

FROM FIELD AND STUDY

Hummingbird Flower Lists.—That birds play an important part in the cross-fertilization of flowers is now an established fact of science. A hummingbird with its ability to poise and hold a definite position on the wing is a more exact pollinator than is the short-winged, clumsy tumbling honey bee, and it can evidently do more with less pollen. But these birds are not indiscriminate in their flower choices. Do they prefer red flowers as some have thought? Or does the color of the gorget affect their taste for color in flowers? If so, why do they visit yellow and orange flowers when these colors are so strikingly absent from the plumage of the average hummer?

Some flowers like hen-and-chickens (*Dudleya ovatifolia*) are beak-tip pollinators, some like tree tobacco are beak-base pollinators, a few like larkspur use the throat, and some the forehead and crown, while one or two dust the back of the head or possibly the nape.

We may also divide bird flowers in general into four groups: 1. Flowers wholly pollinated by birds. 2. Flowers pollinated by birds with insect aid. 3. Flowers pollinated by insects with bird aid. 4. Flowers visited for nectar or insects without reciprocal aid.

I would greatly appreciate lists of garden and wild flowers which readers of the *Condor* have seen visited by birds of any species. Give where possible the scientific name of the flower, but if without technical knowledge of botany, send a pressed example of the flower, unless, as will now and then occur, the familiar name of a plant is restricted enough to warrant accuracy.—A. L. PICKENS, *Room 216, Zoology Building, University of California, Berkeley, California, July 19, 1929.*

The Song of Cage-bred Linnets.—Some years ago I published an account of my experiences with a brace of young linnets reared by hand (*Condor*, XXIII, 1921, p. 41). Statement was made that the linnets' call notes were not influenced by the environment, but were inherited. Furthermore, the first song was likewise racial. The "first song", or "tribal song", was characteristic. This statement has led to some confusion and I have for some time been called on to make repeated oral explanation. Perhaps a printed explanation would be in order.

Those bird students who know the several California species of *Carpodacus*, and who have paid some attention to voice in birds, will probably have heard what I call the first or tribal song. It is a simple performance and is used by young males, or by males of arrested development, or by females, of *Carpodacus mexicanus frontalis*; and it is very much the same in the purple finch, *Carpodacus purpureus californicus*. The latter species digresses less widely from the tribal song than do the other two species of *Carpodacus* when the full-volume song is produced, digresses only during spring nuptial raptures, so far as my own experience goes. The evidence then, as I see it, points to the purple finch as least modified from the ancestral stock in the character of its song.

As the male linnets matures, it passes beyond this first song stage and attains its full virtuosity. This final product, I consider a secondary or more superficial character, and have conceded that it probably is not an inherited song.

Just this spring I have had a good opportunity to observe a hand-reared linnets that had become mature in plumage (yellow, of course, instead of red), and had passed out of its tribal song stage. He was struggling with a voluble performance that was all his own! It was not like any other bird song I ever heard, and was apparently not imitated.

The owners of the bird had just recently bought some caged canaries and placed them in the same room with the linnets who has adopted one or two of their notes, but he shows no interest in these birds and is ill at ease when too near them. I believe that the final song performance of linnets is probably the result of imitation of his fellows, acquired after the flock group is formed. This solitary bird had no one to imitate and was experimenting for himself. The owners could not tell me whether or not there had been a "first song" of the nature discussed above.—LOYE MILLER, *University of California at Los Angeles, July 26, 1929.*