves along the trunks and limbs of trees not unlike the Nuthatch or Brown Creeper. The Water Thrushes
Yellow Warblers.

1. Male; 2. Female.
and Ovenbird, by their peculiar jerking motions, often remind one of some of the Sandpipers or the American Pipit. As you catch a glimpse of the Maryland Yellow-throat, and hear his sharp note, as he vanishes in the thick undergrowth, you are reminded of certain peculiarities so characteristic of Wrens. The Parula and Pine Warblers, are often seen to hang downwards, like the Titmice when feeding and the ever active Redstart in some ways is not unlike the Tyrant flycatchers.

The Warblers* subsist almost exclusively on insects, such as flies, beetles, spiders, grasshoppers, plant-lace, and various kind of larvae. Referring to these birds Dr. Coues says: "With tireless industry do the Warblers befriend the human race; their unconscious zeal plays due part in the nice adjustment of nature's forces, helping to bring about that balance of vegetable and insect life without which agriculture would be in vain. They visit the orchard when the apple and pear, the plum, peach and cherry are in blossom, seeming to revel carelessly amid the sweet-scented and delicately tinted blossoms, but never faltering in their good work. They peer into the crevices of the bark, scrutinize each leaf, and explore the very heart of the buds, to detect, drag forth, and destroy those tiny creatures, singly insignificant, collectively a scourge, which prey upon the hopes of the fruit-grower, and which, if indisturbed would bring his care to nought."

**Genus DENDROICA.** Gray.

652. *Dendroica aëstiva* (Gmel.).

**Yellow Warbler.**

**Description.** *(Plate 41.)*

Length about 5½ inches; extent about 7½; bill bluish black; legs, feet and eyes brown. **Male**—Golden yellow; back olive yellow; chest and sides streaked with brownish red. Female and young duller, and the former with brownish red streaks very obscure or entirely wanting.

**Hab.**—North America at large, south in winter to Central America and northern South America.

Abundant summer resident. Arrives the last week in April and remains until about the middle of September. A common inhabitant of shrubbery in gardens, lawns, and parks, and also frequents orchards; it is often seen in groves but is rarely observed in forests. Builds a small compact cup-shaped nest of plant-fibres, spider's webs, lined with woolly plant substances, feathers or hair, in an upright fork of a tree or bush. In this locality pear trees and bushes in hedges are favorite breeding places. The eggs, 4 or 5 in number, are greenish or grayish-white, spotted with different shades of brown and lilac; measure about .65 long by .50 of an inch wide. This bright and pleasing little songster may frequently be observed in trees and bushes or on telegraph wires along the roadsides. With us, the Yellow Warbler, according to my observations, subsists exclusively on various forms of insect-life, especially small beetles, plant-lace, flies, spiders, ants and larvae. Is is stated, however, that this species often feeds on small seeds and berries.

*The Myrtle Warbler, Tennessee Warbler and Pine Warbler, sometimes, though rarely, feed on small fruits, at least it is supposed they do, from the fact that I have found in the stomachs of each of these species, which were shot in the fall or winter months small seeds of fruits.*
Genus SEIURUS. Swainson.

674. Seiurus aurocapillus (Linn.).

Ovenbird.

Description.
Length about 6; extent about 9½ inches; bill and eyes brown; legs flesh color. Above uniform olive-green with a tinge of yellow; crown with two black lateral streaks, which extend from bill and enclose a golden or brownish-orange space; white ring around eye; beneath, white breast and sides streaked with dusky or black. The young at first have no stripes on top of head, and lower parts are light-dull brownish-yellow, with obscure dusky streaks.

Hab.—Eastern North America, north to Hudson’s Bay territory and Alaska, breeding from Kansas, the Ohio Valley and Virginia, northward. In winter, southern Florida, the West Indies and Central America.

This bird is a common summer resident, arriving here generally about the 25th of April and remaining until about the middle of September. During migrations it is often found in thickets, and occasionally is seen in yards and gardens. In the summer months it rarely is observed to leave its favorite retreats in dark and unfrequented localities in forests. The Ovenbird very carefully hides its rather bulky and loosely built nest in old leaves, by the side of a log or under the projecting edges of brush heaps; in addition to such protections, and to further conceal its treasures from the curious eyes of egg-collectors or other predatory animals, the top is usually covered over or roofed by the birds, who gain an entrance through an opening in the side. The eggs, 4 to 6, are creamy-white, spotted with reddish-brown. They measure about .80 of an inch long and .60 of an inch wide. The song of this bird is exceeding loud, shrill and monotonous. Birds of this genus, when walking on the ground, have the habit of wagging their tails like the Spotted Sandpiper. The Ovenbird subsists chiefly on various forms of insect life, such as beetles, earthworms, crickets, flies, spiders and larvae; it also sometimes feeds on small seeds.

Genus GEOTHLYPS. Cabanis.

681. Goethlypis trichas (Linn.).

Maryland Yellow-throat.

Description. (Plate 42.)
Length of male about 5½; extent about 7½; female rather smaller; bill black; legs pale-brown. Male in summer: Above olive-green; forehead and a broad band through the eyes and on side of neck pure black, bordered posteriorly with ashy; chin, throat, breast, under coverts, and edge of wing bright yellow, fading into a dull buff-white on belly, wings and tail, glossed with yellowish-olive. Female in summer: Colors duller; less yellow on under parts; no black or ashy head markings; top of head, especially forehead, reddish-brown. The young generally resem-
Maryland Yellow Warblers.
1. Adult; 2. Female; 3. Young Male.
BIRDS OF PENNSYLVANIA.

The female, but young males may usually be known by indistinct black feathers on sides of head, though feathers of forehead are quite similar to those of female.

**Hab.**—Eastern United States, mainly east of the Alleghanies, north to Ontario and Nova Scotia, breeding from Georgia northward. In winter south Atlantic and Gulf States and the West Indies.

In eastern Pennsylvania the Maryland Yellow-throat is an exceedingly abundant summer resident from about May 1st to the latter part of September. During migrations, particularly in the spring, it often visits apple trees to seek among the leaves and blossoms for numerous small insects. Frequents especially thickets, tangled underbrush, brush piles and high weeds, generally near streams or swampy places. Its voice is rather loud, yet its song is not unmusical.

This species builds a rather large cup-shaped nest of leaves and dried grasses, usually carefully concealed in a tussock of grass, among weeds or at the base of low bushes, commonly in low and moist situations. The eggs, mostly five, are white, finely speckled, usually about the larger end with black and brown. They measure about .70 by .50 of an inch. The Maryland Yellow-throat feeds on numerous kinds of small insects and larvæ.

**Genus Icteria. Vieillot.**

683. *Icteria virens* (Linn.).

**Yellow-breasted Chat.**

**Description.**

Length about 7½; extent about 10 inches; wings rounded and shorter than tail, which measures about 3½ inches in length; bill rather long (measuring along gape about 7 of an inch), stout, higher than broad at base; ridge of upper mandible and commissure much curved. Birds of this genus are the largest of the family. Upper parts uniform olive-green; chin, throat, chest, breast and inside of wings bright gamboge-yellow; lower part of belly and under tail coverts white; eye-lids, line under lower jaw and a stripe above the black lores, white. Bill black; feet lead color.

**Hab.**—Eastern United States to the plains, north to Ontario and southern New England, south in winter to eastern Mexico and Guatemala.

The Yellow-breasted Chat arrives in Pennsylvania about the first week in May, and remains until about the 20th of September. Although this bird is an abundant summer resident in briery thickets and tangled undergrowth, in open woods or along the edges of woods, it is much oftener heard than seen, except, perhaps, during the mating season, when it often may be observed to mount into the air, above the tops of its tangled bushy retreats, and perform most curious evolutions. When migrating this bird skulks silently about bushes and thickets, but when he locates for the summer he becomes one of the most noisy inhabitants of the place. Often when perched in a tree top near his favorite retreats his song is not unpleasant, but if his
domain is invaded by a human being he flies into the bushes and greets the intruder with a most varied medley of whistling, cackling, whispering, uncouth guttural sounds, yet all the time he remains hidden, and as he continually shifts his position it is often exceedingly difficult to detect him, even though he continues his varied sounds. By remaining perfectly quiet you generally can catch a glimpse of his bright eye and yellow breast, or see his white crissum as he turns in the tangled leafy shrubbery. The nest, composed of leaves, grape-vine bark and grasses, is built usually in briery thickets. The eggs, four or five in number, are white, marked with reddish brown. They measure a little less than 1 inch in length and a trifle over $\frac{3}{4}$ wide. The Chat feeds chiefly on different forms of insect life. He also subsists on wild strawberries, blackberries, raspberries, whortleberries and small wild grapes.

Genus SETOPHAGA. Swainson.

687. Setophaga ruticilla (Linn.).

American Redstart.

Description. (Plate 45.)

Length about $\frac{5}{4}$; extent about 8 inches; bills and legs black.

Male.—Prevailing color glossy black; the belly and under tail coverts, white; some feathers in the latter strongly tinged with dark-brown; bases of all the quills, except the inner and outer, and basal half of all the tail feathers, except the middle one, a patch on each side of the breast, and lining of the wings orange-red, 6 of a ver. million shade on the breast. Female with the black replaced by grayish-olive above, by brownish-white beneath; the head tinged with ash; a grayish-white lore and ring round the eye; the red of the male replaced by yellow. Young male similar to adult female but browner above, the yellow more of a reddish hue; immature males are often seen with glossy black feathers singly or in patches. Two or three years are, it is said, required before this bird gains its perfect plumage.

Hab.—North America, north to Fort Simpson, west regularly to the Great Basin, casually to the Pacific Coast, breeding from the middle portion of the United States northward. In winter the West Indies, and from southern Mexico through Central America to northern South America.

The Redstart during migrations—May and September—is abundant and very generally distributed throughout the State. Although found in all sections of our Commonwealth as a summer resident, as such it is much more numerous in the northern parts and mountainous regions than elsewhere. In Erie and Crawford county it is a common breeder, but in Chester, Delaware, Bucks and Lancaster counties it is seldom found breeding. Frequents chiefly forests, but often in company with other warblers, visits fruit and shade trees about houses, lawns and parks. The male, in his showy dress of black, fiery orange and white, is one of the most attractive inhabitants of the woods. Like a Fly-catcher, he darts from his perch with clicking bill to secure
Plate 43.

American Redstart.

1. Male; 2. Female.
flying insects. In addition to their sharp and rapid song, these birds when hopping about the trees, frequently spread their tails; this peculiar habit of opening and closing the tail will often aid you in recognizing a Redstart, in the tops of high trees, when it otherwise might be unknown. The nest a compact, cup-shaped structure, composed of various vegetable fibres, spider's webs, and horse-hair is built in the fork or on the horizontal limb of a small tree, 6 to 25 feet from the ground. The eggs, mostly four, are grayish-white or light greenish-white, thinly speckled or blotched with brown and purplish. They measure about .63 long by .50 wide. The Redstart feeds exclusively on an insect diet, consisting chiefly of flies, spiders, plant-lice, butter flies, beetles and different larvae.

