

ing stars, looming large and resplendent, Venus with great shining face standing high over the prairie. And then, they in turn were followed by the rich red band that presaged the coming of the morning.

Days beginning with sunrises of orange and red, ended perhaps with a lake of gleaming silver, the sunset a serene green with only delicate touches of red, perhaps with an orange sky behind the straggling tree border of the lake, or with a flamboyant afterglow sending continental funnels of color high in the sky.

Whatever turn they took the days were days of glory, and although I had to leave for another time that most wonderful ornithological experience, the northern flight of waterfowl, my summer had already had full measure and I left with mental gallery crowded with bird pictures, with pulses quickened by the stirring northern days, with mind swept clear by prairie winds, and with spirit uplifted by memories of gorgeous sunrises and sunsets, of brilliant morning stars, of marvelous star-filled firmaments, and illuminated auroral skies.

Washington, D. C., June 16, 1917.

FROM FIELD AND STUDY

The Eastern Savannah Sparrow and the Aleutian Savannah Sparrow at Tacoma, Washington.—The Savannah Sparrow group is represented at Tacoma during different times in the year by no less than four varieties, but it was not until the fall of 1919 that I was able to actually take specimens of the Aleutian Savannah Sparrow (*Passerculus sandwichensis sandwichensis*). The first, a male, and evidently a young of the year, was taken on October 12, while sitting on a fence in company with a large number of Savannah Sparrows. Its dark coloring, sluggish actions, and much larger size at once showed it to be different from its companions, with which the tidewater marsh was swarming. Upon returning to the same locality on October 30, I was successful in collecting another male of the same species, an adult this time, and saw what I am positive from their actions were two or three others. The difference in actions between this species and the rest of the group is so striking as to at once arouse my suspicion as to their being different. When I first saw this bird it flushed almost under my feet when I was stalking some ducks, instead of flying at from twenty to thirty yards as the other Savannahs all do. I at once lost all interest in the ducks and went in pursuit of my sparrow. After walking up and down where I had "marked" it, I saw it standing watching me some ten feet away, and it ran instead of flying. In fact I very nearly did not get this bird in my efforts to study its habits before collecting it.

On September 20, 1919, I collected on the same tide-flats an adult male Eastern Savannah Sparrow (*Passerculus sandwichensis savanna*), which was in the company of a large number of others that were apparently of the same kind. All three of the above mentioned specimens were kindly identified for me by Mr. Joseph Grinnell. Judging from specimens taken in past years I believe this form is an extremely abundant fall migrant, although I have never seen it in the spring migration.

It may be of interest to state that our breeding form in western Washington is the Brooks Savannah Sparrow (*Passerculus sandwichensis brooksi*), a very small, light-colored bird, barely five and a quarter inches long. They arrive from the south usually in the latter part of March, although a few are sometimes found much earlier, and they leave for the south again very early in September. The most northern record that I have for this form is a nest with six eggs in my collection taken, with the parent bird, on a

tidewater marsh at Knik, Alaska, by Mr. Geo. G. Cantwell, of Puyallup, Washington. At that point, Mr. Cantwell tells me, the Western Savannah Sparrows were still migrating, either to interior Alaska or to some point north of Knik, as none remained to breed in that section.

The Western Savannah Sparrow (*P. s. alaudinus*) reaches Tacoma about April 20 on its northern migration, remaining until about May 10, at which time our little Washington bird (*brooksi*) is busy with nests and eggs. I am uncertain as to what route *alaudinus* takes on the fall migration. Still another form of this sparrow is found during the breeding season in eastern Washington, namely the Nevada Savannah Sparrow (*P. s. nevadensis*), giving the state of Washington five very easily distinguishable forms. Recurring once more to *alaudinus*, it would seem that this form should be given a new English name, at least, as the present one is not only misleading, but also not in accordance with existing conditions.—J. H. BOWLES, Tacoma, Washington, January 3, 1920.

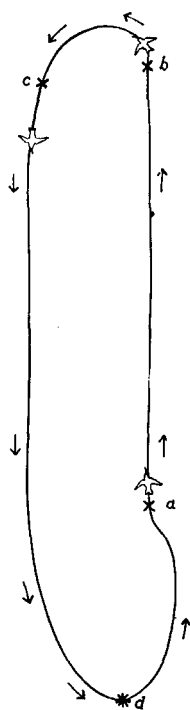


Fig. 27. DIAGRAM ILLUSTRATING THE NUPTIAL FLIGHT OF THE ANNA HUMMINGBIRD.

Nuptial Flight of the Anna Hummingbird.—On January 13, 1918, I was fortunate enough to be present at a finished performance of the nuptial flight of a male Anna Hummingbird (*Calypte anna*), and to observe the affair so clearly that I could diagram it with accuracy. I have been present at the performance many times since, but never under conditions permitting a full and clear observation. I do not know, therefore, whether, typically, the Anna Hummer adheres rigidly to the evolutions here described, or whether he varies them somewhat.

The phenomenon was observed over chaparral in a small ravine several hundred yards uphill from the University of California swimming pool, Berkeley. It consisted of set aerial evolutions with vocal demonstrations occurring at mechanically exact points in space and time. The phases of the affair were as follows (see fig. 27):

The bird hovered in one spot, *a*, long enough to utter its common song, *zeed'l-zeed'l-zeed'l*, *zeed'l-zeed'l-zeed'l*, *zeed'l-zeed'l-zeed'l*. I can best convey an idea of the timbre of this utterance by asking the reader to think of the loose-rattling plus glassy-singing sound-quality of small shot made to roll round the inside of a thin bottle or flask. But there is also a dry element involved, as if fragments of crisp thorny-edged leaves were mixed with the shot, scratching the glass on their way round and lending a sort of continuous high squeaky ring to the effect, like a thread of tonality running throughout. The utterance is rather faint and whisper-like, and does not come out into full tonality. It is not rapid. It consists of nine syllables in three sections of three each.

From *a* to *b* the bird climbed with great rapidity straight into the air, hovering a moment at *b*, without, however, vocalizing.

The line from *c* downward represents a bullet-swift dive, head-first, with an upward swoop just clear of the bush-top at a specifically aimed-at point, *d*. Within a few inches of *d* the female was doubtless perched, though she was so well concealed that I could not see her from where I stood.

At *d* the bird uttered an abrupt, explosive, ringing *kilp* or *pilp*. Mr. J. Grinnell spells it *plop*, which is the same in essence. The vowel-sound varies with the intensity of the utterance, sometimes being lower and nearer "o". There is certainly a musical "l" involved, which my ears persist in hearing after the vowel-sound. As a matter of fact, all of the sound elements concerned are nearly, if not quite, simultaneous. The note is remarkable: tonal and clear, and louder and more violent than one would expect from a bird of the humming size. It is a sort of clank. It rings out like a good live blow on musical glass or metal, but the ring dies instantly as if gulped down into some cavern of dead silence.