

SOME FLOWERS VISITED BY BIRDS

By A. L. PICKENS

Audubon seems to have taken it for granted that the hummingbird secured sustenance from every species of flower, and this tendency to generalization on the part of older observers probably prevented more careful study of the ecological problem presented in the relation of birds and flowers. It would certainly require a long time to prove the statement of the noted painter-naturalist.

In the United States and Canada are probably fifteen thousand field and garden flowering plants without mentioning conifers, rushes, and grasses. Recorded visits to tassels of maize (*Zea mays*) and to heads of blue-grass (*Poa?*) are probably for insects or spider-web, and visits to showy heads of *Hydrangea hortensis* and *Eschscholtzia californica* are perhaps the experimental tests of young birds, comparable to the curiosity that leads them to scarlet tissue paper bells. Consultation of literature, correspondence and personal observation extending over a number of years have supplied me with less than 250 names of flowers really known to be visited by birds of the Nearctic region. A few appear to be specialized for transfer of pollen by birds. In the east all such tend to reds, oranges and goldens. Mr. Aretas A. Saunders notes ruby-throats at the orange jewel-weed more often than at the paler species. In the west, however, I believe some purples and even greens may be so specialized. From observations on woolly blue curls, and from a description of the hummingbird's manipulation of the flower given by Miss Helen Pratt, it would appear this flower has such a tendency.

Tendencies to local variation are interesting. Mr. Robert S. Woods notes a tendency to neglect roses on the part of hummers; Mrs. Lura Garrison found ruby-throats neglecting lantana in her garden and swarming about the same species at another four miles away. Abundance of food in nearby flowers of another kind may affect such variation. Nectar-sipping appears to be much more common in desert and semi-arid regions, and fourteen species other than hummers have been recorded so doing, nearly all like the verdin at *Astragalus preussii*, and others recorded by Mr. Gander and myself, being observed in southern California (Condor, xxxi, 1929, pp. 229 and 250).

One can eliminate the rose and pink hues from the present list, and reds will still be far in the lead. Just what part the naturalists' tendency to be attracted by red played we have no means of ascertaining; but even allowing for this would apparently leave a margin. Certain genera and families also show striking leads. Several showy flowers that are nectar-bearing have not been found in the records, and all such we are anxious to hear of, with notes as to the relative number of visits. Certain showy poppies and some other flowers bear only pollen and so lure birds, if at all, merely by the offerings of insects. The suggestion has been made that publication of this list will lead to sending in notices of other species not here named. The name, with any color variation that may occur, and the species of bird visiting the same should be recorded, with relative number of visits, and where there is doubt, a specimen of the plant. Particularly interesting is a summer record showing each visit of a species to a particular form and color of flower. Such a record certainly seems to indicate decided preferences on the birds' part.

PROTEACEAE: Silk oak, *Grevillea robusta*. Orange.

Grevillea thelemanniana. Rose.

LORANTHACEAE: *Loranthus* sp.

POLYGONACEAE: *Antigonon* sp.