Family TROGLODYTIDÆ. Wrens, Thrashers, Etc.

Subfamily MIMINÆ. Thrashers.

Genus GALEOSCOPTES. Cabanis.

704. Galeoscoptes carolinensis (LINN.).

Catbird.

Description.

Length about 9; extent about 11 inches; bill and feet black; iris brown; prevailing color dark slate, somewhat lighter beneath; top of head and tail black; under tail coverts chestnut. The adult male is rather smaller than the male, and the young are duller in color, with little or no black on crown; under parts paler; under tail coverts dull reddish.

Hab.—Eastern United States and British Provinces, west to and including the Rocky Mountains; occasional on the Pacific Coast. Winters in the Southern States, Cuba and Middle America to Panama; accidental in Europe.

This well-known bird is a common summer resident from the last week in April to about November 1. This species frequents all localities, but is probably most numerous in briery thickets and tangled undergrowth near streams and ponds. Its bulky nest, constructed mainly of dead twigs, roots, to which are often added dried leaves or grasses, is built mostly in bushes. The eggs, usually four, are deep greenish-blue and unspotted. They measure a little less than an inch long, and a trifle under three-fourths wide. These birds, like some other members of the family, subsist largely on different kinds of small fruits and berries. In the early summer the Catbird feeds on cherries and strawberries; later in the season, mulberries, blackberries and raspberries. Late in the summer and in the autumn he subsists mainly on berries of the spicewood and poke-plant, and also different varieties of both cultivated and wild grapes. This species, in the spring, especially in May, and also when breeding, feeds to a considerable extent on various “worms,” beetles, flies, spiders, etc. The Catbird, so called because its sharp and petulant cry is not unlike the mewing of a cat, is one of our most gifted and delightful songsters.
Genus Harporhynchus. Cabanis.

705. Harporhynchus rufus. (Ann.)

Brown Thrasher.

Description. (Plate 44.)

Length, about 11½ inches; extent, about 13 inches; tail, 5 or 6 inches; bill, black, with base of lower mandible yellow; legs, pale brown; iris of adult yellow; iris of young brown; upper parts reddish brown; greater wing-coverts edged with and middle lower parts white; breast, sides and crissum strongly tinged with reddish brown; breast, sides and flanks conspicuously spotted with dark brown.

Hab.—Eastern United States, west to Rocky Mountains, north to southern Maine, Ontario and Manitoba, south to the Gulf States, including eastern Texas. Accidental in Europe.

Common summer resident from about April 20 to late in September. The Brown Thrush, as this bird is usually called, is found in thickets and shrubbery; he frequently, especially in the morning and evening, repairs to the tops of trees, where for hours at a time he sings his varied and beautiful song. Like our common domestic fowls, he frequently may be seen scratching among the dead leaves or dusting himself by the roadside. He sometimes visits fields, where corn is being planted, to pick up the scattered grains of maize, and some farmers assert that he often "pulls up corn" when it first appears above the ground. This species breeds usually in low bushes, in briery thickets, sometimes on the tops of old stumps covered with thick vines; very rarely, with us, do they build on the ground. The nest is a loose and bulky structure composed of small twigs, strips of bark, leaves, rootlets, etc. The eggs, four or five in number, are a light greenish or Buffy color, thickly speckled with reddish brown. They are a little more than an inch long, and about three-fourths wide.

Although these birds are generally shy and retiring, they will, if their eggs or young are disturbed, display great bravery in defending them. They will fly violently into a person's face and strike with both bill and claws. When their home is invaded by a black snake, they assail such intruder in a most vigorous manner. I once saw a dog, which had upset a nest containing young Thrushes, forced to make a speedy retreat when attacked by the old birds, who flew at his head and struck him in the eyes. The Brown Thrush feeds chiefly on insects, berries and small seeds.

Subfamily Troglodytinae. Wrens.

[Note.—Thirteen species, also "six geographical forms" and one "local race" of this subfamily are recorded in the fauna of the United States. Of these twenty species and varieties, but six species* are found in Pennsylvania. The House Wren, Bewick's Wren, also the Marsh Wrens are found here only as summer residents. The Carolina Wren is most abundant in the summer; though sometimes during

*See Appendix for technical names of species occurring in Pennsylvania.
½ natural size.

Brown Thrush.
1, 2. Males; 3. Female.
Genus TROGLODYTES. Vieillot.

721. Trogodytes aëdon. Vieill.

House Wren.

Description. (Plate 45.)

Length about 4½ inches; extent about 6½; bill, legs and eyes brown, above brown, rusty on rump and tail; lower parts dull brownish-white or grayish-white; more or less waved or barred with darker shades—back very obscurely or not at all barred.

Hab.—Eastern United States and southern Canada west to Indiana and Louisiana. Common summer resident. Arrives here usually about April 20, and remains until the 1st of October. During the summer is found mostly about orchards and in shrubbery near buildings. When migrating these birds are often seen in woods, but they seldom breed there. The nest of twigs, wool, strings, feathers, hair, grasses, etc., is built in various odd places—holes in trees, boxes and hollow fence rails are the most usual building places. They will build also in an old hat, the sleeve of an old coat or back of loose weather boards on buildings. In the summer of 1888, Mr. Geo. B. Sennett and the writer found a nest, with four young, built in a cavity in a sand bank along the roadside. The eggs, 6 to 9, mostly 7, measure about .65 long by .50 wide. They are pinkish or creamy white, speckled with reddish
brown; the brown markings are generally darker colored about the larger end, though the lighter ground color is often almost entirely hidden by the brown coloration. With us at least two broods are raised in a season. The House Wren feeds on beetles, spiders, flies, "moth-flies," grasshoppers and larvae.


Winter Wren.

Description.

Length about 4; extent about 6 inches; upper bill, end of lower, tarsi and eyes brown, rest of lower bill and toes yellowish-brown. Above reddish-brown, darkest on head, brightest on rump and tail. Everywhere except on head and upper part of back with transverse bars of dusky and lighter; lower parts pale reddish-brown; belly, flanks and crissum strongly barred with blackish and whitish; the outer webs of several primaries barred with white and dusky; an obscure line over eye, and streaks or spots on sides of head and neck whitish.

Hab.—Eastern North America generally, breeding from the northern parts of the United States northward, and wintering from about its southern breeding limit southward.

Common winter resident from early in October to about the middle of April. During its residence with us, frequents chiefly overhanging banks of streams, the projecting or upturned roots of trees, brush piles and dead logs, in woods or thickets near watery places. The sharp chirr of this sly and secretive little creature may often be heard—though the bird is hidden from view—in wood piles about houses, where it comes to seek insects and larvae, on which it feeds exclusively. I have never seen the nest or eggs of the Winter Wren. The nest is said to be built generally in "thick coniferous woods," in a hole or crevice of a stump or log, close to the ground, and constructed of moss, twigs, lichens, lined with feathers or hair. "Eggs 5–8, .05 by .08, pure white, minutely dotted with reddish-brown and purplish."—(Couch).

Family PARIDÆ. Nuthatches and Tits.

Subfamily SITTINÆ. Nuthatches.

Genus SITTA. Linnæus.


White-breasted Nuthatch; White-bellied Nuthatch.

Description. (Plate 46.)

Length about 6; extent about 11 inches; bill blue-black, base of lower mandible paler; legs and iris brown. Adult male.—Back and rump ashy-blue; top of head and back of neck glossy black; tail (except two middle feathers, which are same color as back), black spotted with white; lower parts and sides of head and neck
White-breasted Nut-hatch.

1. Male; 2. Females.
white; flanks and lower tail coverts rusty brown. Female and young similar, though the black on head is indistinct, or sometimes absent.

Hab.—Southern British Provinces and eastern United States to the Rocky mountains.

The White-breasted Nuthatch, generally known in this locality by the name of "Sap-sucker," is a common resident throughout the State. During the summer this species inhabits trees in groves and forests, but in winter it visits trees of orchards, yards and gardens in quest of food. The name of "Sap-sucker," given to this bird and also to the Downy and Hairy Woodpeckers, is when so used a misnomer, as neither the Nuthatch or either of the Woodpeckers ever feed on sap. Nuthatches, like Woodpeckers, creep about the trunks and limbs of trees searching for insects, or their eggs, and various larvae. A Nuthatch will descend the vertical trunks and limbs of trees head downward; a Woodpecker cannot do this. The Nuthatch deposits its eggs, usually 5 or 6 in number, in a warm bed of feathers, hair and grasses which are placed in holes of trees. The eggs are white, speckled with reddish brown; about .75 long by .55 wide. These birds, in addition to feeding on various forms of insect-life, also eat nuts, acorns, Indian corn, and various seeds, which they frequently stick into the crevices of bark or in cracks of fence rails, and hammer away with their bills until the nut or other food stuff is sufficiently broken that it may be swallowed.

Subfamily PARINAE. Titmice.

Genus PARUS. LINNÆUS.

731. Parus bicolor. LINN.

Tufted Titmouse.

Description.

Length about 6; extent about 10 inches; bill black; iris brown; legs lead color; crown with a conspicuous crest; upper parts ashy or leaden-gray; forehead dull sooty-black; lower parts whitish; sides and flanks rusty brown. In the young the crest is shorter, the black of the forehead, also the rusty brown of the sides very indistinct.

Hab.—Eastern United States to the plains, but rare towards the northern border, being a straggler merely to southern New England.

Common resident, generally found in forests, yet it often, especially in winter, comes around dwellings. May easily be recognized by its loud whistling notes or its ordinary cry of dee, dee, dee. Although this bird usually nests in holes of trees, in woods, it occasionally builds in boxes about houses. The nest is composed of feathers, dried grasses, leaves, etc. The eggs, about \( \frac{2}{3} \) of an inch long and a little more than \( \frac{1}{4} \) wide, usually 5 or 6 in number, are white, speckled with reddish-brown and lilac. The Tufted Titmouse feeds on various forms of insect life, also seeds of various weeds and grasses, and at times he subsists on small berries.
735. *Parus atricapillus* (Linn.).

**Chickadee.**

**Description.** (Plate 47.)

Length about 5½ inches; extent about 8 inches; bill black; legs bluish gray; iris brown. Back brownish ashy; top of head, chin and throat black; sides of head white; beneath whiteish; brownish on sides; wing and tail feathers more or less margined with white.

_Hab._—Eastern North America, north of the Potomac and Ohio Valleys.

Common resident; found in all localities, but during the summer these birds are usually seen in woods and thickets, from which in winter they often come about houses, or, in small flocks, frequent weedy places in fields and swamps in search of food. The common name arises from their familiar note of _chick-a-dee-dee_. These birds sometimes nest in natural cavities, but generally Woodpecker-like, they excavate holes in trees, stumps, etc., in which they build a nest of hair, feathers, moss, fine dried grasses or other soft materials. The eggs, mostly 6 or 7, sometimes more, are white, spotted or dotted chiefly about the larger end with reddish-brown; measure about .60 long by .50 wide. The Chickadee feeds on different forms of insect life and seeds of various weeds, grass and other plants. Crumbs of bread, pieces of meat, fragments of apples, pears and other fruits are also eaten.

