# TWO-YEAR RECORD OF THE RUBY-THROAT'S VISITS TO A GARDEN.

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THE half-decade period beginning with 1925 and closing with 1929 saw records for heat, coolness, drought and moisture broken at various stations in the South Atlantic states. The weather records bristle with superlatives. For 1925 North Carolina reports a "record drought, especially in the mountains and upper Piedmont"; Georgia reports the season as "the hottest on record" while in the intermediate region "the most widespread and disastrous drought in the history of South Carolina" extended from the close of January to the first two weeks in November. Other dry years succeeded until 1928, and 1929 gave a precipitation to North Carolina the "heaviest of record except 1901" which record was in excess by only 0.6 of an inch; Georgia had the "highest rainfall on record," while in South Carolina the average precipitation was the "greatest of record" and remarkable coolness attended the rainy period and extended through even the drier months.

It is to be regretted that there were so few field observers in this area who kept systematic notes during this period. Bird migration appeared to be greatly affected, and high in the hills, as well as near the coast-plain, drought seemed to reduce the throng of migrating warblers both as to number of species and as to individuals. Whether they selected other routes, or flew on past at night, could only be conjectured.

Hummingbird records during the first three years were scattering and highly unsatisfactory. If early arrivals appeared in the spring, they were not likely to be supported by a satisfactory sequence of later arrivals, or the first record would be so late one felt it could not be the first arrival. Automobile trips to less desiccated regions at some distance showed more Hummingbirds in such places, possible migrants from the dryer territory. By the assiduous planting of red sage on the lawn, farewell visits from migrants were secured as late as October 5 for the first two years, and as late as October 6 for the third, but visits between arrival and departure were so rare as to disappoint detailed observation.

The farm surrounding the old Richmond church site in upper Anderson county, South Carolina, is highly favorable for Hummingbirds. Lichen-grown oaks afford fine building material for nests, wild flowers are found in forest, open fields, and along the well-watered valley below the church grounds, while not only the lawn but even a part of the vegetable garden are planted with flowers. Spring or autumn, it is not difficult to collect a floral spectrum. For two years a record of the Ruby-throat's visits to the flowers about the house was kept. Altheas, Gardenias, and Snow-ball flowers, with White Day-lilies have long supplied an abundance of white here, but with the first ageing, the last handicapped by several years of drought, demanding as they do moist, warm shade, the situation might have been more favorable for a test of whites. A greater number of visits could, of course, have been wished for, but with four adverse breeding years preceding, a decrease in the Ruby-throat is unfortunately to be expected. As it happened a record wet year, and the noted dry year of 1930 were included, and the first season was handicapped with a May which was "abnormally cool, the monthly highest temperature equalled the previous lowest May maximum temperature records." The records gleaned from notes and letters of the junior author follow:

1929:—First record at red *Fuchsia* in May; next on 31st at the purple *Buddleia.*

June 1, purple *Buddleia* and pink *Petunia;* June 5, purple *Buddleia* and pink *Petunia* in morning; *Gladiolus* and pink *Petunia* in afternoon; June 6, *Gladiolus* again visited in morning; *Gladiolus* and blue *Delphinium* in afternoon; June 7, *Gladiolus* and blue *Delphinium* in morning; June 9, Orange Lilies; June 14, *Gladiolus* and blue *Delphinium* in the morning, and both again in the afternoon. The purple *Buddleia* was next recorded; June 21, red *Fuchsia;* June 22, *Gladiolus,* pink *Petunia,* a corn-tassel, *Gladiolus* again, pink *Dahlia,* yellowish-pink Roses, red *Canna;* June 24, *Gladiolus,* blue *Delphinium,* multicolored Snapdragon with an orange appearance, and next a bunch of blue *Delphinium* held in the observer's hand; June 27, *Gladiolus* and blue *Delphinium.*

July opens with a visit to the Tiger Lily, three to the purple *Buddleia* follow, one each to pink *Petunia, Gladiolus,* and blue *Delphinium;* July 10, Tiger Lilies; July 11, Tiger Lilies again.

yellowish-pink Roses, *Petunia, Gladiolus,* and red *Hibiscus;* July 12, *Buddleia, Zinnia,* red *Hibiscus* and pink *Petunia;* July 15, *Buddleia;* July 16, *Gladiolus;* July 19, *Gladiolus;* July 31, two seen together for the only time, and they perched on the fence for the most of the period, but also visited the Tiger Lilies and *Buddleia.*

August 1, first recorded visit to red *Salvia;* Aug. 5, *Petunia;* Aug. 6, red Four-o'clocks and cardinal Cypress Vine; Aug. 10, Cypress Vine, and red *Hibiscus;* Aug. 11, Cypress Vine, red *Hibiscus;* Aug. 12, Cypress Vine and red *Hibiscus,* with a succeeding visit to the lavender Asters; Aug. 16, Cypress Vine and Mexican Cucumber, (*Momordica*); Aug. 18, red *Begonia,* and lavender *Lantana* visited in a neighbor's garden, four miles distant, where the birds are reported very fond of the latter, though they do not appear to care for it in the observer's garden; Aug. 19, red *Salvia.*

September. No record.

October. Probably a passing migrant; visited pink *Canna* and red *Salvia.*

The *Gladiolus* this season contained both reds and pinks. No choice was noted between the two. The *Delphinium* flowers were an intense blue.