- AMARANTHACEAE:** Ragged sailor, *Amaranthus hypochondriacus*? Red; purple.
NYCTAGINACEAE: Four-o'clock, *Mirabilis jalapa*. Red.
CACTACEAE: *Cereus* sp. and *Opuntia* spp.
CARYOPHYLLACEAE: Fire pink, *Silene virginica*. Crimson.
 Fire pink, *Silene californica*. Crimson.
 Indian pink, *Silene laciniata*. Crimson.
 Bouncing Bet, *Saponaria officinalis*. Pale pink.
 Carnation, *Dianthus caryophyllus*. Pink, etc.
MAGNOLIACEAE: Tulip poplar, *Liriodendron tulipifera*. Yellowish.
RANUNCULACEAE: Columbine, *Aquilegia canadensis*. Bright red.
 Columbine, *Aquilegia truncata*. Scarlet.
 Columbine, *Aquilegia vulgaris*. Blue.
 Red larkspur, *Delphinium cardinale*. Scarlet.
 Blue larkspur, *Delphinium elatum*. Deep blue.
 Western blue larkspur, *Delphinium scopulorum*. Blue; purple.
 Virgin's bower, *Clematis* sp.
CRUCIFERAE: *Stanleya* sp. Golden.
 Collard, *Brassica oleracea*. Yellow.
CAPPARIDACEAE: Spider flower. *Cleome* sp. Rose purple.
VIOLACEAE: Pansy, *Viola tricolor*. Purple.
PASSIFLORACEAE: Passion flower, *Passiflora incarnata*. Purple.
BEGONIACEAE: Mountain chief, *Begonia coccinea*. Red.
CRASSULACEAE: Rock leek, *Dudleya brauntoni*. Red and yellow.
 Rock leek, *Dudleya ovatifolia*. Yellow.
SAXIFRAGACEAE: Escallonia, *Escallonia rubra*. Red.
 Western gooseberry, *Ribes divaricatum*. Purplish-green.
 Northern gooseberry, *Ribes oxycanthoides*. Greenish; white.
 Garnet gooseberry, *Ribes speciosum*. Bright red.
 Flowering currant, *Ribes sanguineum*. Reddish; white.
 Coral bells, *Heuchera sanguinea*. Red.
ROSACEAE: Hawthorn, *Crataegus* sp. White.
 Japan quince, *Cydonia japonica*. Red.
 Pear, *Pyrus communis*. White.
 Apple, *Pyrus malus*. Pink and white.
 Crab apple, *Malus coronaria*. Pink.
 Raspberry, *Rubus idaeus*. White.
 Salmon berry, *Rubus spectabilis*. Red.
 Logan-berry, *Rubus vitifolius* hyb. White.
 Garden roses, *Rosa* spp. Various colors.
 Wild roses, *Rosa* spp. Pink.
 Apricot, *Prunus armeniaca*. Pinkish.
 Cherry, *Prunus cerasus*. White.
LEGUMINOSAE: Silky tree, *Albizia julibrissin*. Pink.
 Silky tree, *Albizia montana*. Yellowish-green.
 Mesquite, *Prosopis* sp. Greenish-yellow.
 Sensitive briar, *Schrankia uncinata*. Pink.
 Lavender lupine, *Lupinus* sp. Lavender.
 Sweet pea, *Lathyrus odoratus*. Red; yellow; blue; white.
 Scarlet runner, *Phaseolus multiflorus*. Scarlet.
 Coral tree, *Erythrina christi-galli*. Brilliant red.
 Cherokee pea, *Erythrina herbacea*. Deep scarlet.
 Red clover, *Trifolium incarnatum*. Crimson.
 Wisteria, *Wisteria sinensis*. Blue-violet.
 Pea tree, *Caragana arborescens*. Yellow.
 Purple loco, *Astragalus preussii*. Purple.
 Red-bud, *Cercis* sp. Rose pink.
 Palo verde, *Cercidium torreyanum*. Yellow.
 Poinciana, *Caesalpinia* sp. Red and yellow.
LYTHRACEAE: Lythrum, *Lythrum californicum*. Bright purple.
 Crepe myrtle, *Lagerstroemia indica*. Bright pink.