**Family SYLVIIDÆ. Kinglets, Etc.**

**Subfamily REGULINÆ. Kinglets.**

**Genus REGULUS. Cuvier.**


Golden-crowned Kinglet.

**Description.** (Plate 48.)

Length about 4; extent about 6.50; legs brownish-yellow; feet yellowish; bill black; iris brown. Upper parts olive-green; wings and tail dusky, edged with yellowish; crown (adult male) bordered in front, also on sides with black, embracing a central patch of fiery orange-red encircled by yellow. The female has no flame-colored patch; crown is entirely yellow, margined with black; wing and tail feathers edged with yellowish; lower parts dull whitish.

_Hab._—North America generally, breeding in the northern and elevated parts of the United States, and northward, migrating south in winter to Guatemala.

Common winter resident from about the middle of October to the middle of April. This species is most numerous in October, November, March and April, or when migrating south and north. The Golden-crowned Kinglet frequents the tops of tall forest trees as well as low bushes, and frequently, particularly when migrating in the spring and fall, is found, in company with the Ruby-crowned Kinglet (*R. calend-
Blackcap Titmouse.

1. Male; 2. Female.
Golden-crested Kinglet.
1. Male; 2. Female.
Birds of Pennsylvania.

Birds of Pennsylvania.

Kinglets are generally seen in small flocks. They feed exclusively on various forms of insect life; they are very expert in capturing small insects upon the wing, and destroy great numbers of plant-lice, flies, ants, besides devouring large numbers of insect eggs and larvae.

**Family Turdidæ. Thrushes. Bluebirds, Etc.**

**Subfamily Turdinae. Thrushes.**

**Genus Turdus. Linnæus.**


Wood Thrush; Wood Robin.

**Description.**

Length about 8; extent about 13 inches; bill blackish, yellowish at base; legs flesh color; iris brown. Upper parts clear cinnamon brown, brightest on top of head, and shading into olive on rump and tail; lower parts pure white, and everywhere, except on chin, throat, middle of belly and under tail coverts, marked with roundish, dusky spots.

**Hab.**—Eastern United States to the plains, north to southern Michigan, Ontario and Massachusetts; south in winter to Guatemala and Cuba.

Abundant summer resident from about the last week in April to October 1. The Wood Robin, the name by which the Wood Thrush is best known in this region, is a common inhabitant of woods. It especially delights to frequent bushes in woodland, near streams or other watery places. The sweet, ringing, bell-like notes of this bird are such that it justly ranks as one of our most entertaining songsters. It builds a compact and rather large nest of mud, leaves and dried grasses in trees and bushes, usually in low or damp woods. The eggs, commonly four, are light greenish blue, and measure about one inch long by three-fourths wide. The Wood Thrush feeds on numerous forms of insect life, it devours large numbers of beetles, earth-worms, crickets, flies, larvae, etc., and also, like the Common Robin, subsists on various small fruits and berries.

**Genus Merula. Leach.**

761. Merula migratoria (Linn).

American Robin.

*(Plate 49, old and young.)*

Length about 9½; extent about 16 inches; bill yellow, upper mandible tipped with black; iris brown; legs and feet brownish; above plain grayish, blackish on head, tail and sides of neck; lower parts reddish brown, paler in female; lower part of belly, anal region and under tail coverts white; some specimens have under tail coverts spotted with grayish brown; outer tail feathers tipped with white; young are spotted above and below.
This familiar bird is abundant throughout the State during the spring, summer and autumn. In the winter months it is not uncommon to find small flocks about cedar thickets, swamps and other well sheltered localities. At times, other than when breeding, Robins are gregarious. Late in the summer and autumn they collect in good-sized flocks and repair every evening to some favorite roosting resort, where they are found often in company with Cowbirds and Purple Grackles. The Robin seems in no way particular about the site selected for its bulky nest of mud, leaves, dried grass, etc. Although it usually builds in a tree, it frequently nests under an overhanging bank along the roadside, or under a porch, and occasionally on fence-rails. In May, 1880, a friend of mine found, near West Chester, a nest of this bird built on the ground in the middle of a woods, and concealed by May-apple plants. The eggs, usually four or five in number, are light bluish green, and measure about 1.16 long by .79 wide. With us at least two broods are raised each season. By farmers and fruit growers the Robin is very generally regarded as a nuisance, because of his fondness for various small fruits. The following notes and remarks on the food, it is hoped, will suffice to show that this species is at least somewhat beneficial to the agriculturist and pomologist, even though it will, at certain periods of the year, subsist largely on a fruit diet: In the early part of June, 1879, twenty-three robins were captured on the same date and in East Bradford, Pa. The birds were taken in an apple orchard, or in the act of going to or from cherry trees located near said orchard. Thirteen birds of this series showed, on dissection, remains of cherries; five of the thirteen had only this fruit in their viscera. The remaining eight birds had, in addition, and certainly with two exceptions, in excess, insect food, consisting mainly of small brown and black beetles. One bird had in its stomach two earth-worms. Seven young birds, taken from the nests, with the exception of one that had a small piece of cherry, which, however, was present in connection with a large insect mass, furnished only proof of an insectivorous diet, which was so comminuted as to be almost unrecognizable. Sufficient evidences, however, were present to establish the fact that beetles were an important element in their bill of fare. Two birds destitute of all food materials.

Dr. Coues (Birds of the Colorado Valley), writes: "The Robin is a great eater of berries and soft fruits of every description, and these furnish, during the colder portion of the year, its chief sustenance. Some of the cultivated fruits of the orchard and garden are specially attractive, and no doubt the birds demand their tithe. But the dam-
American Robin, or Migratory Thrush.
1. Male; 2. Female and young.
age in this way is trifling at most, and wholly inconsiderable in comparison with the great benefit resulting from the destruction of noxious insects by this bird. The prejudice which some persons entertain against the Robin is unreasonable; the wholesale slaughter of the birds which annually takes place in many localities, is as senseless as it is cruel. Few persons have any adequate idea of the enormous, the literally incalculable, numbers of insects that Robins eat every year. It has been found, by careful and accurate observations, that a young Robin, in the nest, requires a daily supply of animal food equivalent to considerable more than its own weight. When we remember that some millions of pairs of Robins raise five or six young ones once, twice, or even three times a year, it will be seen that the resulting destruction of insects is, as I have said, incalculable. I have no doubt that the services of these birds, during the time they are engaged in rearing their young alone, would entitle them to protection, were the parents themselves to feed exclusively upon garden-fruits for the whole period. But at this time the diet of the old birds is very largely of an animal nature; nor is this the only season during which the destruction of insects goes on. Upon the first arrival of the main body of the birds early in the spring, long before any fruits are ripe, they throw themselves into newly-plowed fields, and scatter over meadows, lawns and parks, in eager search for the worms and grubs that, later in the season, would prove invincible to the agriculturist were not their ravages thus stayed in advance by the friendly army of Robins."

<table>
<thead>
<tr>
<th>No.</th>
<th>Date</th>
<th>Locality</th>
<th>Food-Materials</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>January 3, 1883</td>
<td>New Castle county, Del.,</td>
<td>Wild grapes.</td>
</tr>
<tr>
<td>2</td>
<td>January 8, 1883</td>
<td>New Castle county, Del.,</td>
<td>Small seeds and remains of beetles.</td>
</tr>
<tr>
<td>3</td>
<td>Feb. 18, 1880</td>
<td>Chester county, Pa.,</td>
<td>Beetles.</td>
</tr>
<tr>
<td>4</td>
<td>March 15, 1879</td>
<td>Chester county, Pa.,</td>
<td>Beetles.</td>
</tr>
<tr>
<td>5</td>
<td>March 15, 1879</td>
<td>Chester county, Pa.,</td>
<td>Beetles.</td>
</tr>
<tr>
<td>6</td>
<td>March 15, 1879</td>
<td>Chester county, Pa.,</td>
<td>Beetles.</td>
</tr>
<tr>
<td>7</td>
<td>March 15, 1879</td>
<td>Chester county, Pa.,</td>
<td>Beetles and earth-worms.</td>
</tr>
<tr>
<td>8</td>
<td>March 15, 1879</td>
<td>Chester county, Pa.,</td>
<td>Earth-worms.</td>
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<td>9</td>
<td>March 15, 1879</td>
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<td>Beetles.</td>
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<tr>
<td>10</td>
<td>March 6, 1880</td>
<td>East Bradford, Pa.,</td>
<td>Cut-worms.</td>
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<td>11</td>
<td>Mar. 8, 10, 1880</td>
<td>Willistown, Pa.,</td>
<td>Small worms (stomach distended).</td>
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<tr>
<td>12</td>
<td>Mar. 8, 10, 1880</td>
<td>Willistown, Pa.,</td>
<td>Small worms (stomach distended).</td>
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<td>13</td>
<td>Mar. 8, 10, 1880</td>
<td>Willistown, Pa.,</td>
<td>Beetles and small seeds.</td>
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<td>14</td>
<td>March 31, 1883</td>
<td>Chester county, Pa.,</td>
<td>Beetles, grasshoppers and grub-worm.</td>
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<td>March 31, 1883</td>
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<td>Beetles and larvae.</td>
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<td>April 9, 1879</td>
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<td>April 9, 1879</td>
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<td>Beetles.</td>
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<td>18</td>
<td>April 13, 1879</td>
<td>West Chester, Pa.,</td>
<td>Beetles and earth-worms.</td>
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<td>April 2, 1880</td>
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<td>23</td>
<td>April 7, 1880</td>
<td>East Bradford, Pa.,</td>
<td>Beetles and earth-worms.</td>
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<td>24</td>
<td>April 4, 1883</td>
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<td>Beetles.</td>
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<td>25</td>
<td>April 12, 1883</td>
<td>East Bradford, Pa.,</td>
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15 Birds.
### Birds of Pennsylvania.

