

## A RED FIGWORT AS THE IDEAL NEARCTIC BIRD-FLOWER

By A. L. PICKENS

With this article appears the third installment of the Condor list of ornithophilous flowers which was begun in 1931 as a result of suggestions by Dr. Otto Porsch and Dr. Joseph Grinnell. The figworts, or Scrophulariaceae, continue to lead all plant families, and red, all colors among bird-visited native or introduced flowers found in the Nearctic region. White has passed all colors except red, which latter is present in some 30 per cent of the recorded plant species.

But not every test shows red ahead. A single Ruby-throated Hummingbird busy with a large *Abelia* clump conspicuously neglected some scraggly red salvia-like plants and a violet *Achimenes* growing near by. But the latter's S-like tube and key-hole-like opening may discourage long-billed probers. Six uniform-sized sugar-watered artificial flowers gave the following results with Ruby-throats:

	Red	Orange	Yellow	Green	Blue	Violet
Short drinks	17	15	3	4	10	29
Long drinks	5	2	....	....	....	7
Dancing drinks	7	4	....	....	2	17
Examinations	27	14	7	12	12	12
Long examinations	1	....	....	....	....	....
Dancing examinations	2	....	....	2	....	2

By "dancing" is meant the exhilarative buzzing up and down above the flower, with time out at the end of each descent either for a drink or for scrutiny of the flower. Obviously summation of the varied elements of the foregoing table is difficult, but whichever way the different kinds of "visits" are evaluated, violet appears to lead..

Smaller containers, extra tones, and closer grouping in a second experiment gave fewer of those actions difficult to evaluate. The results were:

	Maroon	Red	Pink	Orange	Yellow	Green	Blue	Violet	White
Visits	29	37	37	32	34	36	36	46	37

Violet again! Each time, however, red seemed to have the best drawing and holding power. In the first experiment, one bird stretched out on a large leaf before the red flower, like a basking squirrel on a limb, and drank and drank, until only a stop-watch or graduated containers could have given a proper answer. In the second experiment, the red, now smaller, was drained at the first visit and so was "handicapped." How I have felt the need of that sea-fed drinking horn with which the Jotunheim giants deceived the boastful Thor, proud of the load he could carry! Also, violet buddleia had long fed birds in the yard where number 2 was conducted and may well have influenced choice. One hummingbird, lantana-trained perhaps to look on red as the color of a dying flower, rose from its lantana clump to examine a red artificial flower but was never seen to drink.

But sophistication at times bends back upon ignorance. In an Atlanta park, birds in a mimosa grove, exposed to neighboring sign-tubes and gadgets, gave passing examination only to the red and orange sugar-flowers and drank from none. The Cardinal may be brought to a window by its own reflection. A pet duckling with a fear of red and a love of human company was so observant that it could be pacified when left alone by a pair of shoes over the tops of which trouser legs had been dropped in a natural manner from a lawn seat above. When older it would enter the house and bully a pair of child's red bedroom slippers, shoving them all about the floor.

Although statistical information is still meager, at present, non-trochilid flower-

visiting birds appear to favor orange, then yellow including greenish-yellow, with white, red, and violet following in order. The popularity of orange *Grevillea* and century plant affects this finding. Dr. Loye Miller sends in some additional names for this non-trochilid flower-visiting group, bringing the number to twenty, as follows:

White-winged Dove	Phainopepla
Flicker	Blue-winged Warbler
California Woodpecker	Yellow Warbler
Steller Jay	Audubon Warbler
Chestnut-backed Chickadee	Arizona Hooded Oriole
Arizona Verdin	Scott Oriole
Bush-tit	Western Tanager
Mockingbird	Black-headed Grosbeak
Golden-crowned Kinglet	Common House Finch
Cedar Waxwing	Pine Siskin

These are chiefly western records, nectar-drinking possibly originally arising from the desert-induced thirst, rather than a quest for insects. But, here in Paducah, Kentucky, Cedar Waxwings have been seen at *Crataegus*, and Kate M. Roads of Ohio found Golden-crowned Kinglets visiting the red salvia.

Observers should carefully distinguish between regular visits of old birds and the tests made by young or inexperienced birds. Visits to tulips and poppies are suspect. Always examine nectarless, and also non-showy flowers for possible aphid infection. Rich blue *Salvia patens*, a Mexican bird-flower, is surprisingly neglected by Anna Hummingbirds at times when planted in California. A Ruby-throated Hummingbird has been seen to examine crane-fly orchids meticulously without attempting to secure food. A favorite flower in one garden may be neglected in another because of neighbors with richer nectaries. The third list of bird-flowers follows (for the two previous lists see Condor, 33, 1931:23-28; and 38, 1936:150-154):

