THE INHERITANCE OF SONG IN PASSERINE BIRDS. REMARKS AND OBSERVATIONS ON THE SONG OF HAND-REARED BOBOLINKS AND RED-WINGED BLACKBIRDS (DOLICHONYX ORYZIVORUS AND AGELAIUS PHŒNICEUS).

DURING the past spring (1903) I secured a brood of bobolinks and two broods of red-winged blackbirds. These young nestlings were carefully reared, and, while allowed to hear many other kinds of birds sing, were not placed where it was believed that they could hear the songs of their own species. The results about to be described have been based on continuous observation, in the case of the blackbirds for six weeks, and for the bobolinks three weeks. Care has been taken to have competent judges, well acquainted with the song of both species, listen to the song of these birds without seeing the singers. In no instance was the song recognized; one listener ascribed the song of two red-winged blackbirds to the brown thrasher (*Toxostoma rufum*), and was wholly unable to form an opinion as to what birds were singing when listening to the performance of two bobolinks. It should be stated that there were but two males of each of the species in question from the broods that had been reared.

The song of the bobolinks is loud and brilliant as well as sustained; that of the red-winged blackbirds is even of greater volume and may be best described as continuous.

A word seems essential as to the call-notes of the two kinds of birds in question. I have failed to distinguish anything that resembles the call-note of the bobolink in its wild state, nor any sound that emanates from the two representatives of this species that are under observation which could be referred to bobolinks in a wild state. The interval of the notes and the duration of the song seem, however, not unlike those of wild bobolinks. One of the young birds, moreover, has been noticed both by myself and other observers attempting with a marked degree of success to sing the continuous rolling warble with its rising and falling inflection that characterizes the Hartz Mountain roller canary.

The call-note of the red-wing blackbird is clearly distinguishable in the two red-wing blackbirds under observation, but is the only sound that might be referred to that species. The song of these two birds seems to be made up of a composite jumble wherein robin and thrush-like notes of great clearness and volume predominate. The duration of the song is not marked by any particular break, the performance generally lasting from five to ten minutes. The clear robin and thrush-like notes are connected by fainter warbles and lisps, the whole being continuous.

The blackbirds were taken during the first weeks in June and were probably about a week old. They began to sing early in September, and the only interruption was an interval of four or five days when they changed from the liberty of a room where they could fly about to two large room cages.

The bobolinks were taken on the twelfth day of June and were much younger than the blackbirds, being not more than four days old. They have been kept all the time together in a large cage, and have not known the freedom of a flying room. They began to sing about the first of November, and in a few days could be heard in song at almost any time during daylight.

WILLIAM E. D. SCOTT.

PRINCETON, N. J.,
November 30, 1903.

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*THE U. S. NAVAL OBSERVATORY.**

THE astronomical force has been gradually diminished year by year, first by the detachment of a number of line officers who were formerly assigned positions as observers, and more recently by the detachment of several professors of mathematics for duty at the Naval Academy. This not only left the observatory short-handed, but made frequent rearrangements of the personnel necessary. Each new assignment to astronomical duty retards the work, breaks up its continuity, and diminishes the output. It is such changes as these among subordinate officers who have special work to do that pro-

* From the reports of the Superintendent Rear-Admiral C. M. Chester, for the year ending June 30, 1903.

duce confusion, as in the case of every other executive branch of the government; not, as is frequently maintained, the change of the head or administrative officer. He must necessarily continue the policy left by his predecessor until experience has demonstrated the wisdom of innovations.

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In addition to the drawback to efficient administration and labor caused by the reorganization of the personnel, most of the time of the superintendent and staff during the latter half of the year has been given up to answering questions called forth by several investigating boards. These boards have consisted of:

1. A board ordered by the Navy Department, composed of Rear-Admiral F. M. Ramsay, U. S. Navy; Capt. J. E. Pillsbury, U. S. Navy; and Commander C. J. Badger, U. S. Navy; 'for the purpose of inquiring into and reporting upon the advisability of eliminating or transferring to other than the control of the Navy Department any of the work now performed at the Naval Observatory.'

This board reported that 'in the opinion of the board, the regular work of the Naval Observatory is essential to the Navy; it can be systematically and successfully accomplished only under government control; and no portion of it should be discontinued or transferred to other than the control of the Navy Department.'

2. The General Board of the Navy, of which Admiral of the Navy George Dewey is president, to which was referred the same subject that was referred to the preceding board, rendered a similar decision.

3. A committee ordered by the President of the United States, composed of Mr. Charles D. Walcott, chairman; Brig. Gen. William Crozier, U. S. Army; Rear-Admiral Francis T. Bowles, U. S. Navy; Mr. Gifford Pinchot and Mr. James R. Garfield, to report upon various matters connected with the organization of the government scientific work. The report of this committee has not yet been made public, but it also thoroughly investigated the Naval Observatory.