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<th>Food-Materials</th>
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<td>Beetles and other insects.</td>
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<td>30</td>
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<td>Beetles and apterous insects.</td>
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<td>31</td>
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<td>Beetles and earth-worms.</td>
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<td>May 5, 1883</td>
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<td>34</td>
<td>May 7, 1883</td>
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<td>Small seeds and flies.</td>
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<td>35</td>
<td>May 7, 1883</td>
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<td>Small worms and beetles.</td>
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<td>May 18, 1883</td>
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<td>Spiders</td>
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<td>May 27, 1883</td>
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<td>Vegetable matter and few particles</td>
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<td></td>
<td></td>
<td></td>
<td>of oyster shells.</td>
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<td>July 12, 1880</td>
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<td>Berries and small seeds.</td>
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<td>July 12, 1880</td>
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<td>Small seeds.</td>
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<td>August 18, 1880</td>
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<td>Wild cherries.</td>
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<td>August 18, 1880</td>
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<td>57</td>
<td>October 2, 1880</td>
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<td>Spicewood and Dogwood berries.</td>
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<td>58</td>
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<td>59</td>
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<tr>
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<tr>
<td>62</td>
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<td>West Chester, Pa.</td>
<td>Wild cherries.</td>
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<td>October 3, 1880</td>
<td>West Chester, Pa.</td>
<td>Wild cherries.</td>
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<td>73</td>
<td>Nov. 12, 1884</td>
<td>East Goshen, Pa.</td>
<td>Beetles and few grub-worms.</td>
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<tr>
<td>74</td>
<td>Dec. 20, 1884</td>
<td>Newark, Delaware,</td>
<td>Berries and insects.</td>
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<td>75</td>
<td>Dec. 25, 1884</td>
<td>Newark, Delaware,</td>
<td>Berries and insects.</td>
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### Genus Sialia. Swainson.

**766. Sialia sialis (Linn.).**

**Bluebird.**

**Description.** *(Plate 50.)*

Length, about 6½; extent, about 12½ inches, bill and legs blackish; iris brown. Adult male in summer, upper parts uniform azure blue, sides of head and fore part of chin blue; throat, breast and sides reddish brown; abdomen, anal region and
Common Blue Bird
1. Male; 2. Female; 3. Young.
under tail coverts white. Male in fall and winter: blue duller, feathers of the head neck and back edged with rusty; white on abdomen more extended; the reddish brown or chestnut on the throat and breast is darker. Adult female, upper parts dull grayish blue, brightest on rump, tail and wings; lower parts similar to male but much duller.

Hab.—Eastern United States to the eastern base of the Rocky mountains, north to Manitoba, Ontario and Nova Scotia, south, in winter, from the Middle States to the Gulf States and Cuba. Bermudas, resident.

This common and well known species is found in Pennsylvania during all months of the year, but in the height of the winter season they are much more plentiful in the southern counties than elsewhere in this region. In summer Bluebirds are abundant and generally distributed throughout the State. These birds, when not engaged in building, are usually seen in flocks of from ten to twenty each, sometimes, however, particularly in the fall, they collect together in large numbers, as will be seen from the following extract taken from one of my note books: “October 23, ’84, Girard Manor, Schuylkill county, Pa. Bluebirds very abundant; a flock of about two hundred have every day for the past two weeks been observed distributed over the field surrounding the residence of my friend and host M. M. MacMillan, Esq., busily engaged in feeding or dressing their plumage while they perch on the leafless branches of the numerous young trees scattered along the fences. When feeding the birds confine their operations to the ground and feed chiefly on grasshoppers, which are abundant. The fields about here appear to be favorite feeding resorts, as they come in large numbers in the morning, and remain, if not driven away, for about two hours. They also come in the afternoon, but not in such large numbers.” The Bluebird builds a scanty and loosely constructed nest of dried grasses, feathers or other soft materials in holes of trees or stumps, in bird-boxes, or in hollows of posts and fence rails. The eggs, usually four or five in number, are light blue and unspotted. They measure about .81 long by .62 wide. The eggs of this bird sometimes though very rarely are white. Two broods are raised in a season. When insect-life can be found these birds prefer it to any other diet, but in the winter season when such food is not easily obtained they feed on various small fruits and berries.
APPENDIX.

LIST OF THE BIRDS OF PENNSYLVANIA.

[The number following the common name corresponds to the number in the A. O. U. Check-list of 1886.]

The following list, embracing three hundred and ten species and sub-species,* is based chiefly on observations made during the past ten years in eastern Pennsylvania, especially in the counties of Chester, Delaware and Lancaster. Birds which breed in this State are designated by an asterisk (*) which precedes the scientific name. Most of the species thus marked are common during the summer season; some few remain with us all months of the year, they are so indicated by the word resident. The terms straggler and accidental visitant is applied to birds which when found here have wandered from their common range e. g. Dendroica townsendi. The words winter resident signify that a bird is found in this region during the winter season. For instance the Tree Sparrow (S. monticola), is a winter resident; it occurs in Pennsylvania from about October 15 to probably the middle of April, when it returns to the far north to breed. Spring and fall migrants are those which winter beyond the southern limits of Pennsylvania, and pass through our State in the months of March, April and May, and after rearing their young in more northern States, or as some of them do, in the Arctic regions, return again in August, September and October to their winter resorts. I doubt not that a thorough investigation of our mountainous regions and larger water courses will show that other species occur here as summer residents or as spring and fall migrants. In the preparation of this list I have been materially aided by manuscript notes kindly furnished by the late John Krider, of Philadelphia, and and the late H. B. Graves, of Berks county, but formerly a resident of West Chester, Pa. Quotations have also been made from Robert Ridgway’s Manual of N. A. Birds, Dr. Elliott Coues’ Key to N. A.

*"A variation, usually geographical, of a species, but not accorded full specific rank on account of the incompleteness of its differentiation; hence, usually a geographical race or form."—Nomenclature of Colors, by Robert Ridgway.
Birds of Pennsylvania.  

Birds, Prof. Thomas G. Gentry’s Life-Histories of Birds of Eastern Pennsylvania, Dr. Turnbull’s Birds of East Pennsylvania, the Messrs. Baird List of the Birds, Carlisle, Pa., and the several lists and catalogues of the birds of Chester county, Pa., published by the late Dr. Ezra Michener, Toughkenamon, Pa., the late Vincent Barnard and Mr. Chas. J. Pennock, of Kennett Square, Pa. Through the kindness of my esteemed friend Mr. Geo. B. Sennett, of Erie, Pa., I have been able to give in this report information relative to species in the north-western part of the State.

Family Podicipidæ. The Grebes.

1. *Colymbus holbollii* (Reinh.). 
   Holboll’s Grebe. 2. Winter visitant.

2. *C. auritus* Linn. 
   Horned Grebe. 3. Winter visitant.

3. *Podilymbus podiceps* (Linn.). 
   Pied-billed Grebe. 4. Winter visitant.

Family Urinatoridæ. The Loons.

4. *Urinator imber* (Gunn.). 
   Loon. 7. Winter visitant.

5. *U. arcticus* (Linn.). 
   Black-throated Loon. 9. Very rare or accidental visitant. A specimen is said to have been taken, by the late John Krider, near Philadelphia.

6. *U. lumnæ* (Gunn.). 
   Red-throated Loon. 11. Rare visitant in eastern Pennsylvania. This species is said to be “not rare on Lake Erie, especially in the fall.”

Family Alcidae. The Murres, Puffins, etc.

7. *Fratercula arctica* (Linn.). 
   Puffin. 13. Accidental winter visitant.—Krider.

8. *Cephus grylle* (Linn.). 
   Black Guillemot. 27. Specimens have been taken in winter on the Delaware, Schuylkill and Susquehanna rivers.

9. *C. mandtii* (Licht.). 
   Mandt’s Guillemot. 28. Some few winters ago a specimen was taken near Philadelphia.

10. *Uria lomvia* (Linn.). 
    Brünnich’s Murre. 31. Accidental winter visitant. A specimen stuffed by Mr. C. D. Wood, of Philadelphia, was said to have been captured in the winter of 1880 on an ice-pond in Delaware county.

11. *Alle alle* (Linn.). 
    Dovkie. 34. Specimens have been taken in winter on the Delaware river near Philadelphia.

Family Stercoraridæ. The Jaegers.

12. *Stercorarius pomarinus* (Temm.). 
    Pomarine Jaeger. 36. Accidental. “One specimen was taken at Harrisburg in summer.”—Turnbull.

13. *S. parasiticus* (Linn.). 
Family Laridæ.* The Gulls and Terns.

14. Rissa tridactyla (Linn.).
   Kittiwake. 40. Accidental winter visitant. H. B. Graves mounted a
   specimen taken in Lancaster county.

15. Larus argentatus smithsonianus Coues.
   American Herring Gull. 51b. This bird is said to be a common spring
   and fall migrant on Lake Erie. It occurs also on the Delaware river
   and occasionally is observed about the large streams in the interior.

16. L. delawarensis Ord.
   Ring-billed Gull. 54. This species is frequently met with during the
   spring and fall migrations in different parts of the State. It is also
   found on the Delaware river in winter.

17. L. atricilla Linn.
   Laughing Gull. 58. Found on the Delaware river, and occasionally in
   the interior during the spring and fall migrations.

18. L. philadelphia (Ord.).
   Bonaparte's Gull. 60. Migratory. Said to be quite common during spring
   and fall migrations on Lake Erie. Not uncommon on the Delaware
   river and in the interior.

19. Gelochelidon nilotica (Hasselq.).
   Gull-billed Tern. 63. Very rare. H. B. Graves killed a specimen in
   Chester county in the autumn.

   Caspian Tern. 64. A specimen mounted by Mr. Joseph Krider is said to
   have been captured in Delaware county.

   Royal Tern. 65. In September, 1879, H. B. Graves shot a specimen in
   Berks county.

22. S. forsteri Nutt.
   Forster's Tern 69. Specimens are sometimes taken during spring and
   fall migrations.

23. S. hirundo Linn.
   Common Tern 70. Specimens are often taken during migrations, especi-
   ally in September.

24. S. paradisaea Bruin.
   Arctic Tern 71 Specimens are occasionally taken in the autumn about
   the rivers.

*These birds occur in Pennsylvania chiefly as stragglers. When found inland they usually are
observed after severe wind and rain storms. None, as far as I am aware, breed in the State.
The Gulls and Terns are found principally about the coasts. Certain species, however, frequent
large inland waters. Although there are exceptions, it may be stated in a general way that
Gulls are larger than Terns. In Gulls the bill is hooked, while in Terns the bill is straight. Again,
in Gulls the tail is even; in Terns the tail is forked. The Gulls are veritable scavengers of the
sea. They feed eagerly upon any and all kinds of animal food which may be cast into the waters
before them. They also devour pieces of bread, crackers and fruit which are cast overboard.
Nuttall says: "Like Vultures, they are voracious, feeding on every kind of animal food,
whether dead or living, fresh or tainted. The larger kinds also prey upon eggs and young
birds; but their principal supply is fish, whose crowding schools they follow with much eagerness,
seizing their prey with great address as it approaches the surface of the water, darting swiftly
in quest, and at the same time submerging the head. So powerful is the gastic juice in this
family of birds that it suffices even to digest the scales of fish, feathers and putrid matter." The
Terns, when feeding, will frequently hover over the water, in the same manner as the Sparrow
Hawk does when hunting in a grass field, and dart head foremost into it, oftentimes with
such velocity as to submerge the whole body. Unlike the Hawk, however, which seizes its prey
in its talons, the Tern captures its prey in its bill. Dr. Coues, writing of the Terns, says: "The
larger kinds feed principally on little fish * * * but most of the smaller ones are insectivorous
and flutter over marshy spots like Swallows or Nighthawks." Gulls and terns are web-
footed. They swim with great ease, but are, it is stated, unable to dive.
Birds of Pennsylvania.

