

others, and, therefore, readily distinguished, yet the second may be precisely like the third, thus rendering the seed coat valueless, on the whole, as a means of determining specific rank.

After a careful comparison of the results reached through these experiments, it is safe to say that the same harmony of structure exists in the seeds of species as in the leaf or the flower, while the same variety is found existing between seeds of different species. For although in the family under discussion each species resembles one or more of the others in some respects, yet it has at least one characteristic that is peculiarly its own. Thus *major* resembles *decipiens* in color, but differs from all the others in outline. *Virginia* and *Patagonica* are similar in cross section, but differ in color. And so on through the list studied, one may be distinguished by outline, another by color, another by cross section, or another by surface, yet the individual seeds of any one species are "as like as two peas." By these results we are impelled to the belief that the characteristics of seeds furnish as true an index to family, genus or species as do the leaf and the flower; and that it only remains for the botanist to school himself to read aright the lessons found in nature to be convinced that nothing is left to chance or accident, but that she has mathematical rules and chemical formulae to which she is as constant as the needle to the pole.

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ADDITIONS TO THE FISH FAUNA OF WABASH COUNTY. BY W. O. WALLACE.

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NOTES ON REPTILIAN FAUNA OF VIGO COUNTY. BY W. S. BLATCHLEY.

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PRELIMINARY LIST OF THE BIRDS OF BROWN COUNTY. BY E. M. KINDLE.

Brown County lies about forty miles south of Indianapolis. Its boundaries correspond rather closely with natural features, and it may consequently be regarded as representing much more closely than counties usually do a faunal area. It has the geological distinction of being the only county in the state whose limits are confined entirely to the knobstone formation. The limestone hills of Monroe County approach to within a mile or two of the western boundary, while on the north and east, the southern limit of the drift corresponds approximately to the boundaries separating it from Morgan, Johnson and Bartholomew Counties. The county has a uniformly rugged and broken surface, which reaches the maximum

of elevation in Bear Wallow and Weed Patch hills. Much of the county is still heavily timbered or covered with dense underbrush. The entire absence of ponds and marshes and of any large streams offers no inducement to water-loving birds to stop within the county. Bean Blossom and Salt Creek, which drain the county, are both small and unimportant streams.

The present list makes no pretension to being complete. It is offered as a first contribution to the ornithology of the county, which may serve as a basis for future work. The observations on which it is based have been made mainly in the course of several excursions to the county during the past three years. For the notes on nesting and the dates of first arrival of some migratory species I am indebted to Mr. Victor Barnett, a careful resident observer. Only those species are noted as breeding that have been observed nesting.

The list includes 106 species. Summarizing the more important facts concerning these species in their relation to the county, I find there are resident species 22, summer residents 47, winter residents 4, migrants 27. Fifty-three of these species are known to breed within the county.

My observations have not, perhaps, been sufficiently extended to warrant any remarks on species which do not occur in the county that might have been expected. I have, however, been much surprised at the apparent absence of one species, the summer red bird, inasmuch as it is common in Monroe County a few miles west of the Brown County line.

1. *Ardea virescens*. Green heron. A common summer resident.
2. *Rallus elegans*. King rail. Rare migrant.
3. *Philohela minor*. American woodcock. Old one with four young seen April 13, '94 (Barnett).
4. *Gallinago delicata*. Wilson's snipe. Migrant. March 24, '94.
5. *Totanus solitarius*. Solitary sandpiper. Common migrant.
6. *Aegialitis rocifera*. Killdeer. Summer resident. Breeds.
7. *Colinus virginianus*. Bob White. Common resident.
8. *Bonasa umbellus*. Pheasant. Common resident.
9. *Meleagris gallopavo*. Wild turkey. Almost if not entirely extinct. Formerly abundant.
10. *Ectopistes migratorius*. Passenger pigeon. Rare migrant. March 7, '94.
11. *Zenaidura macroura*. Turtle dove. Rather common resident.
12. *Cathartes aura*. Turkey vulture. Common summer resident. Breeds.
13. *Buteo borealis*. Red-tailed hawk. Common resident. Breeds.
14. *Haliaeetus leucorephalus*. Bald eagle. An occasional visitor.

