

three raisins, and was gone,—for the season. I am confidently expecting, however, that the memory of that raisin shelf will be a factor in their next year's selection of a nesting site.

One extremely interesting fact was noted regarding the song of the birds. The male was not a markedly good singer as Catbirds go, though he seldom spoiled his song with his cat call. He sang infrequently, also; but at such times as he could be heard singing at a little distance, the female on the nest always showed signs of excitement and restlessness. One day, as I sat close to the window, within three or four feet of her, I was amazed and delighted to hear her, while sitting on the nest, take up the strain her lord was singing. She followed it in all its intricacies, perfectly and beautifully, but in a "whisper" voice. On a later day she did a similar thing, though in briefer, less brilliant fashion. This raised several queries. Did she sing softly to avoid attracting attention to her nest? Could this particular bird have sung with loudness equal to the male's if she had chosen to do so? Do female Catbirds commonly sing? Are all whisper songs, perhaps, confined to female birds?

Next year's experience may help to answer some of these questions.

Cohasset, Mass.

NOTES ON THE NESTING OF A PAIR OF DICKCISSELS (SPIZA AMERICANA).

BY EDWARD D. CRABB.

DICKCISSELS breed very commonly in central Oklahoma, where during the early summer they may be seen in surprising numbers. Yukon, the location of the observations related in this account, is in this territory. On May 18, 1919, the writer noticed a female Dickcissel carrying nesting material, and at once decided to find her nest in order to gather data on the progress of the construction of the home and on the behavior of the family. From a place of concealment I could watch the activities of the female, who was doing all the work. Several times while busily engaged she alighted on a peach limb from which she dived into

a nearby clump of weeds. Here I naturally expected to find the nest, but failing to locate it, I realized that the bird had seen and deceived me; I therefore extended my search and the next day found the nest in another clump of weeds several yards from the one into which I had repeatedly seen her go. The nest was nearly complete when I found it. The remaining touches were nevertheless added and the lining put in by the female.

The male at no time took part in the labor. His duty seemed rather to be to furnish his mate with music, for he sent forth his gayest notes from the top-most branch of a nearby catalpa tree. Even though he would not stoop to the drudgeries of home life, he was, nevertheless, a faithful watchman, chalinging me whenever I visited the nest, no matter whether the female was on or not. On one particular occasion he was not in sight, but when I took my station under a catalpa near the nest he suddenly appeared in the branches above my head and hopping from twig to twig scolded me severely.

The female continued her work and the male his song, and on the morning of the 22d, I found a blue egg in the nest. An egg was deposited each day until the 26th, when the task of incubation began. The male sang almost continuously from sunrise till sunset while the mother bird sat quietly on her five eggs, until one morning I chanced to mow the weeds around the nest, leaving, however, a large clump to screen and protect it. When the scythe neared the nest she flew away, and of course I retired from the vicinity as quickly as possible so that she might return. As the minutes passed and she did not return, I feared that the eggs might chill, for the temperature was so low that one's breath was plainly visible.

Presently the female flew by with the male close behind, evidently pursuing her. In and out among the trees she flew with the male close upon her. Now and then she attempted to alight in a nearby tree, but the male would not relent. She was forced to flee for safety. The male continued to chastise her until she flew toward the nest and alighted on a wire just above it. Then he repaired to the top of the catalpa. The female hopped nervously along the wire; now facing one way and then the other; now looking wistfully at the nest and then fearfully at her lord and master;

meanwhile uttering petulant "cheep-cheep"s. She was afraid to sit on her nest because the weeds had been cut on all sides of it, still it was evident that she did not wish to forsake her eggs entirely; yet she was afraid to return, for glancing at her mate she flew directly away from him into empty space. He followed her like an arrow and in a few moments brought her back and did not give up the chase until she again alighted on the wire above her nest. She exhibited every sign of fear—hopping about on the wire, and calling between pants in a most pitiful manner. After continuing these antics for some time she seemed to be on the point of returning to her nest, but fear again overcame her and she took wing. The male darted after her, and in a few moments she returned in great haste. It was plain to see by the way the male pursued and viciously dived at her that he was thoroughly angered. The female, being quite frightened and nearly exhausted, soon gained a respite by again alighting on the wire over her nest. She scolded and complained, and often seemed about to resume her task but each time her nervousness prevented, and for the fourth time she attempted to escape the unknown terror by flight. But the male had no intention of allowing her to shirk her duty, so in a few moments he again brought her back. After a considerable hesitancy she resumed her sitting and almost as soon as she touched the nest the male poured forth his richest song, from his sentinel-post in the top of a catalpa.

Two days later I cut the remainder of the weeds in the vicinity of the nest, and the female left her eggs as she had done before. When she returned to the nest she manifested great fear and twice refused to resume her duties. She flew to a nearby catalpa instead of attempting to leave the vicinity, and this is perhaps why the male did not chastise her as before.

Each trip after this I found the female quietly sitting on her eggs, until I visited the nest at 4:20 on the afternoon of June 6, when I found her absent; but there were four little ones—blind, hardly able to lift their big, ugly heads, and so nearly naked that the hot sun seemed to shine clear through their little bodies. Later in the day I visited the family but since a thunderstorm was rapidly approaching and since the mother was sitting on the edge of the nest, I did not disturb them. The fifth egg was pro-

bably infertile, for the next morning when I visited the nest I found that it had not hatched.

These observations show that the incubation period of this clutch was from ten to eleven days, probably 250 to 255 hours to be more exact; for although I noticed that the last fertile egg had hatched at 4:20 in the afternoon of the tenth day, I was not sure but that this might have occurred earlier in the day, since I did not scare the mother from the nest at the time of my morning visit.

This concluded my observations on the activities of this one family. I may add, however, that I have never seen a male Dickcissel feeding the fledglings and dare say that further observations will show that he takes no part in any of the drudgeries connected with domestic life. He merely looks after the general safety of his family and compels his mate to do all the work, while he encourages her by his presence and song.

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FURTHER OBSERVATIONS ON THE HABITS AND BEHAVIOR OF THE HERRING GULL.

BY R. M. STRONG.

Plate XXXVI.

I. INTRODUCTION.

This paper gives the results of observations made since my publications on the same subject in 1914.¹ In July and August, 1917, I was located at the University of Michigan Biological Station. During this period, I had a student working on the behavior of juvenal Herring Gulls.

A few days after the work at the Biological Station was started I read in 'Science'⁽⁴⁾ the recommendation of the Committee on Zoology of the National Research Council that the problem of "utilization of gulls and other aquatic birds in locating submarines be studied." It at once occurred to me that I ought to consider

¹ The Auk, 1914, pp. 22 and 178.