25. _Sterna dougallii_ Montag.
    Roseate Tern. 72. Specimens have been captured on the Schuylkill and Delaware rivers.

26. _S. antillarum_ (Less.).
    Least Tern. 74. Specimens have been taken in Chester, Lancaster and Montgomery counties in August and September.

27. _S. fuscicollis_ Gmel.
    Sooty Tern. 75. Specimens have been taken in the spring and early fall in Chester and Delaware counties.

28. _Hydrochelidon nigra surinamensis_ (Gmel.).
    Black Tern 77. Specimens have been taken in Chester, Delaware, York and Erie counties.

Family _Rynchopidae_. The Skimmers.

29. _Rynchops nigra_ Linn.

Family _Procellaridae_. The Shearwaters and Petrels.

30. _Puffinus major_ Faber.
    Greater Shearwater 89. Accidental. Chester county.—_Michener._

31. _Procellaria pelagica_ Linn.
    Stormy Petrel; "Mother Carey's Chicken." 104. Accidental. One captured in Philadelphia.—_Turnbull._

32. _Oceanodroma leucorhoa_ (Vieill.).
    Leach’s Petrel. 106. Accidental. Chester county, September, 1879. "During a gale in August, 1842, a number were driven inland."—_Turnbull._

Family _Phalacrocoracidae_. The Cormorants

33. _Phalacrocorax carbo_ (Linn.).
    Cormorant. 119. Very rare, or accidental winter visitor. About twelve years ago Mr. H. B. Graves obtained a specimen in Berks county.

34. _P. dilophus_ (Sw. & Rich.).
    Double-crested Cormorant. 120. "An occasional straggler is observed in the vicinity of Erie."—_G. B. Sennett._

Family _Pelecanidae_. The Pelicans

35. _Pelecanus erythrorhynchus_ Gmel.
    American White Pelican. 125. Has been seen at rare intervals on the Delaware.—_Turnbull._ Many years ago a few of these birds were seen near Erie.—_G. B. Sennett._

Family _Anatidae_. The Ducks, Geese and Swans

36. _Merganzer americanus_ (Cass.)
    American Merganser. 129. Migrant.

37. _M. serrator_ (Linn.).
    Red-breasted Merganser. 130. Migrant.

38. _Lophodytes cullulatus_ (Linn.).
    Hooded Merganser. 131. Migrant. Probably breeds occasionally.

39. _Anas boschas_ Linn.
    Mallard. 132. Frequent spring and fall migrant. According to Audubon this species formerly bred along the meadows of the Schuykill.
40. *Anas obscura* Gmel.  
Black Duck. 133. Spring and fall migrant.

41. *A. strepera* Linn.  
Gadwall. 135. Spring and fall migrant.

42. *A. americana* Gmel.  
Baldpate. 137. Spring and fall migrant.

43. *A. carolinensis* Gmelin.  
Green-winged Teal. 139. Rather common spring and fall migrant.

44. *A. discors* Linn.  
Blue-winged Teal. 140. Spring and fall migrant.

45. *Spatula clypeata* (Linn.).  
Shoveler. 142. Spring and fall migrant rather rare.

46. *Dafila acuta* (Linn.).  
Pintail. 143. Spring and fall migrant.

47. *Aix sponsa* (Linn.).  
Wood Duck. 144. Rarely seen in winter.

48. *Aythya americana* (Eyt.).  
Redhead. 146. Winter visitant.

49. *A. vallisneria* (Wils.).  
Canvas-back. 147. Winter visitant.

50. *A. marila neurotica* Stejn.  
American Scaup Duck. 148. Autumn and winter visitant.

51. *A. affinis* (Eyt.).  
Lesser Scaup Duck. 149. Frequent winter visitant.

52. *A. collaris* (Donov.).  
Ring-necked Duck. 150. Spring and fall migrant.

53. *Glaucionetta clangula americana* (Bonap.).  

54. *Charitonetta albcola* (Linn.).  
Buffle-head. 153. Common winter resident.

55. *Clangula hyemalis* (Linn.).  
Old-squaw. 154. Rare winter visitant.

56. *Somateria dresseri* Sharpe.  
American Eider. 160. Very rare winter visitant. *If there is no mistake a bird of this species was taken near Chadd's Ford, Delaware county, in the winter of 1886.—B. M. Everhart.*

57. *Oidemia americana* Sw. & Rich.  
American Scoter. 163. Occasional winter visitant.

58. *O. deglandi* Bonap.  
White-winged Scoter. 165. Very rare winter visitant about our rivers, probably more frequent on Lake Erie.

59. *O. perspicillata* (Linn.).  
Surf Scoter. 166. Rare winter visitant.

60. *Erismatura rubida* (Wils.).  
Ruddy Duck. 167. Common winter resident.

61. *Branta canadensis* (Linn.).  
Canada Goose. 172. Common spring and fall migrant.

62. *Olor columbianus* (Ord.).  
Whistling Swan. 180. Casual spring and winter visitor.
Family IBIDIDÆ. The Ibises.

63. Plegadis autumnalis (Hasselq.).
Glossy Ibis. 186. Accidental. No recent record of its occurrence in Pennsylvania. In 1860 Mr. Krider shot a specimen just below Philadelphia. "At long intervals it has been seen on the Delaware river."— Turnball.

Family CICONIDÆ. The Wood Ibises

64. Tantalus loculator Linn.
Wood Ibis. 188. "A very rare straggler. One specimen was taken a number of years ago by the late Vincent Barnard."—Pennock.

Family ARDEIDÆ. The Herons, Bitterns, etc.

65. Botaurus lentiginosus (Montag.)
American Bittern. 190. Migrant, spring and fall.

66. B. exclis (Gmel.)
Least Bittern. 191. Spring and fall migrant. Probably breeds occasionally.

67. *Ardea herodias Linn.
Great Blue Heron. 194.

68. A. egretta Gmel.
American Egret. 196. Migrant, spring and fall.

69. A. candidissima Gmel.
Snowy Heron. 197. Migrant, spring and fall.

70. A. tricolor ruficollis (Gosse.).
Louisiana Heron. 199. An occasional straggler is sometimes taken in the late summer and autumn.

71. A. cosrulea Linn.
Little Blue Heron. 200. Immature birds are occasionally taken in the south-eastern portions of the State during the late summer and early autumn.

72. *A. virgiceps Linn.
Green Heron. 201.

73. *Nycticorax nycticorax naevius (Bodd.).

74. N. violaceus (Linn.).
Yellow-crowned Night Heron. 203. "A rare straggler from the south. It has been seen on the borders of the Schuylkill near Philadelphia.—Turnbull. No record of its recent occurrence in Pennsylvania.

Family GRUIDÆ. The Cranes.

75. Grus canadensis (Linn.).
Little Brown Crane. 205. "Some forty years ago a flock of four or five of these birds was found along the White Clay Creek, near this place, one of which was shot and presented to me."—Michener. (1881.)

Family RALLIDÆ. The Rails, Gallinules, etc.

76. Rallus elegans Aud.
King Rail. 208. Rare spring and fall migrant. Specimens have been taken in Chester, Delaware, Berks and Lancaster counties.

77. R. longirostris creptans (Gmel.).
Clapper Rail. 211. A bird of this species was shot near Chester city, Delaware county, September, 1880, by ex-Sheriff George R. Hoopes, of West Chester, and presented to me. Accidental, usually found about salt marshes of the Atlantic coast.
78. *Rallus virginianus* Linn.
    Virginia Rail. 212.
79. *Porzana carolina* (Linn.).
    Sora. 214. Most abundant during the fall migrations.
80. *P. noveboracensis* (Gmel.).
    Yellow Rail. 215. Rare visitor. Probably breeds occasionally.
81. *P. jamaicensis* (Gmel.).
    Black Rail. 216. Rare migrant. Specimens are occasionally shot in the fall near Chester city, Delaware county.
82. *Ionornis martinica* (Linn.).
    Purple Gallinule. 218. A very rare straggler from the south.
83. *Fulica americana* Gmel.
    American Coot. 221. Spring and fall migrant.
84. *Phalaropus lobatus* (Linn.).
    Northern Phalarope. 223. Rare straggler from the north.
85. *Crymophilus fulicarius* (Linn.).
    Red Phalarope. 222. Chiefly maritime; found in this State only as an irregular and rare migrant.
86. *Phalaropus tricolor* (Vieill.).
    Wilson’s Phalarope. 224. Rare spring and fall migrant.
87. *Macrorhamphus griseus* (Gmel.).
    Dowitcher. 231. Rare and irregular spring and fall migrant. Chester county.—Michener. “Cumberland county, male, September, 1844; female, August, 1844.”—Baird.
88. *Philohela minor* (Gmel.).
    American Woodcock. 228. Sometimes seen during mild winters.
89. *Gallinago delicata* (Ord.).
    Wilson’s Snipe. 230. Common migrant; spring and fall.
90. *Macrorhamphus griseus* (Gmel.).
    Dowitcher. 231. Rare and irregular spring and fall migrant. Chester county.—Michener. “Cumberland county, male, September, 1844; female, August, 1844.”—Baird.
91. *Tringa canutus* Linn.
    Knot. 234. Common spring and fall migrant along the Atlantic coast. Specimens are occasionally found along our rivers during the fall migrations.
92. *T. maritima* Brünn.
    Purple Sandpiper. 235. Very rare. A specimen in the U. S. National Museum was taken many years ago near Philadelphia.
93. *T. maculata* Vieill.
    Pectoral Sandpiper. 230. Spring and fall migrant.
94. *T. fuscicollis* Vieill.
    White-rumped Sandpiper. 240. Rare spring and fall migrant.
95. *T. minutilla* Vieill.
    Least Sandpiper. 242. Spring and fall migrant.
96. *T. alpina pacifica* (Coues.).
    Red-backed Sandpiper. 243a. Most frequently seen in the fall. Said to be a common spring and fall migrant on Lake Erie, near Erie city.
93. *Crex crex* (Linn.).
Semipalmedated Sandpiper. 246. Spring and fall migrant. Most frequently met with in August and September.

99. *Calidris stagnatilis* (Linn.).
Sanderling. 248. Spring and fall migrant.

100. *Limosa falcata* (Linn.).
Marble Godwit. 249. "An occasional bird of this species is seen during migrations."—H. B. Graves.

101. *L. hystrix* (Linn.).
Hudsonian Godwit. 251. Very rare spring and fall migrant.

102. *Totanus melanoleucus* (Gmel.).
Greater Yellow-legs. 254. Spring and fall migrant.

103. *T. flavipes* (Gmel.).
Yellow-legs. 253. Spring and fall migrant.

104. *T. solitarius* (Wils.).
Solitary Sandpiper. 256. Common spring and fall migrant. Mr. Geo. B. Sennett informs me that he is quite certain that this species breeds in Crawford county.

