

which is the most interesting account of bird behavior that we have read for many a year—admirably presented; based on most careful observation and teeming with suggestion.

After a brief résumé of the peculiarities and distribution of Manakins in general and a description of the peculiarly modified wing feathers of the males of certain species, by the aid of which they make the characteristic snapping sounds, our author discusses the activities of the species to which he has given particular attention.

The males at the beginning of the mating season clear the leaves from small areas in the forest making little "courts" to which they endeavor to attract the females. There are usually four or five males located within some thirty feet of one another and when a female arrives in the neighborhood they begin a display with rapid flitting across their respective courts and constant emission of the snapping sounds. If the female is in the proper sexual condition she responds to one of the males and joins in his "dance" which in the complete fulfillment of the demonstration results in coition. She seems to come in contact with the male only on the court as she alone builds the nest and rears the young, so that there is no real pairing of the birds as in most other species. Dr. Chapman gives many details of his interesting observations as well as the results of introducing stuffed birds on the court, and also discusses many other factors which may influence the behavior of the birds.

His final summary as to the development of peculiar structures and the object of the Manakin's complicated behavior is presented as follows: "that natural selection, working through the performance of the fundamental sexual relation, has developed specialized structures and coöperative habits which, rigidly followed throughout an extended breeding season, overcome the high mortality of tropical nest-life and produce a successful species."

He quotes the published observations of several ornithologists on different species of Manakins, and while we do not suppose that he intended this as a complete list of such contributions we wonder if he has overlooked Mr. Ernest G. Holt's interesting account of the competitive "dance" of three males of *Chiroxiphia caudata* before a single female, published in 'The Auk,' October, 1925, which he does not mention.

This paper of Dr. Chapman's should be read by all interested in bird behavior especially with reference to sexual activities.—W. S.

Sumner on Protective Coloration.—In three interesting publications¹ Prof. Sumner discusses the problem of protective coloration from several angles and presents the results of important experiments in this field. Specimens of *Gambusia patruelis*, the mosquito fish, which has the faculty of changing its tone of coloration in accordance with its surroundings, were placed in black and white aquaria and the resultant black and white fishes were then placed together in equal numbers in similar aquaria and a Penguin and a Night Heron introduced into each. In the pale tank 61% of the fishes eaten were black and only 39% white, while in the black tank 74% of white fishes were eaten and only 26% black.

Prof. Sumner rightly claims that this is pretty positive evidence of the protective value of chromatic adjustment of fishes to their backgrounds. In the course of his discussion Thayer's claim that all colors of animals are of concealing value, comes in for sharp criticism but high value is placed on the same author's demonstration of the optical principles underlying concealment. McAtee's conclusion, in the case of

¹ Does "Protective Coloration" Protect? Proc. Nat. Acad. Sciences XX, No. 10. October, 1934. Studies of Protective Color Change, III. Ibid. XXI, No. 6. June, 1935. Evidence for the Protective Value of Changeable Coloration in Fishes. Amer. Naturalist, LXIX, May-June, 1935.

insects eaten by birds, that "availability undoubtedly is the chief factor involved" is granted but his further deduction that "the phenomena classed by theorists as protective adaptations have little or no effectiveness," is not.

Prof. Sumner's object in his experiments is to demonstrate that there is such a thing as survival value in protective coloration and he regrets that the extravagant claims of some writers have led many biologists to discard the whole theory. He has done an important piece of work and demonstrated the possibility of convincing proofs through actual experiment.—W. S.

Mitchell's 'The Passenger Pigeon in Ontario.'—In spite of the many publications on the Passenger Pigeon there seems to be much information still to be obtained and the present publication¹ is a striking example of what can be done even at this late day. In 1926 the Royal Ontario Museum of Zoology issued a questionnaire with the object of securing information on the bird from those who remembered it and Miss Mitchell has been engaged in tabulating this information and in collecting a mass of additional data from early Canadian and American literature. The result is the most important history of the bird, so far as care in selection and use of data and in scientific method of treatment are concerned, that has yet appeared and the Museum authorities as well as the author deserve great praise for prosecuting such a piece of research.

It is impossible in the space at our disposal to begin to describe the information condensed in this publication which our readers must study for themselves; but it would seem that every angle of the Pigeon problem had been considered. There are long tables of nesting colonies, occurrences at other times and migrations; for all of the counties of Ontario, and much information for other parts of the continent, as well as interesting discussions of the various phases of the life of the bird, its destruction, etc.

Among the most important items are a reproduction in colors of a painting of the bird made by William Pope in 1835 and an old newspaper cut of a Pigeon flight in northern Louisiana sketched by Smith Bennett, showing the flock spread out on a rather wide company front but stretching away to the horizon like a column of smoke. There are also many other comments on the form of the flock.

The last specimen still extant for Ontario seems to be one in Mr. J. H. Fleming's collection taken on October 11, 1890, although there are "sight records" as late as 1902! There is also a photograph of the Pigeon habitat group in the Royal Ontario Museum.—W. S.

A Soil Conservation Bird Bulletin.—Ross O. Stevens of the Deep River, North Carolina, Soil Conservation Project has compiled a leaflet intended to interest school children in birds and to encourage outdoor bird study. Attention is drawn to the usefulness of birds, and notes are given on methods of attracting birds. The publication² contains reproductions of 6 larger colored bird pictures by J. L. Ridgway, and of 18 smaller ones by Lynn Bogue Hunt. It sets a fine example for Soil Conservation workers, who, recent developments indicate, may constitute one of the most important of our general conservation groups.—W. L. M.

¹ *The Passenger Pigeon in Ontario.* By Margaret H. Mitchell. Contrib. Royal Ontario Museum of Zoology, No. 7, 1935. Pp. 1-181. Price \$1.00 paper bound; \$1.50 bound in cloth.

² *Helping our Bird Friends*, 15 pp., line drawings and colored figures, High Point, N. Car., Sept. 1935.