- MYRTACEAE: Bottle-brush, *Melaleuca hypericifolia*. Rich red.
 Sugar gum, *Eucalyptus corynocalyx*. Whitish.
 Red-flowered gum, *Eucalyptus ficifolia*. Crimson.
Eucalyptus sideroxylon rosea. Pinkish.
Eucalyptus globulus.
- ONAGRACEAE: California fuchsia, *Zauschneria californica*. Red.
 Fireweed, *Epilobium angustifolium*. Rose purple.
 Evening primrose, *Oenothera laciniata*. Yellow.
 Evening primrose, *Oenothera hookeri*. Yellow.
 Sundrops, *Kneiffia* spp. Yellow.
 Fuchsia, *Fuchsia magellanica*. Red and purple.
 Fuchsia, *Fuchsia speciosa*. Red and purple.
- FOUQUIERACEAE: Ocotillo, *Fouquieria splendens*. Scarlet.
- MALVACEAE: Red hibiscus, *Hibiscus coccineus*. Rose-red.
Hibiscus rosa-sinensis. Rose-red.
 Althea, *Hibiscus syriacus*. Rose; purple.
 Okra, *Hibiscus esculentus*. Yellow with red center.
 Hollyhock, *Althaea rosea*. Maroon, rose, etc.
 Cotton, *Gossypium hirsutum*. White, turning red.
 Maple fuchsia, *Abutilon megapotamicum*. Red and yellow.
 Red mallow, *Malvastrum coccineum*. Brick red; coppery.
- GERANIACEAE: Pelargonium, *Pelargonium inquinans*. Red.
 Pelargonium, *Pelargonium angulosum*. Red.
- ZYGOPHYLLACEAE: Creosote bush, *Larrea tridentata*. Yellow.
- TROPAEOLACEAE: Nasturtium, *Tropaeolum majus*. Orange; yellow; red.
- RUTACEAE: Orange, *Citrus aurantium*. White.
 Lemon, *Citrus limonia*. White.
- MELIACEAE: China tree, *Melia azedarach*. Lilac.
- SAPINDACEAE: Horse chestnut, *Aesculus hippocastanum*. Red and white.
 White buckeye, *Aesculus parviflora*. Pure white.
 Red buckeye, *Aesculus pavia*. Dark red.
 Ohio Buckeye, *Aesculus glabra*. Greenish-yellow.
- RHAMNACEAE: Mountain lilac, *Ceanothus thyrsiflorus*. Blue.
- CYRILLACEAE: Titi, *Cliftonia monophylla*. White; pinkish.
- BALSAMINACEAE: Touch-me-not, *Impatiens balsamina*. Rose.
 Jewel weed, *Impatiens fulva*. Orange.
 Sultana, *Impatiens sultani*. Scarlet, etc.
- PLUMBAGINACEAE: Leadwort, *Plumbago capensis*. Azure.
- ERICACEAE: High-bush blueberry, *Vaccinium corymbosum*. White; pale pink.
 Madroño, *Arbutus menziesii*. White.
 Manzanita, *Arctostaphylos manzanita*. Pinkish.
 Red heather, *Phylloce breweri*. Rose.
 Flame azalea, *Azalea lutea*. Orange; red.
 Pink azalea, *Azalea nudiflora*. Pink.
- CONVOLVULACEAE: Indian runner, *Quamoclit coccinea*. Scarlet.
 Cypress vine, *Quamoclit pinnata*. Scarlet.
 Morning glories, *Ipomoea purpurea*. Purple, etc.
- POLEMONIACEAE: Phlox, *Phlox paniculata*. Pink; purple.
 Gilia, *Gilia aggregata*. Scarlet.
- HYDROPHYLLACEAE: Nama, *Nama parryi*. Purple.
- BORAGINACEAE: Anachuita, *Cordia boissieri*. White with yellow center.
 Blue alkanet, *Anchusa officinalis*. Blue.
- SOLANACEAE: Petunia, *Petunia violacea*. Purple, pink, etc.
 Salpiglossis, *Salpiglossis sinuata*. Purple and yellow.
 Cestrum, *Cestrum elegans*. Deep red.
 Tree tobacco, *Nicotiana glauca*. Yellow.
Nicotiana paniculata. Green.
 Jamestown weed, *Datura stramonium*. White.
 Iochroma, *Iochroma tubulosum*. Deep blue.