105. *Scolopods semipalmata* (Gmel.).
Willet. 258. August, 1855, two of these birds were shot in Delaware county.

106. *Bartramia longicauda* (Bechst.).
Bartramian Sandpiper. 261.

107. *Tryngites subruficolis* (Vieill.).
Buff-breasted Sandpiper. 262. Very rare, migrant in the autumn.

108. *Actitis macularia* (Linn.).
Spotted Sandpiper. 263.

Long-billed Curlew. 264. Recorded by Dr. Michener (1831) as a rare migrant in Chester county.

Hudsonian Curlew. 265. Specimens of this and the succeeding species have, it is said, been taken near Philadelphia during the spring and fall migrations.

111. *N. borealis* (Forst.).
Eskimo Curlew. 266.

**Family Charadriidae. The Plovers.**

112. *Charadrius squatarola* (Linn.).
Black-bellied Plover. 270. Irregular spring and fall migrant.

113. *C. dominicus* Müll.
American Golden Plover. 272. Irregular spring and fall migrant.

114. *Egaidites vociferus* (Linn.).
Killdeer. 273. Sometimes found during mild winters in southern parts of the State.

115. *Æ. semipalmata* Bonap.
Semipalmedated Plover. 274. Spring and fall migrant, When found is generally seen in the late summer and autumn.

116. *Æ. melodus* (Ord.).
Piping Plover. 277. This species during migrations is found on the shores of Lake Erie.
Family Aphriza. The Turnstones.

117. *Arenaria interpres* (Linn.).
Turnstone. 283. Common during migrations on the shores of Lake Erie.—G. B. Scnett. Stragglers have also been taken in Philadelphia and Delaware counties.

Family Tetraonidæ. The Grouse, Partridges, etc.

118. *Colinus virginianus* (Linn.).
Bob-white. 289. Resident.

119. *Bonasa umbellus* (Linn.).
Ruffed Grouse. 300. Resident.

120. *Tympanuchus americanus* (Reich.).
Prairie Hen. 305. Extinct. "Now very rare. A few are still met with in Monroe and Northampton counties, where I have shot the species."—Turnbull (1869).

Family Phasianidæ. The Turkeys.

121. *Meleagris gallopavo* Linn.
Wild Turkey. 310. Resident.

Family Columbidæ. The Pigeons.

122. *Ectopistes migratorius* (Linn.).
Passenger Pigeon. 315. Breeds sparingly: some seasons quite abundant in the fall: a few individuals are sometimes seen during mild winters.

123. *Zenaidura macroura* (Linn.).
Mourning Dove. 316. Resident.

Family Cathartidæ. The American Vultures.

124. *Cathartes aura* (Linn.).
Turkey Vulture. 325. Resident in southern parts of State.

125. *Catharista atrata* (Bartr.).
Black Vulture. 326. Rare straggler from the South.

Family Falconidæ. The Hawks, Eagles, etc.

126. *Elaeoides forficatus* (Linn.).
Swallow-tailed Kite. 327. A rare straggler from the South.

127. *Ictinia mississippiensis* (Wils.).
Mississippi Kite. 329. A rare straggler from the southern United States, Chester county, October 20, 1852.—Barnard.

128. *Circus hudsonius* (Linn.).
Marsh Hawk. 331. Most abundant in spring and fall. Rare in summer.

129. *Accipiter velox* (Wils.).
Sharp-shinned Hawk. 332. Resident.

130. *A. cooperi* (Bonap.).
Cooper's Hawk. 333. Resident.

131. *A. atricapillus* (Wils.).
American Goshawk. 334. Rare winter visitant.

132. *Buteo borealis* (Gmel.).
Red-tailed Hawk. 337. Resident.

133. *B. harlani* (Aud.).
134. *Buteo lineatus* (Gmel.).

135. *B. latissimus* (Wils.).
   Broad-winged Hawk. 343. Resident.

136. *Archilochus lagopus sancti-johannis* (Gmel.).
   American Rough-legged Hawk. 347a. Winter resident.

137. *Aquila chrysaetos* (Linn.).
   Golden Eagle. 349. Winter resident, rather rare and irregular.

138. *Haliaetus leucocephalus* (Linn.).
   Bald Eagle. 352. Winter visitant.

139. *Falco perigrinus anatum* (Bonap.).
   Duck Hawk. 356. Winter visitant.

140. *F. columbarius* Linn.
   Pigeon Hawk. 357. Winter visitant.

141. *F. sparverius* Linn.
   American Sparrow Hawk. 360. Resident.

142. *Pandion haliaetus carolinensis* (Gmel.).
   Fishhawk. 364. Summer visitant.

143. *Strix pratincola* Bonap.

144. *Asio wilsonianus* (Less.).

145. *A. accipitrinus* (Pall.).
   Short-eared Owl. 367. Common winter resident.

146. *Syrnium nebulosum* (Forst.).
   Barred Owl. 368. Resident; usually found in winter.

147. *Ulula cinerea* (Gmel.).
   Great Gray Owl. 370. Rare straggler from the north. Erie county—Geo.
   B. Sennett; Chester county—H. B. Graves.

148. *Nyctala acadica* (Gmel.).

149. *Megascops asio* (Linn.).
   Screech Owl. 373. Resident.

150. *Bubo virginianus* (Gmel.).
   Great Horned Owl. 375. Resident.

151. *Nyctea nyctea* (Linn.).
   Snowy Owl. 376. Winter visitant.

152. *Surnia ulula cupreococh* (Müll.).
   American Hawk Owl. 377a. Very rare and irregular visitant from the
   northern portions of North America.

153. *Crotophaga ani* Linn.

154. *Coccyzus americanus* (Linn.).
   Yellow-billed Cuckoo. 387.

155. *C. erythropthalmus* (Wils.).
   Black-billed Cuckoo. 388.
Family Alcedinidae. The Kingfishers.

156. *Ceryle alcyon* (Linn.).
  Belted Kingfisher. 390. Resident. Most abundant in summer.

Family Picidae. The Woodpeckers.

157. *Dryobates villosus* (Linn.).
  Hairy Woodpecker. 393. Resident.

158. *D. pubescens* (Linn.).
  Downy Woodpecker. 394. Resident.

159. *D. borealis* (Vieill.).
  Red-cockaded Woodpecker. 395. "Accidental; very rare."—Michener (1863). Rare visitant in Eastern Pennsylvania; specimen shot about 1875 in Delaware county.—Gentry. This species is an abundant resident in the pine forests of Florida and other of the southern U. S.

160. *Picoides arcticus* (Swains.).
  Arctic Three-toed Woodpecker. 400. Casually southward to the northern counties and mountainous districts of Pennsylvania. (Audubon). (Turnbull).

161. *Sphyrapicus varius* (Linn.).
  Sapsucker. 402. Spring and fall migrant; a few individuals are also sometimes seen in winter.

162. *Cedrela pileatus* (Linn.).
  Pileated Woodpecker. 405. Resident in thinly settled districts.

163. *Melanerpes erythrocephalus* (Linn.).
  Red-headed Woodpecker. 406. Partially resident, especially in southern counties.

164. *M. carolinus* (Linn.).
  Red-bellied Woodpecker. 409. Rare winter visitant.

165. *Colaptes auratus* (Linn.).
  Flicker. 412. Common summer resident. Individuals of this species may frequently be observed in winter.

Family Caprimulgidae. The Goatsuckers.

166. *Antrostomus vociferus* (Wils.).
  Whip-poor-will. 417.

167. *Chordeiles virginianus* (Gmel.).
  Nighthawk. 420.

Family Micropogonidae. The Swifts.

168. *Chetura pelagica* (Linn.).
  Chimney Swift. 423.

Family Trochilidae. The Hummingbirds.

169. *Trochilus colubris* Linn.
  Ruby-throated Hummingbird. 428.

Family Tyrannidae. The Tyrant Flycatchers.

170. *Tyrannus tyrannus* (Linn.).
  Kingbird. 444.

171. *Myiarchus crinatus* (Linn.).
  Crested Flycatcher. 452.

172. *Sayornis phoebe* (Lath.).
  Phoebe. 456.
173. *Contopus borealis* (Swains.). Olive-sided Flycatcher. 450. Rare spring and fall migrant.


177. *E. minimus* Baird. Least Flycatcher. 467. Rare spring and fall migrant.

**Family Alaudidæ. The Larks.**


180. *O. alpestris praticola* Hensh. Prairie Horned Lark. 474. Breeds sparingly in Erie county, near Erie city, where Mr. Geo. B. Sennett and the writer have obtained the young in stubble-fields in July, 1888.

**Family Corvidæ. The Crows and Jays.**

181. *Cyanocitta cristata* (Linn.). Blue Jay. 477. Resident; most numerous in spring, summer and fall.

182. *Perisoreus canadensis* (Linn.). Canada Jay. 481. A rare straggler, in winter to the northern counties of Pennsylvania.—*Turnbull*.

183. *Corvus corax sinuatus* (Wagl.). American Raven. 486. Formerly resident; now very rare or extinct.

184. *C. americanus* And. 
American Crow. 488. Resident.

**Family Icteridæ. The Blackbirds, Orioles, etc.**

185. *Dolichonyx oryzivorus* (Linn.). Bobolink. 494. Mr. Geo. B. Sennett informs me that this bird is a regular breeder in Crawford and Erie counties, in the north-western part of this State. In eastern Pennsylvania I have observed this bird only as a common spring and fall migrant.


187. *Xanthocephalus xanthocephalus* (Bonap.). Yellow-headed Blackbird. 495. Accidental, “Dr. Jackson mentions that this species is occasionally seen along the Alleghany mountains, where a flock appeared in the autumn of 1857. Mr. John Krider shot a young male near Philadelphia.—*Turnbull*.


190. *Icterus spurius* (Linn.). Orchard Oriole. 506.
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191. *Icterus galbula* (Linn.).
   Baltimore Oriole. 507.

192. *Scolopaghus carolinus* (Müll.).
   Rusty Blackbird. 509. Spring and fall migrant.

193. *Quiscalus quiscula* (Linn.).
   Purple Grackle. 511. Common summer resident in Eastern Pennsylvania. In winter small flocks are frequently seen, especially along the southern borders of the State.

194. *Q. quiscula cyanus* (Ridgway).
   Bronzed Grackle. 5116. Rare in Eastern Pennsylvania. This form is the one which is found in the central and western part of the State.

Family Fringillidae. The Finches, Sparrows, etc.

195. *Pinicola enucleator* (Linn.).
   Pine Grosbeak. 515. Occasional but irregular winter visitor; when found is generally seen in small flocks about pine forests or apple orchards.

196. *Carpodacus purpureus* (Gmel.).
   Purple Finch. 517. Common spring and fall migrant and frequent winter resident in south-eastern Pennsylvania. Breeds in Crawford and Erie counties, and also probably in other portions of the State.

