

surface, peeking into every possible nook and cranny. The bird's bill is its constantly used tool. It turns over small stones with its bill and, especially, it scratches among dead leaves with its bill. One might believe that half a dozen fox sparrows or towhees were busy under a bush, only to find a jay vigorously brandishing its bill, first to one side then to the other.

In fact, the word "vigorous" aptly fits most of the activities of the Long-crested Jay. He will alight in a tree and hop up, up, up as though ascending the rungs of a ladder, from sheer energy. He wipes his bill on the branch with the utmost vigor. He loves to "flick" his wings and tail. When he launches himself into flight from a small tree, he leaves it trembling with the force of his push-off. Even during the noon-day siesta, when I have seen the jays resting like balls of blue in the branches on all sides, the head is never still; there is no hint of sleepiness. And as for his voice—surely there is vigor! *Jay, jay, jay* he cries, in the harshest imaginable tone (though now and again in a faint falsetto). *Chek-ek-ek-ek-ek-ek*, uttered very fast, is another favorite sound. "He is calling his mate to the food," I heard someone say. However, not only could I assign no significance to the various notes, but I could see no signs, in January, that the birds were mated. A squeaky *sreek, sreek* is often heard, and a guttural clucking, almost a rattle. Then, in amazing contrast, one finds a jay sitting alone and quietly uttering a sweet little song, with chirps and trills, like a young canary learning to sing.

The Long-crested Jay must enjoy the cold of high altitudes or it would not stay there. At Cragmor, a male House Finch slept every night in my rolled-up awning, but where the jays slept I do not know. At daybreak, I have seen a jay with his crest and wing coverts (on one side) white with frost. And when the thermometer hovers around zero, the jays look cold, and no mistake. They puff out their feathers and squat down on the branch, as though to keep their feet warm. About seven o'clock one morning, after a night when the thermometer had fallen to seven degrees below zero, one of the jays was found lying on a path, with eyes closed, but still living. When placed in a warm room, it soon revived. I saw it when it was released; it flew to the branch of a tree, shook itself, and then went straight to the food-shelf. Probably that particular jay had gone to bed the night before with an insufficiently filled tummy.

Even when water is available, the Long-crested Jays seem to prefer to drink snow. I have seen one perch on a branch covered with soft snow and literally "guzzle" the snow beside him, billful after billful. On the ground, too, I have watched them gobble far more fresh-fallen snow that seemed to be necessary. After thaws, when the snow remains only in frozen patches in sheltered spots, it is a different story. I have observed a jay at the edge of such a patch hammer away with all the energy of a woodpecker, raising his whole body with each stroke, in order to add strength to his efforts, and thus break off icy fragments, which he eagerly swallowed.—CLINTON G. ABBOTT, *San Diego Society of Natural History, San Diego, California, February 15, 1929.*

**Long Breeding Period in Captive Mourning Doves.**—It is interesting to observe that birds which, in their native habitat, are accredited with raising two and sometimes three broods in a season, exhibit some interesting variations when in captivity and fed on a controlled diet. This is illustrated by the following extract from the log of the activities of two Mourning Doves (*Zenaidura macroura*) which were captured as nestlings in the summer of 1927 and kept under as near ideal living conditions as possible.

January 25, 1928, the first egg was laid, and the second on the 27th.

February 10, one egg hatched, the other being added, the young leaving the nest on the 24th.

February 27, the third egg was laid, and on the 29th the fourth egg.

March 5, the nest was deserted after an all-night rain.

March 8, rebuilding started. The fifth egg was laid on the 9th, and the sixth on March 11. During a light rain on the 24th the nest was deserted, leaving one added egg and one almost hatched.

The seventh egg was laid March 29 and the eighth egg on the 31st.

April 3, 7 A. M., nest deserted after a light rain.

April 8, the ninth egg was laid, and the tenth egg on the 10th.

April 22, both eggs taken from the nest, addled.

April 26, the eleventh egg was laid, and on the 27th the twelfth egg.

May 2, the nest was deserted during slightly stormy weather.

May 13, at a new location, the thirteenth egg was laid; May 15, the fourteenth egg.

May 27, both eggs were removed on account of being addled.

June 1 and 3, the fifteenth and sixteenth eggs were laid at the first site.

June 10, the nest was deserted for no apparent reason. One egg was addled, the other incubated.

In a new location the seventeenth and eighteenth eggs were laid June 13 and 15.

June 22, the nest was deserted on account of the addition of two tree squirrels to the family. Both eggs were fertile.

June 27 and 29, the nineteenth and twentieth eggs were laid at original location.

July 4, squirrels celebrated by raiding the nest.

July 9, the twenty-first egg was laid in a squirrel-proof nest. The twenty-second egg was laid on the 12th. On July 25, one egg hatched, the young remaining in the nest until August 6.

August 8, the twenty-third egg was laid, on the 10th the twenty-fourth egg.

August 25, the nest was deserted, one egg being addled and the other incubated but apparently chilled.

August 28, the twenty-fifth egg was laid, and August 30, the twenty-sixth egg.

September 14, both eggs hatched. September 28, the young left the nest, and family cares for 1928 were almost ended.

For a little over eight months these two birds were continuously engrossed with their nesting activities, and it is interesting to note that they were capable of raising a total of eight broods of young within that period. Actually they laid a total of thirteen sets of eggs, but succeeded in raising a grand total of only four young. They have now decided to "call it a day", and surely they are deserving of a good long dove vacation.—C. H. WOODWARD, *San Diego, California, December 18, 1928.*

**Economic Status of the Pine Siskin.**—In his "Birds of Western Canada" (1926), Taverner says of the Pine Siskin (*Spinus pinus*): "As it is usually only a winter visitor to cultivated sections, . . . it is a neutral species, perhaps doing no great good but certainly no harm". The qualifying phrase is less true today than it might have been twenty, or even ten, years ago, for the agricultural front in that period has developed bold northern salients. The following local notes merely reopen the question and call for more widespread information.

In this comparatively warm and humid pocket in the fringe of the Cariboo Range several of us possess what we are pleased to call ranches, though the district is not agricultural in character, or likely to become so. Further west, as one descends slowly for some eighty miles into the valley of the Fraser, legitimate farming gradually appears. At Cottonwood, twenty-one miles east of Quesnel, general farming is successfully practiced as an exclusive occupation.

None of us who have vegetable gardens has been spared by the siskins. Our own case is the most extreme, as we have attracted the species by means of amazingly effective salt and clay baits for banding purposes. It is now impossible to raise most vegetables except under wire. In rather long experience of gardens and their pests we have seen nothing to rival the instantaneous devastation which an unobtrusive flock of siskins can inflict, often before their presence in a garden has been noticed. Not once, but season after season, and time after time within the same season, we have seen long rows of seedling beets, chard, lettuce, radishes, and onions, cut neatly to the ground. Beets are the favorite, and the toughest mature leaves are devoured as eagerly as the tenderest seedlings. When the beets are protected by wire the birds cover it, and struggle for the chance leaves which can be reached through the mesh. Peas and cole crops, as far as we know, are not taken, but we hear of the destruction of turnips. All scarecrows are useless, and profanity and gunpowder of precisely equal value. As already stated we find a cumbersome but efficient protection in small-mesh wire, and console ourselves with the reflection that ornithology, too, has its martyrs.