- SCROPHULARIACEAE: Snap-dragon, *Antirrhinum majus*. Red; purple; white.
 Pentstemons, *Pentstemon barbatus*. Carmine.
Pentstemon bridgesii. Red.
Pentstemon cordifolius. Scarlet.
 Beard-tongue, *Pentstemon hirsutus*. Purplish.
Pentstemon menziesii. Blue-purple.
Pentstemon palmeri. Creamy and purplish.
Pentstemon spectabilis. Blue-purple.
Pentstemon ternatus. Pale scarlet.
Pentstemon tubiflorus. White chiefly.
Pentstemon? (Ariz.). Vivid pink.
Pentstemon? (Calif.). Maroon.
 Red scroph, *Scrophularia* sp. Red.
 Monkey flower, *Mimulus cardinalis*. Scarlet.
Mimulus langsdorfii. Yellow.
 Bush monkey flower, *Diplacus glutinosus*. Orange-buff.
 Fox-glove, *Digitalis purpurea*. Purple.
 Louse-worts, *Pedicularis densiflora*. Crimson.
Pedicularis sp.? Greenish-yellow.
 Painted cups, *Castilleja coccinea*. Red.
Castilleja grimmelli. Red.
Castilleja miniata. Red.
Castilleja oblongifolia. Red.
 Owl clover, *Orthocarpus purpurascens*. Crimson and varied.
 Spanish princess, *Macranthera lecontei*. Orange; yellow.
 Red Veronica, *Veronica speciosa*. Crimson-purple.
- BIGNONIACEAE: Cape honeysuckle, *Tecomaria capensis*. Scarlet.
 Trumpet creeper, *Campsis radicans*. Scarlet, and orange.
 Chinese trumpet, *Campsis chinensis*. Scarlet.
 Cross-vine, *Bignonia capreolata*. Red and yellow.
 Desert willow, *Chilopsis linearis*. White with pinkish.
 Catawba tree, *Catalpa catalpa*. White with purple.
 Yellow bignonia, *Tecoma stans*. Yellow.
- ACANTHACEAE: Orange honeysuckle, *Anisacanthus thurberi*. Orange.
 Chuparosa, *Beloperone californica*. Red.
- LABIATAE: Romero, or woolly blue curls, *Trichostema lanatum*. Purple.
 Bee-balms, *Monarda didyma*. Red.
Monarda? (New Mex.). Pink.
 Hummingbird sage, *Salvia spathacea* (*Ramona*; *Audibertia*).
 Crimson.
 White sage, *Salvia apiana* (*Ramona polystachya*). Lilac.
 Rabbit sage, *Salvia grahami*. Crimson.
 Crimson sage, *Salvia greggi*. Red.
 Rosy sage, *Salvia involucrata*. Rose.
 Violet sage, *Salvia leucantha*. Purple and white.
 Garden sage, *Salvia officinalis*. Purple; white.
Salvia pratensis? Lilac; white.
 Scarlet sage, *Salvia splendens*. Scarlet.
 Wild sage, *Clinopodium coccinea*. Scarlet.
 Cat-mint, *Nepeta cataria*. Lilac; white.
 Lion's tail, *Leonitis leonurus*. Orange.
 Wound-wort, *Stachys albens*. Whitish.
 Mountain mint, *Pycnanthemum californicum*. Purple.
Monardella linoides. Purple.
 Lavender, *Lavandula vera*. Purple.
- VERBENACEAE: Flame lantana, *Lantana camara*. Orange turning scarlet.
Lantana trifolia. Rose lilac.
 Blue Vervain, *Verbena venosa*? Blue.
- LOGANIACEAE: Butterfly bushes, *Buddleia japonica*. Purple.
Buddleia variabilis. Purple.
 Yellow Jasmine, *Gelsemium sempervirens*. Yellow.
- GENTIANACEAE: *Gentian* sp. Blue-purple.