- Polygonaceae. Lady's finger. *Persicaria orientalis*. Rose.
- Caryophyllaceae. Garden pink. *Dianthus plumarius* (?). Pink and red.
- Ranunculaceae. Giant clematis. *Clematis viticella*. Violet and white.
- Nymphaeaceae. Water-lily. *Castalia odorata*. White.
- Calycanthaceae. Sweet-shrub. *Calycanthus floridus*. Maroon.
- Saxifragaceae. Common alum-root. *Heuchera americana*. Red and maroon.
- Mock orange. *Philadelphus grandiflorus*. White.
- Deutzia. *Deutzia purpureascens*. White.
- Rosaceae. Cherokee rose. *Rosa laevigata*. White.
- Hawthorn. *Crataegus crus-galli*. White. (Western species in 1931 list.)
- Fabaceae. Rose locust. *Robinia hispida*. Rose.
- Red-bud. *Cercis canadensis*. Pink. ("Texas red-bud" in 1931 list.)
- Euphorbiaceae. Snow-on-the-mountain. *Euphorbia marginata*. White.
- Malvaceae. Swamp mallow. *Hibiscus lasiocarpus*. White or pink, with crimson.
- Tamaricaceae. Tamarisk. *Tamarix junipera*, etc. Pink.
- Cactaceae. Flat-stem cactus. *Epiphyllum Ackermanni*. Red.
- Begoniaceae. Tuberos-rooted begonia. *Begonia* sp. Red.
- Lythraceae. Cigar-plant. *Cuphea ignea*. Red.
- Ericaceae. Sourwood. *Oxydendrum arboreum*. White.
- Primulaceae. Shooting star. *Dodecatheon Meadia*. White; rose.
- Oleaceae. Golden bell. *Forsythia viridissima* (?). Yellow.
- Night jasmine. *Jasminum* sp. White.
- Convolvulaceae. Moon-flower. *Calonyction aculeatum*. White.
- Wild potato. *Ipomoea pandurata*. White and pink.
- Polemoniaceae. Wild phlox. *Phlox* sp. Blue; pink.
- Solanaceae. Nightingale trumpet; Angel trumpet. *Datura suaveolens*. White.
- Tobacco. *Nicotiana tabacum*. Pinkish.

- Boraginaceae. Blue bell. *Mertensia virginica*. Blue and pink.  
 Viper's bugloss. *Echium vulgare*. Blue and pink.
- Verbenaceae. Blue vervain. *Verbena hastata*. Blue.  
 Glory bower. *Clerodendron bungei*. Violet red.
- Lamiaceae. Physostegia. *Dracocephalum virginianum*(?). Red; violet.  
 Salizaria. *Salizaria mexicana*. Violet.
- Scrophulariaceae. Great mullein. *Verbascum thapsus*. Yellow.  
 Pentstemon. *Pentstemon baccharifolius*. Red.  
 Pentstemon. *Pentstemon eatoni*. Red(?).  
 Heal-all. *Scrophularia marilandica*. Maroon.  
 Morocco toadflax. *Linaria maroccana*. White and rose.
- Valerianaceae. Corn salad. *Valerianella eriocarpus*. Bluish, or rose.
- Carduaceae. Silver-leaf sunflower. *Helianthus argophyllus*. Yellow.  
 Knapweed. *Centaurea macrocephala*. Yellow.  
 Sweet sultan. *Centaurea moschata*. Lilac.
- Alismaceae. Arrowleaf. *Sagittaria* sp. White.
- Commelinaceae. Zigzag spiderwort. *Tradescantia pilosa*. Violet blue.
- Liliaceae. Regal lily. *Lilium regale*. White and pink.
- Amaryllidaceae. Tuberose. *Polyanthes tuberosa*. White.
- Orchidaceae. Purple fringed orchid. *Habenaria psychodes*. Magenta.

In assembling this list Mrs. Jack Hagar of Texas, Kate M. Roads of Ohio, Aretas A. Saunders of Connecticut, and Robert S. Woods of California continued to give the same valuable aid which it is hoped is by now habitual. Letters from G. R. Johnstone, H. B. Lovell, Donald Culross Peattie and notes from E. W. Gudger and W. L. McAtee yielded a number of other names of bird-flowers. Dalton Bagwell, L. V. Bean, Betty J. Ellis, Louise and Sue Gentry, Wilimina Gramse, Anna J. McKinney, David S. Marx, Doris and Juanita Miller, Lee Molloy, Loree Stone, and Margaret Yarbrow have each aided with the list. William Beebe, H. Hapeman, J. M. Linsdale, C. V. Morton, and F. W. Pennell have assisted with their answers to inquiries on related subjects. Thanks are due to each for his kindness.

Once more the question is asked: Is thistle sage bird-visited? Are the other western flowers mentioned with it in 1936 visited? Does the strange cheesy odor of the century plant indicate that bats come to it by night as well as birds by day? Thus closes the third semi-decadal list, leaving the bird-flowers chiefly among the figworts and largely in the red.

NOTE.—Bent (U. S. Nat. Mus. Bull. 176, 1940) gives some additional flowers visited by hummingbirds. These were noted too late for inclusion above; they bring to more than four hundred the number of species on the three lists.

- Rosaceae. Thimbleberry. *Rubus occidentalis*. White.  
 Plum. *Prunus domestica*? White.
- Fabaceae. Ironwood. *Olneya tesota*. Lavender.
- Solanaceae. Lycium. *Lycium andersoni*. White; lavender.
- Lamiaceae. Hyptis. *Hyptis emoryi*. Violet.
- Scrophulariaceae. Monkey-flower. *Mimulus implexus*. Yellow.  
 Lousewort. *Pedicularis semibarbata*. Yellow.
- Asclepiadaceae. Desert Milkweed. *Asclepias subulata*. Pale yellow.
- Caprifoliaceae. Mountain Honeysuckle. *Lonicera dioica*. Purplish or yellowish.

*Paducah Junior College, Paducah, Kentucky, November 29, 1940.*