197. *Loxia curvirostra minor* (Brehm.).
   American Crossbill. 521. Breeds sparingly in the mountainous districts. Occurs generally throughout the State as an irregular winter visitor. Said to be a common and regular winter resident in Warren county.

   White-winged Crossbill. 522. Rare and irregular winter visitor.

199. *Acanthis linaria* (Linn.).
   Redpoll. 528. Irregular winter visitor; when found is generally seen in large flocks.

   Greater Redpoll. 5286. Probably occurs as an occasional winter visitor in the northern portions of the State.

201. *Spinus tristis* (Linn.).
   American Goldfinch. 529. Resident.

202. *A. pinus* (Wils.).
   Pine Finch. 533. Winter resident.

203. *Passer domesticus* (Linn.).
   English Sparrow. Resident.

204. *Plectrophenax nivalis* (Linn.).
   Snowflake. 534. Winter visitor.

205. *Calcarius lapponicus* (Linn.).
   Lapland Longspur. 536. Irregular winter visitor.

206. *Poecetes gramineus* (Gmel.).
   Vesper Sparrow. 540. Common summer resident; winters from southern Pennsylvania, southward (Delaware, Maryland, etc.).

207. *Ammodramus sandwichensis savanna* (Wils.).

208. *A. savannarum passerinus* (Wils.).
   Grasshopper Sparrow. 546.

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209. *Ammodramus henslowii* (Aud.).

Henslow's Sparrow. 547. Very rare summer resident in Chester county—Michener.

210. *Zonotrichia leucophrys* (Forst.).

White-crowned Sparrow. 547. Tolerably common spring and fall migrant; most numerous in the autumn. According to Prof. Gentry this species winters regularly in well-wooded and sheltered localities in the limits of Philadelphia.

211. *Z. albicollis* (Gmel.).

White-throated Sparrow. 558. Common spring and fall migrant; frequent winter resident.

212. *Spizella monticola* (Gmel.).

Tree Sparrow. 559. Common winter resident.

213. *S. townsendii* (Aud.).

Field Sparrow. 559. Rare spring and fall migrant, winters from southern Pennsylvania, southward through Delaware, Maryland, Virginia, etc.

214. *Janco hyemalis* (Linn.).

Snowbird. 567. Occurs generally throughout the State as a common winter resident. Seen commonly from October 1 to the middle of April. Breeds in Crawford and McKean counties.—Sennett.

215. *Melospiza fasciata* (Gmel.).

Song Sparrow. 581. Resident.

216. *M. lincolnii* (Aud.).

Lincoln's Sparrow. 583. Rare spring and fall migrant.

217. *M. georgiana* (Lath.).

Swamp Sparrow. 584. Common spring and fall migrant; occasional winter resident. Gentry says a few remain in eastern Pennsylvania to breed. Mr. Pennock mentions that a nest and eggs were taken near Kennett Square, Chester county, in 1885.

218. *Passerella iliaca* (Merr.).

Fox Sparrow. 585. Common spring and fall migrant; frequent winter resident in southern parts of the State.

219. *Pipto erythrophtalmus* (Linn.).

Towhee. 587. During mild winters a few individuals may occasionally be observed about bushy and well-sheltered localities in southern Pennsylvania and the northern portions of Delaware and Maryland.

220. *Cardinalis cardinalis* (Linn.).

Winter Redbird. 593. Resident in southern Pennsylvania.

221. *Habia ludoviciana* (Linn.).

Rose-breasted Grosbeak. 595.

222. *Guiraca cerulea* (Linn.).

Blue Grosbeak. 597. Very rare spring and summer visitant to the southern counties of Pennsylvania. The Messrs. Baird, writing in 1844, say: "A few seen each year in the vicinity of Carlisle, Cumberland county, where it breeds."

223. *Passerina cyanea* (Linn.).

Indigo Bunting. 598.

224. *Spiza americana* (Gmel.).

Dickcissel. 604.

225. *S. townsendii* (Aud.).

Townsend's Bunting. †18. From Dr. Ezra Michener's Birds of Chester County published in 1881, I take the following remarks relative to this species. "This unique bird was obtained by my excellent friend, whose
name it bears, in a cedar grove near my dwelling, while assisting me in collecting birds in the spring of 1833. We at once pronounced it new. Audubon did the same, and named and published it in both of his large works. "This curious bird has long been a puzzle to ornithologists in the uncertainty whether it is only a variety of S. americana (Black-throated Bunting) or a distinct species. Thus far (now more than forty years) but one specimen is known, kindly presented to the Smithsonian Institution by Dr. Michener. I do not feel able to decide the question of its true relationship to the S. americana. While this uncertainty remains it seems proper that Chester county should preserve a record of its history as a guide to future observers." 

Sp. Ch.—**Male.** Upper parts, head and neck all round, sides of body and fore part of breast, slate blue; the back and upper surface of wings tinged with yellowish brown: the inter scapular region streaked with black. A superciliary and maxillary line, chin and throat, and central line of under parts from the breast to crissum, white; the edge of the wing, and a gloss on the breast and middle of belly, yellow. A black spotted line from the lower corner of the lower mandible down the side of the throat, connecting with a crescent of streaks in the upper edge of the slate portion of the breast. Length, 53 inches; alar extent, 9; wing, 2.86; tail, 2.56 inches."—S. F. Baird.

**Family Tanagridae.** The Tanagers.

**226. *Piranga erythromelas* Vieill.**
Scarlet Tanager. 608.

**227. *P. rubra* (Linn.).**
Summer Tanager. 610. Is a trifle larger than the Scarlet Tanager. The adult male is a "rose-red" or vermilion color: wings and tail feathers are same color as body (unexposed portions of wing feathers, also ends of primaries and secondaries, dusky), adult female is greenish or brownish olive above, lower parts lighter. This bird like the Scarlet Tanager is subject to great variations in plumage. Rare visitor; saw male and female, May 25, 1876, in West Chester. Found chiefly south of Pennsylvania, early in April these birds arrive in Florida from their wintering resorts in the tropics.

**Family Hirundinidae.** The Swallows.

**228. *Progne subis* (Linn.).**
Purple Martin. 611.

**229. *Petrochelidon lunifrons* (Say.).**
Cliff Swallow. 612.

**230. *Chelidon erythrogaster* (Bodd.).**
Barn Swallow. 613.

**231. *Tachycineta bicolor* (Vieill.).**
Tree Swallow. 614. Most numerous in spring and fall.

**232. *Cliveola riparia* (Linn.).**
Bank Swallow. 616.

**233. *Stelgidopteryx serripennis* (Aud.).**
Rough-winged Swallow. 617.

† A. O. U. Check List, page 349. Hypothetical List "consisting of species which have been recorded as North American, but whose status as North American birds is doubtful, either from lack of positive evidence of their occurrence within the prescribed limits (Continent of North America, north of the present United States and Mexican boundary, and Greenland; peninsula of Lower California, with the islands belonging thereto) of the present check-list, or from absence of satisfactory proof of their validity as species."—A. O. U. Check List, 1884.
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Family Ampelidae. The Waxwings.

234. *Ampelis garrulus* Linn.
Bohemian Waxwing. 618. Rare winter straggler from the north, Chester county (1860).—*H. R. Gravies* has been shot occasionally near Philadelphia.—*Turnbull* (1869).

235. *A. cedrorum* (Vieill.).

Family Laniidae. The Shrikes.

236. *Lanius borealis* Vieill.
Northern Shrike. 621. Winter resident, from October to April, not rare. According to Dr. Turnbull this species breeds on the mountain ridges of the Alleghanies.

237. *L. ludovicianus* (Linn.).
Loggerhead Shrike. 622.

238. *L. ludovicianus excubitorides* (Swains.)
White-rumped Shrike. 622a.

Family Vireonidae. The Vireos.

239. *Vireo olivaceus* (Linn.).
Red-eyed Vireo. 624.

240. *V. philadelphicus* (Cass.).
Philadelphia Vireo. 626. Rare spring and fall migrant.

241. *V. flavifrons* Vieill.
Yellow-throated Vireo. 628. Rather common during spring and fall migrations.

242. *V. solitarius* (Wils.).
Blue-headed Vireo. 629. According to Prof. Gentry this species breeds in the vicinity of Philadelphia. I have observed it only as a spring and fall migrant; most plentiful in the spring.

243. *V. noveboracensis* (Gmel.).
White-eyed Vireo. 631.


244. *Mniotilta varia* (Linn.).
Black and White Warbler. 636.

245. *Protonotaria citrea* (Bodd.).
Prothonotary Warbler. 637. Individuals of this species occasionally straggle northward to southern Pennsylvania where they have been taken in the spring and summer.

246. *Helmitheros vermivorus* (Gmel.).
Worm-eating Warbler. 639. Common summer resident in Chester, Lancaster, Delaware and Berks counties.

247. *Helmithophila pinnis* (Linn.).
Blue-winged Warbler. 641.

†Thirteen Shrikes or Butcher-birds, as they are commonly called, were taken, August 5 and 6, 1888, by Mr. George B. Sennett and myself in Erie county. The specimens were adults and young of the year. Owing to the bad plumage of these birds I am unable to say whether they are *L. ludovicianus* or the sub-species *excubitorides*, hence have deemed it best to include both in this list as summer residents. These birds are said to be equally as plentiful in Crawford county as they are in Erie during the summer season. *L. ludovicianus excubitorides*, should, I think, be eliminated from the A. O. U. Check List.
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48. Helminthophila chrysoptera (Linn.). Golden-winged Warbler. 642. Rare spring and fall migrant. Prof. S. F. Baird obtained an adult male July 8, 1845, at Carlisle, Cumberland county.


250. H. vulgata (Say.). Orange-crowned Warbler. 646. Rare visitant. November 2, 1867, Mr. C. D. Wood, of Philadelphia, shot an adult male in Bucks county.

251. H. pergrina (Wils.). Tennessee Warbler. 647. In eastern Pennsylvania this species occurs in spring only as a very rare sojourner (arriving in Chester county May 20 to 25.—Barnard. In the autumn (September) the Tennessee Warbler is a common visitant about apple orchards and forests, frequenting in the latter, beech trees (Fagus ferruginea). The Messrs. Baird writing of this bird in Cumberland county, say: "1840, not seen; 1841, one seen; 1842, very abundant in autumn; 1843, not seen, migratory."

252. *Compsothlypis americana (Linn.). Parula Warbler. 648. Mr. George B. Sennett informs me that this warbler breeds in Crawford county. Mr. George W. Roberts, Allerton farm, West Chester, Pa., shot, in the summer of 1886, several of these birds (worn plumage) in Centre county, and reported the species to be quite plentiful in that locality. I have seen individuals of this species in Chester and Berks counties, as late as June 27; have also observed a few in Schuylkill and Dauphin counties the first week in July.

253. Dendroica tigrina (Gmel.). Cape May Warbler 650. Migrant May and September. Rather rare in spring; tolerably abundant in the autumn.

254. *D. astira (Gmel.). Yellow Warbler 652.