15. *Falco sparverius*. Sparrow hawk. Common summer resident. Breeds.
16. *Pandion haliaëtus carolinensis*. Fish hawk. Rare migrant. March 8, '94.
17. *Syrnium nebulosum*. Barred owl. A rather common resident.
18. *Megascops asio*. Screech owl. Very common resident.
19. *Conurus carolinensis*. Carolina parakeet. It is reported to have been formerly abundant along Bean Blossom by old settlers.
20. *Coccyzus americanus*. Yellow-billed cuckoo. A common summer resident. Breeds.
21. *Coccyzus erythrophthalmus*. Black-billed cuckoo. Rare.
22. *Ceryle alcyon*. Belted kingfisher. Common summer resident. Breeds.
23. *Dryobates villosus*. Hairy woodpecker. Common resident.
24. *Dryobates pubescens*. Hairy woodpecker. A more common resident than the preceding.
25. *Sphyrapicus varius*. Yellow-bellied woodpecker. A regular migrant. February 20, '94.
26. *Coccycolius pileatus*. Pileated woodpecker. A rare resident.
27. *Melanerpes erythrocephalus*. Red-headed woodpecker. An abundant summer resident. Sometimes common in winter.
28. *Melanerpes carolinus*. Red-bellied woodpecker. Rather common resident.
29. *Colaptes auratus*. Yellow hammer. Common summer resident.
30. *Antrostomus vociferans*. Whip-poor-will. Summer resident. Breeds. April 16, '94.
31. *Chordeiles virginianus*. Night hawk. Abundant migrant. May 9, '94.
32. *Chaetura pelagica*. Chimney Swift. Common summer resident.
33. *Trochilus colubris*. Ruby-throated humming-bird. Common summer resident. May 2, '94.
34. *Tyrannus tyrannus*. King bird. Common summer resident. Breeds. April 18, '94.
35. *Myiarchus crinitus*. Great crested fly-catcher. Common summer resident. Breeds. April 28, '94.
36. *Sayornis phoebe*. Pewee. A common summer resident. March 10, '94.
37. *Contopus virens*. Wood pewee. Common summer resident. Breeds. May 4, '94.
38. *Empidonax flaviventris*. Yellow-bellied fly-catcher. One specimen taken on Weed Patch Hill August 11, '91.
39. *Otocorys alpestris praticola*. Prairie horned lark. A rather rare resident. Breeds. Common in flocks in winter.
40. *Cyanocitta cristata*. Blue jay. A common resident.

41. *Corvus americanus*. American crow. Abundant resident.
42. *Dolichonyx oryzivorus*. Bobolink. Rare migrant. May 3, '94.
43. *Molothrus ater*. Cow bird. Common summer resident.
44. *Agelaius phoeniceus*. Red-winged black-bird. Summer resident. Breeds, March 7, '94.
45. *Sturnella magna*. Meadow lark. Abundant summer resident. March 2, '94.
46. *Icterus spurius*. Orchard oriole. A common summer resident. Breeds. It migrates soon after the young are out of the nest.
47. *Icterus galbula*. Baltimore oriole. Rare.
48. *Scolecophagus carolinus*. Rusty blackbird. Migrant. March 14, '94.
49. *Quiscalus quiscula irvini*. Crow blackbird. Common summer resident. Breeds. March 6, '94.
50. *Carpodacus purpureus*. Purple Finch. Migrant. April 24, '94. A pair taken December 15, '94.
51. *Spinis tristis*. Thistle bird. A common summer resident.
52. *Pooecetes gramineus*. Vesper sparrow. An abundant summer resident. Breeds. March 13, '94.
53. *Ammodramus sandwichensis*. Savanna sparrow. Migrant. April 29, '94.
54. *Ammodramus surannarum passerinus*. Grasshopper sparrow. Summer resident. Breeds. March 29.
55. *Chondestes grammacus*. Lark Sparrow. Rather a common summer resident. April 18, '94.
56. *Zonotrichia leucophrys*. White-crowned sparrow. A common migrant. April 28, '94.
57. *Zonotrichia albicollis*. White-throated sparrow. Abundant migrant in April and November.
58. *Spizella monticola*. Tree sparrow. An abundant winter resident.
59. *Spizella socialis*. Chipping sparrow. A common summer resident. Breeds. March 20, '94.
60. *Spizella pusilla*. Field sparrow. An abundant summer resident. Breeds. March 9, '94.
61. *Junco hyemalis*. Snow bird. An abundant winter resident.
62. *Melospiza fasciata*. Song sparrow. A common resident.
63. *Passerella iliaca*. Fox sparrow. A common migrant. March 6, '94.
64. *Pipilo erythrophthalmus*. Towhee. A common resident.
65. *Cardinalis cardinalis*. Red bird. A common resident.
66. *Habia ludoviciana*. Rose breasted grosbeak. Migrant. April 29, '94.