1930:—April 12, at the red Japanese Quince; April 13, red and yellow Columbine; April 14, yellow Collard blooms. An additional visit by a Hummer is recorded for the Columbines. The hum of wings indicated the bird's presence there sometimes when intervening growth prevented its being seen. Such visits have not been entered with the others.

May. No record.

June 4, red *Gladiolus;* June 5, purple *Buddleia;* June 11, one came within reach, and carefully dipped into every *Gladiolus* regardless of color; June 13, *Gladiolus;* June 14, the bird poised almost in the observer's face to examine carefully the red picot edge on a frill of her dress. June 17, yellow *Gladiolus;* June 18, pink Sultana; June 21, the bird investigated the cover of the Woman's Home Companion for June as carefully as it had previously done for the red picot edging. The picture was largely red. June 24, red *Fuchsia.*

July. For this month fewer visits are recorded, but six flower records were secured: Pink Oleander, White Oleander, *Impatiens*

with white upper, and purplish-pink lower petals, Red Four-o'clock, red Standing Cypress, and the leaf of a fancy Caladium, both green and red, the latter color being tried with the bird's beak as if in quest of a floral nectary.

With July the record terminates.

Rainfall in the mountains for this summer was so low that it is doubtful if the birds gained sufficient relief by migrating there, perhaps the coastal regions were more acceptable, the absence of fall migrants being noticed.

Some facts recorded here are worthy of notice.

Each season opens with a visit to a flower of red, or largely of red, and each closes with visits to similarly colored flowers, while red has the predominant number of visits even after we take out the *Gladiolus* because part of them were pink, and eliminate the *Fuchsia* and the Columbines because the inner parts of these flowers contain, less conspicuously, purple in one and yellow in the other. This is all the more significant when we reflect how few reds occur among the native flowers. Eliminating the primitive conifers and the grasses, a floral calendar was constructed for common wild flowers that grow in the vicinity where this test was made. The percentages of each color follow:

| | | | | | |
|---|---|---|---|---|---|
| Whites | 26% | Greens | 13% | Reds | 4% |
| Yellows | 21% | Pinks | 12% | Maroons | 2% |
| Purples | 13% | Blues | 7% | Oranges | 2% |

It is interesting to compare the results with some previous observations. Some results of color observations by *species* of flower have been given in "Favorite Colors of Hummingbirds" ('Auk,' July, 1930) but only 110 species were available for this List No. I. By adding all species known to be visited by any kind of bird, and supplementing personal observations and correspondence with names given in the literature this has been raised to about 250. This, List No. II, appeared, for the most part in 'The Condor,' January, 1931, and is of necessity tabulated by *species*, but the present List No. III, tabulates by *visits*, the reactions of a single species in a single locality, while the others are more general, neither, however, admitting any record outside of the United States and Canada. Bi-colored species, whose colors did not seem to blend as some one intermediate color have been divided between

the two colors represented, but less conspicuous inside colors, such as the red inside a yellow okra bloom or the yellow inside a red columbine, are subordinated to the more obvious color. The lavenders and lilacs are grouped as paler shades of purple. The results for the three lists follow:

| Colors | I | II | III |
|---|---|---|---|
| Maroons | | 3 | |
| Reds | 45 | 82 | 34 |
| Pinks | 7 | 23 | 20.5 |
| Oranges | 15 | 23 | 9 |
| Yellows | 11 | 28 | 2 |
| Greens | 2 | 5 | 1 |
| Blues | 2 | 6 | 8 |
| Indigoes | 1 | 7 | |
| Purples | 19 | 32 | 11 |
| Lavender and Lilac | 5 | 6 | 2 |
| Whites | 2 | 31 | 1.5 |
| Unclassified | 1 | 4 | 1 |
| Totals | 110 | 250 | 90 |

Visits to objects other than plants are not recorded here.

For more than half the species a second visit is not recorded in the garden under test, indicating selective sampling on the bird's part, but while attracted by more vivid coloring, a rich nectary may count more than coloring. Other things being equal, a red, or orange, or some other intense color, gives a flower adapted to bird-pollination survival value over a duller or paler one, once tropical or other conditions produce a change in intensity. The Old World flower-visiting birds are not able to hover and feed as do the Hummingbirds, but must have a perch on which to rest. Thus a cosmopolitan genus of plants with delicately attached flowers, should show more reds and oranges in America than in the Old World. Something like three hundred garden forms were traced to their original homes using Bailey's "Standard Cyclopedia of Horticulture," (1914–1917), as an authority. The American reds and oranges exceeded those of the eastern hemisphere, almost three to one. All the reds in several genera originated in occidental Hummingbird territory. Of more than ninety species of *Salvia* all the reds, twenty in number, sprang from tropical or sub-

tropical America. In our arid southwest other influences appear. Thirst drives even larger birds here to drinking from flowers. Gorgets which one expects to be red like those of species met in the humid forests, here tend to purples and blues as if to contrast with yellow sands and dry vegetation. Purple and violet flowers rise in favor; the range of selective coloration broadens.

With the keen perception of color that is indicated by the splendid gorgets of the Hummingbird family, and no longer to be denied possibilities for transfer of pollen, the practical minded student with a penchant for seeking the useful among the beautiful, should seek to add to the harmful insects counted in the individual bird's crop, the few or many gorgeously colored garden treasures that the birds as a race have evidently developed from less attractive forms by unconsciously selective pollination.

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