

When we returned them to the box, they continued to fight among themselves, acting as if they were total strangers, and one of them continually attempted to escape through the opening. When we used a flashlight bulb, while taking a final picture, they huddled in a corner and evidently remained so until one appeared at the entrance and intently watched us depart.

1125 Cortez Avenue, Burlingame, California, June 23, 1937.

WINTER HABITS OF THE WHITE-THROATED SWIFT

By GAYLE PICKWELL

Alum Rock Canyon, a city park of San Jose, Santa Clara County, California, is a comparatively deep, east-west canyon in the foothill region of the Mount Hamilton range about six miles to the east of the city. Certain portions of the upper canyon, on the south and west-facing slopes, are composed of precipitous rock faces. These rock faces lie immediately above the Sycamore Canyon Road which follows the north wall of the canyon some two or three hundred feet above the canyon's bottom. In the vicinity of these rocks, White-throated Swifts (*Aëronautes saxatalis*) have frequently been observed, and in the crevices the swifts have nested. Only during the past few months, however, have observations of some care been made in connection with the wintering habits of these birds in this area.

On one occasion, as long ago as November 21, 1931, White-throated Swifts, some two or three score in number, were noted entering and leaving a fissure in the rock faces above the Sycamore Canyon Road. These observations were made about 3:30 p.m. Not again until the late summer of 1936, and the winter just past, were further observations made. During this period, visits were made as follows: August 3 and 21, September 12, October 24, and November 15, all in 1936; March 6, and April 4, in 1937. Mr. Henri Hill kindly furnished reports for November 29, 1936, and January 9, 1937. Mr. James Peterson made a report concerning the swifts on January 23, 1937.

The niche in which the swifts quartered themselves in 1931, and throughout the observations here reported upon, consists of a recess of unknown depth extending beneath a rock face that lies at an angle a little short of the vertical. It is about fifteen feet immediately above Sycamore Canyon Road. The crevice through which the swifts enter and leave measures, it is estimated, from two to three inches in width and about two and one-half feet in length. All of the swifts noted, during the dates specified, used this aperture and this one only.

On August 3, the swifts were flying about in the canyon when first observed just at sunset. A crude estimate made of their numbers in the air gave from one hundred to two hundred individuals. Prior to entering the night roost the birds streamed in a procession into the shadows by it and then turned out into the light of the canyon. Shortly thereafter they entered the rock, streaming in with unbelievable rapidity. Three or four struck the crevice simultaneously, and now and then they struck one another. Twenty or more entered in an interval of one or two seconds. The entire flock was housed between 7:20 and 7:25 p.m., and a constant chattering thenceforth welled from the rock face. The sun had set some time previously, and deep shadows filled the gorge of the canyon.

The region was visited too late (6:55 p.m.) on August 21 to observe the swifts entering their nightly abode, but their voices came in volume from the rocks. The

observations of September 21 were similar to those of August 3. On this date our group of observers, adults and children, were on the road immediately beneath the entrance into the roosting place, but the swifts, nevertheless, streamed past, between us and the rock and therefore only a few feet away. This continued for approximately ten minutes before the first swift whizzed into the entry at 6:30 p.m. In exactly two minutes after the first entered, the last was in, at 6:32. The count, which could have been in error only to the extent of two or three individuals, was 49. The birds maintained the usual chattering after having entered the rock.

The observations of October 24 differed from the earlier ones in that no swifts were observed in the canyon until 5:31 p.m., when two flew into the roosting quarters. Promptly at 5:35, and within a space of ten seconds thereafter, the mass of the swifts poured into the rock. They had dropped abruptly from parts unknown. The birds went into the roosting niche as fast as shot poured through a funnel; faster than the tongue could waggle in an attempt to count. Only one individual missed the aperture, dropped away, and tried again with success. Four or five late comers followed shortly after. All now were in and chattering.

On November 15 an attempt was made to observe the morning egress of the swifts from the rock. With Mr. Henri Hill, the writer was at the swift rendezvous at 6:15 a.m., when the light was barely sufficiently intense to write notes. The Horned Owl still was in voice, and the sun was some time short of rising. Notes of the swifts came from the rock. The sun struck the rock at 7:40 a.m. Three swifts emerged at wide intervals between 10:32 and 10:33 a.m. and immediately flew high over the canyon. Off and on swift voices continued to come from the rock, as they had throughout the morning, but no more swifts appeared up to the time of our departure at 12:00 m.

On November 29, according to Mr. Hill, the swifts entered the nightly quarters at 5:05 p.m. They had fed in the air above the canyon about 15 minutes before entering the rock. Mr. Hill's estimate of the number on this occasion was sixty to sixty-five individuals.

No observations were made in December, but on January 9, 1937, Mr. Hill reported that only about a dozen birds were seen entering the roosting place in the rock. He also reported observing two dead birds on the road beneath the niche entry. On January 23, 1937, Mr. James Peterson reported three dead swifts beneath the entry. Two of these were probably those noted by Mr. Hill. Could the unseasonable and prolonged cold weather of January be held responsible for these dead ones and the striking diminution in numbers? The problems of securing aerial insects, the food taken by these birds, may be difficult to solve on occasions such as these.

The rock wall above Sycamore Canyon Road was visited on March 6 and again on April 4, 1937, and although we stayed until the light faded and notes could no longer be written, Poor-wills hunting on the road were the only solace. *There were no swifts!*

Many interesting problems of numbers, year-round residence, reactions to light, to temperature, and available food, remain to be solved in connection with the Alum Rock Canyon White-throated Swifts, but their method of going to bed remains as one of the most amazing avian spectacles of the bird world.

San Jose State College, San Jose, California, April 21, 1937.