67. *Passerina cyanea*. Indigo bird. Abundant summer resident. Breeds. April 29, '94.
68. *Spiza americana*. Dickcissel. Common summer resident. Breeds. May 12, '94.
69. *Piranga erythromelas*. Scarlet tanager. Summer resident. April 29, '94.
70. *Progne subis*. Purple martin. Common summer resident. Breeds.
71. *Chelidon erythrogaster*. Barn swallow. Common summer resident. Breeds. April 17, '94.
72. *Lanius borealis*. Northern shrike. A rather rare winter resident. Two were taken November 18, '94.
73. *Lanius ludovicianus excubitoroides*. White rumped shrike. Migrant. March 13, '94.
74. *Vireo olivaceus*. Red eyed vireo. Common summer resident. Breeds. April 29, '94.
75. *Vireo noveboracensis*. White eyed vireo. Common summer resident. Breeds. April 27, '94.
76. *Vireo flavifrons*. Yellow throated vireo. Migrant. Taken once April 19, '94.
77. *Helminthorus vermivorus*. Worm eating swamp warbler. April 29, '94.
78. *Helminthophila pinus*. Blue winged yellow warbler. Common summer resident. April 29, '94.
79. *Dendroica aestiva*. Summer warbler. Common summer resident. April 4, '94.
80. *Dendroica ceruleascens*. Black throated blue warbler. Migrant. Rare. May 13, '94.
81. *Dendroica coronata*. Yellow rumped warbler. Abundant migrant. April 14, '94.
82. *Dendroica palmarum*. Red poll warbler. Common summer resident. April 23, '94.
83. *Seiurus aurocapillus*. Oven bird. Rare summer resident. May 5, '94.
84. *Geothlypis trichas*. Maryland yellow throat. Common summer resident. Breeds.
85. *Icteria virens*. Yellow breasted chat. Common summer resident. Breeds.
86. *Sylvania mitrata*. Hooded warbler. Summer resident. Not common. April 30, '94.
87. *Sylvania canadensis*. Canada warbler. Migrant. May 24, '94.
88. *Anthus pennsylvanicus*. American titlark. A common spring migrant.

89. *Mimus polyglottus*. Mocking bird. One specimen taken March 10, '93, by Victor Barnett, near Bean Blossom Creek.
90. *Catroscopetes carolinensis*. Cat bird. Common summer resident. April '23, '94.
91. *Harpophychus rufus*. Brown thrasher. Common summer resident. Breeds. March 23, '94.
92. *Thryothorus ludovicianus*. Carolina wren. Resident. Not very common.
93. *Troglodytes aëdon*. House wren. Common summer resident. March 16, '94.
94. *Troglodytes hiemalis*. Winter wren. Winter resident. Not common.
95. *Certhia familiaris americana*. Brown creeper. Common migrant. March 31, '94.
96. *Sitta carolinensis*. White bellied nuthatch. Common resident.
97. *Sitta canadensis*. Red bellied nuthatch. Common migrant.
98. *Parus bicolor*. Tufted titmouse. Common resident.
99. *Parus carolinensis*. Black capped chickadee. Common resident.
100. *Regulus satrapa*. Golden crowned kinglet. Common migrant. March '22, '94.
101. *Regulus calendula*. Ruby crowned kinglet. Migrant. April 18, '94.
102. *Poliophtila cyerulea*. Blue gray gnat catcher. Common summer resident. Breeds. April 17, '94.
103. *Turdus aliciv*. Gray checked thrush. Summer resident. April 14, '94
104. *Turdus aonalaschkae pallasi*. Hermit thrush. Common migrant. April 15, '94.
105. *Merula migratoria*. American robin. Abundant summer resident.
106. *Sialia sialis*. Blue bird. Abundant summer resident.

NOTES ON THE BIRDS OF 1894. BY A. W. BUTLER.

In the study of the birds of our state, one steps over the boundary in many instances. On the south, the bird fauna is influenced by the Ohio River. On the east, the Big Miami and St. Joseph and St. Mary's rivers have some relation to bird life; on the north, Lake Michigan, with its tributaries, plays an important part in bird distribution; and on the west the Wabash and its western tributaries, besides the lower Kankakee, affect the distribution of birds both in Illinois and Indiana. The reports of occurrence of the migrations and of the breeding of birds without our state may thus be of value in the study of our own birds. This