255. *D. cerulea (Gmel.).

Black-throated Blue Warbler. 654. Common migrant, May and September; breeds in the mountainous districts.

256. D. coronata (Linn.). Myrtle Warbler. 655. Common migrant; arrives some times as early as the first week in April, usually, however, appears about April 20, and returns in October. A few individuals are occasionally seen during mild winters.

257. D. maculosa (Gmel.). Magnolia Warbler. 657. Common migrant; May and September.


259. *D. pennsylvanica (Linn.). Chestnut-sided Warbler 659. Common migrant May and September: "Breeds in Crawford and Erie counties."—Geo. B. Sennett. Have seen a few of these birds in summer in Chester, Lancaster and Delaware counties and am inclined to think that future investigations will show that the species occurs in said districts as an occasional breeder.


262. *D. blackburniae (Gmel.). Blackburnian Warbler 662. Migrant, May and September; some seasons quite common. Especially in the autumn. Given by the Messrs. Baird as a native in Cumberland county; breeds also Mr. Sennett tells me, in Crawford and Erie counties.
263. *Dendroica dominica* (Linn.).

Yellow-throated Warbler. 663. Rare spring and summer visitant in the southern counties of the State. In the winter of 1885, I found this species in small flocks feeding in pine, palmetto and oak trees, along the St. Johns river, from Palatka, southward.

264. *D. virens* (Gmel.).

Black-throated Green Warbler. 667. Common migrant, May and September. Given by the Messrs. Baird as breeding in Cumberland county. July, 1881, I saw two of these birds in Schuylkill county, have also on two or three occasions seen individuals of this species in Chester county in the summer.

265. *D. townsendi* (Nutt.).

Townsend's Warbler. 668. Accidental. An adult male of this decidedly western species,* was shot by Mr. C. D. Wood, of Philadelphia, May 12, 1868, in an apple orchard, near Coatesville, Chester county. The specimen was sold (§40) to Dr. Turnbull, and after his death was purchased by Barney Hoopes, Esq., of Philadelphia, who subsequently disposed of it to the late John Krider, of Philadelphia.

266. *D. vigorsii* (Aud.).

Pine Warbler. 671. Migrant; spring and fall. Given by the Messrs. Baird as breeding in Cumberland county. "During certain mild and open winters, we are informed by reliable authority, that it is common in pine forests in the vicinity of Brighton, New Jersey. An instance is recorded where a stray individual was met in Philadelphia in mid-winter."—Centy. In February, March and April, 1885, I found this species, to be quite common in the Florida pine forests, along the St. John’s river.

267. *D. palmarum* (Gmel.).

Palm Warbler. 672. "In spring, brownish-olive, rump and upper tail-coverts brighter yellowish-olive, back absolutely streaked with dusky, crown chestnut; superciliary line (i.e. streak over eye) and entire under parts rich yellow, breast and sides with reddish-brown streaks, somewhat as in the Summer Warbler; a dusky forel line running through eye; no white wing-bars, the wing coverts and inner quills being edged with yellowish-brown; tail spots at very end of inner webs of two outer pairs of tail-feathers only, and cut squarely off—a peculiarity distinguishing the species in any plumage. Female not particularly different from the male. Young: An obscure-looking object, brownish above like a young Yellow-rump, but upper tail-coverts yellowish-olive, and under tail-coverts apt to show quite bright yellow in contrast with the dingy yellowish-white or brownish-white of other under parts; pectoral (breast) and lateral streaks obscure; crown generally showing chestnut traces; but in any plumage, known by absence of white wing-bars and peculiarity of the tail spots. Length, 5½; extent, about 8; wing, 2¼; tail, 2½ inches. Habitat.—Eastern North America, abundant; north to Labrador, Hudson’s Bay, Fort Resolution, etc., breeds only beyond the United States, excepting Maine."—Centy. I am inclined to think that the white spots at the ends of the two outer tail feathers cannot, in all cases, be regarded as a diagnostic mark, as I have seen specimens of this species with the third feather narrowly tipped with white.

* "Habitat. Western North America, chiefly near Pacific coast, north to Sitka, Alaska; east, during migrations to Rocky Mountains; in winter from southern California to Guatemala."—Ridgway’s Manual N. A. Birds.
268. Dendroica palmarum hypochrysea Ridgw.

Yellow Palm Warbler.* 672a. "Said to differ in being more brightly and continuously yellow on the under parts, with the streaks confined mostly to the sides, broadly tear-shaped, instead of linear, reddish, instead of dusky; lower eyelid yellow, not whitish; back bright olive. Habitat—Atlantic States, from East Florida to Nova Scotia." According to this, hypochrysea should be the common bird of the Atlantic States and what is above described as true palmarum should be the bird of the interior. But I have little faith in the validity of the physical characters assigned, and none in the geographical distinctions sought to be established."—Cones.

The "Palm Warbler," a common spring and fall migrant in Eastern and Central Pennsylvania, may be seen on the ground, in fields, along the fences and by the roadsides. It is seldom observed to light in trees and bushes to feed as is the common habit of others of its genus.

269. D. discolor (Vieill.).

Prairie Warbler. 673. Migrant, spring and fall. Probably breeds here.

270. *Seriurus aurocapillus (Linn.).

Ovenbird. 674.

271. *S. noveboracensis (Gmel.).

Water Thrush. 675. Common spring and fall migrant; rare summer resident.

272. S. montacilla (Vieill.).

Louisiana Water Thrush. 676. Rare spring and fall migrant. Specimens have been taken in summer in Chester county, where it probably sometimes breeds.

273. *Geothlypis formosa (Wils.).

Kentucky Warbler. 677.

274. G. agilis (Wils.).

Connecticut Warbler. 678. I have never seen this bird in the spring; in autumn, however, it is rather common.

275. G. philadelphica (Wils.).

Mourning Warbler. 679. Rare spring and fall migrant; said to breed in the mountainous portions of Pennsylvania.

276. *G. trichas (Linn.).

Maryland Yellow-throat. 681.

277. *Icteria virens (Linn.).

Yellow-breasted Chat. 683.

278. *Sylvania nitrata (Gmel.).

Hooded Warbler. 684. Very rare spring and summer visitant. A nest and young of this species were a few years ago found in Chester county.

279. S. pusilla (Wils.).

Wilson's Warbler. 685. Migrant spring and fall.

280. *Setophaga ruticilla (Linn.).

American Redstart. 687.

Family Motacillidae. The Wagtails.

281. Anthus pensylvanicus (Lath.).

American Pipit. 687. Common spring and fall migrant about ploughed grounds.

*In consequence of the fact that I have in my possession no specimens of Pennsylvania birds, I am unable to say whether palmarum or hypochrysea is the bird which is found here, hence I have included both in this list.
Family Trogloidytdie. The Wrens, Thrashers, etc.

282. *Mimus polyglottos (Linn.).
   Mockingbird. 763. Very rare and only in the southern portions of the State.

283. *Galerocryptes carolinensis (Linn.).
   Cathbird. 704.

284. *Harporhynchus rufus (Linn.).
   Brown Thrasher. 705.

285. *Thryothorus ludoericianus (Lath.).
   Carolina Wren. 718. Frequent summer resident; rather rare winter resident.

286. *Thryothorus bewickii (Aud.).
   Bewick's Wren. 710. Rare.

   House Wren. 721.

   Winter Wren. 722. I have observed this bird in eastern Pennsylvania only as a winter resident, from October to April, when it is quite common. Mr. George B. Sennett informs me that it breeds occasionally in Crawford county.

289. *Cistothorus steMaris (Aud.).
   Short-billed Marsh Wren. 724.

290. *C. palustris (Wils.).
   Long-billed Marsh Wren. 725.

Family Certhiidie. The Creepers.

291. Certhia familiaris americana (Bonap.).
   Brown Creeper. 726. Rather common winter resident, but most numerous during spring and fall migrations.

Family Paride. The Nuthatches and Tits.

   White-breasted Nuthatch. 727. Resident.

293. *S. canadensis Linn.
   Red-breasted Nuthatch. 728. I have observed this bird in eastern Pennsylvania only as a winter resident; rather rare. My friend, Mr. George B. Sennett, however, tells me that it sometimes breeds in Crawford county.

294. S. pusilla Lath.
   Brown-headed Nuthatch. 729. Given by Dr. Turnbull as a rare summer visitant to the lower counties. A taxidermist, some few years ago, showed me a specimen which he stated had been shot near Philadelphia in the autumn.

295. *Parus heolor Linn.
   Tufted Titmouse. 731. Resident.

296. *P. carolinensis Aud.
   Carolina Chickadee. 736. Rare. Nests and eggs have been taken in Chester county.

Family Sylvidi. The Kinglets and Gnatcatchers.

297. Regulus satrapa Licht.
   Golden-crowned Kinglet. 748. Common spring, fall and winter resident.

298. *R. calendula (Linn.).
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299. *Polioptila caerulea* (Linn.).
   Blue-gray Gnatcatcher. 751. Rare visitor from the south in spring, summer and fall. Probably breeds.

Family Turdidæ. The Thrushes, Bluebirds, etc.

300. *Turdus mutilinus* Gmel.
   Wood Thrush. 755.

301. *T. fuscescens* Steph.
   Wilson's Thrush. 756. Common migrant spring and fall.

   Gray-cheeked Thrush. 757.* Migrant, spring and fall.

303. *T. ustulatus swainsonii* (Cab.).
   Olive-backed Thrush. 758a. Migrant, spring and fall.

304. *T. aonulaschke pallasii* (Cab.).
   Hermit Thrush. 759b. Common spring and fall migrant; specimens have also been taken during mild winters.

305. *Merula migratoria* (Linn.).
   Robin. 761. Resident.

306. *Sialia sialis* (Linn.).
   Bluebird. 766. Resident.

Note.—On different occasions during the past twenty years the following named species have been introduced to Pennsylvania with a view to their naturalization. The attempted naturalization of these birds, other than the English Sparrow, has been unsuccessful.

1. *Tympanuchus americanus* (Rich.).
   Prairie Hen. 305.

2. *Alauda arvensis* Linn.
   Skylark [473].

3. *Coturnix coturnix* (Linn.).
   European or Migratory Quail.

4. *Passer domesticus* (Linn.).
   English or European House Sparrow.

ADDENDA.

Since this list has been printed I find that three species all common summer residents have been omitted. The families to which these birds belong and their names are as follows:

Family Fringillidæ.

307. *Spizella socialis* (Wils.).
   Chipping Sparrow. 560.

Family Vireonidæ.

308. *Vireo gilvus* (Vieill.).
   Warbling Vireo. 627.

Family Paridæ.

300. *Parus atricapillus* Linn.
   Chickadee. 755. Common resident.

*Turdus alicicæ bicknelli* Ridgw. (Bicknell's Thrush), probably occurs in the mountainous regions of this State, as a summer resident.
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NOTE.—A few errors occurring in the scientific names in the text have been corrected in the index.

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