- APOCYNACEAE: Oleander, *Nerium oleander*. Rose-red.
- ASCLEPIADACEAE: Butterfly weed, *Asclepias tuberosa*. Orange.
Milkweed, *Asclepias* sp.
Milkweed, *Asclepias cordifolia*. Purple.
- OLEACEAE: Persian Jessamine, *Jasminum officinale*. White.
Shrub Jessamine, *Jasminum humile*. Yellow.
Persian lilac, *Syringa persica*. Whitish; pale lilac.
Common lilac, *Syringa vulgaris*. Lilac; purplish.
- RUBIACEAE: Bouvardia, *Bouvardia triphylla*. Bright scarlet.
- CAPRIFOLIACEAE: Weigela, *Diervilla hybrida*. Pink.
Honeysuckles, *Lonicera japonica*. White turning yellow.
Lonicera involucrata. Yellowish; red tinge.
Lonicera tatarica. Crimson ("purple") and white.
Lonicera sempervirens. Scarlet.
Snowberry, *Symphoricarpos albus*. Pinkish.
Abelia, *Abelia grandiflora*? Pinkish.
- CUCURBITACEAE: Mexican cucumber, *Momordica balsamina*. Buffy.
- CAMPANULACEAE: Cardinal flowers, *Lobelia cardinalis*. Cardinal.
Lobelia splendens. Cardinal.
Venus' looking-glass, *Legouzia perfoliata*. Purple.
Canterbury bells, *Campanula medium*. Violet-blue.
- MONOTROPACEAE: Snow-plant, *Sarcodes sanguinea*. Deep red.
- VALERIANACEAE: Spurred valerian, *Centranthus ruber*. Red.
- COMPOSITAE: Aster, *Callistephus chinensis*? Purple.
Sun-flowers, *Helianthus annuus*, etc. Golden.
Tar-weed, *Hemizonia*? Yellow?
Marigold, *Tagetes erecta*. Yellow; orange.
Coreopsis, *Coreopsis* sp. Yellow.
Zinnia, *Zinnia elegans*. Yellow; red, etc.
Dahlia, *Dahlia pinnata*. Red, etc.
Swamp thistle, *Cirsium muticum*. Purple.
Cirsium californicum. Purple phase.
Shasta Daisy, *Chrysanthemum maximum* X—? White.
Corn blossom, *Centaurea cyanus*. Blue, etc.
- LILIACEAE: Orange day lily, *Hemerocallis fulva*. Orange.
Yellow day lily, *Hemerocallis flava*. Lemon yellow.
White day lily? *Hosta plantaginea*? Pure white.
Aloes, *Aloe arborescens*. Red.
Yucca, *Yucca* sp. White.
African blue lily, *Agapanthus umbellatus*. Purple-blue.
Easter lily, *Lilium harrissi*. White.
Tiger lily, *Lilium humboldtii*. Orange-red.
Lilium tigrinum. Salmon-red.
Swamp lily, *Lilium superbum*. Orange-scarlet.
Tulip, *Tulipa gesneriana*, etc. Red and purple, etc.
Giant Solomon seal, *Polygonatum commutatum*. Yellow-green.
- AMARYLLIDACEAE: Century plant, *Agave americana*. Greenish-yellow.
Orange mesal, *Agave* sp. Orange-yellow?
Amaryllis, *Amaryllis* sp.
- IRIDACEAE: Blue iris, *Iris missouriensis*. Bright lilac.
Gladiolus, *Gladiolus gandavensis*. Red and yellow.
Montbretia, *Tritonia pottsii*. Yellow tinged with red.
- MUSACEAE: Banana, *Musa* spp. Yellowish maroon.
- CANNACEAE: Cannas, *Canna* spp. Red, etc.
- UNCLASSIFIED: (Scientific names lacking) Tree cypress. Scarlet.
California wild hyacinth. Purple.
Texas fragrant mountain laurel. Purple.
Single pink japonica (Florida). Pink.
Gulf-coast "sage brush".
Great tree-trumpet.
Squaw cabbage.
Texas Fuchsia.

In checking scientific names, Bailey's "Standard Cyclopedia of Horticulture" (1914-17) has been used for species in cultivation and for northeastern species; Small's "Flora of the Southeastern United States" (1913) served for the area indicated where Bailey does not list the species; Jepson's "Flowering Plants of California" (1925) has been used for checking species in the Pacific region; while one or two species not given in either has been checked by the card files in the herbarium of the University of California. An equally small number from the works of well-known recent authorities have been left as they wrote them.

Available literature from Catesby to the present authors, including the files of our better-known ornithological journals, has been consulted; the bibliographic list would be longer than the floral list and must be omitted.

Valuable information has come in letters, chiefly in answer to the recent notice in the *Condor*. Among such I would mention those of M. E. Davidson, Lura Garrison, J. R. Pemberton, Helen Pratt, Cornelia C. Pringle, B. U. Reid, Aretas A. Saunders, and R. S. Woods. Others of later date with new records include Mrs. Jack Hagar and Katie M. Roads.

Zoology Department, University of California, February 12, 1930.