Added to the drain on the time of the astronomical staff incident to the above-enumerated conditions is that due to the greatly increased demand for navigational instruments for the numerous ships building for the Navy. No small portion of the labor due to this demand has fallen on the Naval Observatory. Formerly from four to six naval line officers were employed in the three departments of nautical instruments, storekeeper and chronometers and time service. Now one lieutenant-commander is the only line officer detailed for the combined duties of all three departments. Other branches of the naval service have been supplied with additional men paid from the general appropriation 'Increase of the Navy' to meet these conditions, but the requirements of this observatory seem to have been overlooked.

Failing to procure the needed force for this important service, it has been necessary, under the Bureau of Equipment's general order to sacrifice astronomy for military duties, to assign two computers from the astronomical force to keep up with the extraordinary demands of the fleet. Further than this, as is shown in the report of the head of the department of nautical instruments, articles of equipment for naval vessels are such that the board of inspection which passes upon invoices before they are paid for must devote much time to the examination of each article, and thus not only has the fleet made an unusual number of calls on the observatory staff, but each call has required a greater amount of time than is usual at other naval stations. It should be remembered that navigational intruments can not be passed over with the cursory inspection given to ordinary supplies for a ship, but must be subjected to a critical test of all their different parts under varying conditions, needing at times several hours to pass one item of a schedule. As the one line officer at the observatory can not report upon the articles under his charge, professors of mathematics who are employed for astronomical work have been detailed to act on the board of inspection, thereby detracting from their own individual work.

Feeling as I do that the work of the Naval

Observatory has been greatly handicapped by the conditions briefly outlined above, I commend to the department the zeal of the staff as worthy of more consideration than seems to have been accorded it in the past. The members of the staff have vied with each other during the past year in doing more than was required of them, and thus have been enabled to maintain a good average of records; but such conditions can not be expected to continue. In one instance a member of the Nautical Almanac Department, Mr. H. B. Evans, in addition to a full-time service in that department, has devoted a good part of three nights in the week to observational astronomy, giving to the records data of much value. Also, Mr. Hammond, a member of the computing division of the observatory, has contributed overtime work in the search for and location of asteroids, a work that has been much appreciated by outside astronomers.

Such observations have been published in astronomical periodicals and the authors given credit for their work, thus making an incentive for additional labor.

While such work may be only incidental to naval purposes, it helps to maintain the interest of observers in a class of astronomy that is more or less a drudgery and carries out the precept of the observatory to contribute to astronomical science. It also produces better results in routine observations.

SCIENTIFIC NOTES AND NEWS.

The French minister of public instruction and fine arts has conferred the degree of officer of public instruction upon Dr. Lester F. Ward for his scientific and sociological works. This highest degree of the academic order is usually only conferred on persons who have for five years held the degree of officer of the academy.

Dr. W. Roux, professor of anatomy at Halle, has been elected a foreign member of the Brussels Academy of Sciences.

Professor H. De Vries, of Amsterdam, and Professor R. von Wettstein, of Vienna, have been elected honorary members of the Berlin Botanical Society.

Grants in aid of research have recently been made from the Rumford Fund of the American Academy of Arts and Sciences as follows: to Professor Edward W. Morley, for his research on the nature and effects of ether drift, $500; to Professor Carl Barus, for his research on the study by an optical method of radio-actively produced condensation, $200; to Mr. J. A. Dunne, for his research on fluctuations in solar activity as evinced by changes in the difference between maximum and minimum temperature, $200.

President Roosevelt has appointed the assay commission for 1904, which will test the weight and fineness of coins produced at the mints of the United States during the year. The members include Dr. S. W. Stratton, chief of the Bureau of Standards; Mr. Marcus Benjamin, of the Smithsonian Institution; Professor Edgar F. Smith, of the University of Pennsylvania, and Professor William Hallock, of Columbia University.

Mr. J. A. Ewing, F.R.S., lately professor of mechanism and applied mechanics, Cambridge, and Mr. Karl Pearson, F.R.S., professor of applied mathematics in University College, London, and formerly fellow, have been elected to honorary fellowships at King's College, Cambridge.

The silver medal of the Munich Academy of Sciences has been conferred on Professor Rudel, of Nüremberg, for his researches in climatology.

Dr. W. T. Blanford, F.R.S., who was on the staff of the Geological Survey of India from 1855 to 1872, has been made a Companion of the Order of the Indian Empire.

Mr. R. G. Carruthers and Mr. G. W. Grabham have been appointed geologists on the British Geological Survey.

Brigadier-General A. W. Greely, chief signal officer of the U. S. Army, has refused to go on the retired list with the rank of major-general, preferring to remain in active service.

Dr. T. D. Wood, professor of physical education in Teachers College, Columbia University, has been given leave of absence for the rest of the year on account of his health.