GRAYSON'S PIGEON (ZENAIDURA GRAYSONI) IN CAPTIVITY.[1]

BY E. W. GIFFORD.

THROUGH the courtesy of Dr. Barton W. Evermann, Director of the Museum of the California Academy of Sciences, and through the special efforts of Mr. Joseph R. Slevin, I received at my home in Oakland, California, on May 20, 1925, a number of Grayson's Pigeons, a species peculiar to Socorro island, Revillagigedo group.

The species is hardly to be called a free breeder in captivity. I have reared but two young, both hatched in 1926. Deserted eggs, presumably laid by this species, were frequently found. In one instance a pair incubated two eggs until slightly past the hatching time, but they had been cracked shortly after laying. The one other example of incubation on the part of the same pair resulted in the fine pair of squabs which have been reared to maturity. My experience with the species warrants the assertion that it is a very fickle nester in captivity.

Of the seventeen examples received on May 20, 1925, at least four were young birds, as evidenced by the buff edges of the primary coverts and tertiaries. Evidently, therefore, the 1925 breeding season on Socorro was over when they were captured. In fact the expedition obtained neither eggs nor nestlings.

By June 1, 1925, the heads and necks of birds which had been partially denuded during the voyage were well studded with pin feathers. By June 17, so far as I could see without handling the birds, there had been no general moulting of body and flight feathers, but there had been some growth of tail feathers to replace lost ones. Probably there really had been some growth of body feathers, for there had been much preening, which probably had not been altogether for the removal of dirt.

On June 14, 1925, I saw the first courtship and on June 21, the first manifestation of interest in nests, a pair being observed to examine nesting boxes. On the 23rd, I saw a pair in a nest and on the 24th found two eggs in another nest. These were apparently not incubated. On June 30 I found an egg in another nest, cold

[1] Herbert Bright has published an account of the breeding of this species in England. Avicultural Magazine, 4th series, vol. 4, pages 223, 224, 1926.

and apparently deserted. On July 1, the pair that was apparently responsible for the two eggs observed on the 23rd was engaged in renewed courtship, the female squatting on the ground and beseeching her mate to mount her. At another male who showed interest she thrust with her beak. Her importunities were in vain during the time I watched. Later her mate was seen pursuing her very vigorously, changing his run to a hop now and then. Twice he paused to coo. His ardor was intermittent. After a bit of violent pursuit he would lose interest, only to resume again in a few minutes. The entire pursuit was on foot on the ground.

The call is like that of *Zenaidura carolinensis.* In paying his addresses to the female, the male usually runs after her on the ground, stopping at intervals to coo, and, sometimes, if he gets close enough, striking at her with his bill. When cooing, his back, from occiput to tip of tail, forms a straight horizontal line. The beak is pointed downward and the crop region much distended, showing the beautiful iridescence of its sides. On one occasion I observed a male in an unusual courting attitude. After pursuing the female for some time, he crouched down on a gravelly bit of soil, elevated his tail slightly, puffed out his crop feathers (perhaps cooing, but I could not hear him), and kept both wings twitching or moving slightly, very much as does *Chamaepelia passerina.* Later in the day the female was seen crouching and twitching her wings close to the male, in vain invitation to him to tread her. She also fondled him, picking his neck feathers, but could not induce him to feed her. The male spent considerable time chasing other birds of the same species.

Treading takes place on the ground, not on a perch. The act takes place not just once or twice but several times prior to laying. More than once a pair was observed to copulate twice within an hour. Coition is preceded by preening of the feathers under the wings on the part of the male, and by crouching and trembling of the wings on the part of the female. Feeding, or mock-feeding, of the female by the male immediately precedes treading. I say mock-feeding, because in some cases, I have observed the male hold the female's bill crosswise in his own, instead of thrust down his throat as in actual feeding. Coition is followed by both birds standing very erect for a moment, the male spreading his

tail and swelling his throat. Often the male appears to lack enthusiasm and procrastinates, while the female arduously shakes her wings.

Occasionally I have seen males (including a widowed one) stand alone in one place and coo. If on a broad level surface instead of a perch, the tip of the tail rests against the ground. This is perhaps a coo to call a mate, rather than a definite part of the addresses paid a female who is at hand.

Two breeding pairs in one aviary had distinct spheres of influence, or domains, one pair taking the west shelter, the other the adjoining north shelter. If either pair encroached on the other's territory, swift pursuit followed.

By August 2, 1925, two females had laid a number of eggs, all of which had been abandoned. Although one bird left the nest readily when closely approached on one occasion, I am sure that my occasional entry into the aviary had nothing to do with the desertions. By August 15, all desire to mate and nest was over and it appeared that a moult had begun, for the heads of several were studded with pin feathers, especially on the face. By September 13, no further evidence of moult was to be seen. In September and the early half of October, 1925, deserted eggs were again found in nests and on October 4 treading was observed. In the winter of 1926–27, mating and laying took place during November, December, January, and February, though in September and October, 1926, there was no mating activity whatever. Judging from the 1926 events the period of quiescence in regard to reproduction extends roughly from July 1 to November 1. I am inclined to think that the sea voyage in 1925 upset the usual course of events in that year. July and August seem to be the months of heaviest moult.

Cold weather does not diminish the mating ardor of these tropical pigeons. Early in January, 1926 and 1927, with the 7 A. M. temperature ranging around 40° F., three pairs were observed copulating. One pair was nest-building on January 17, 1926, the female remaining in the nesting box while the male brought sticks to her. On January 24, traces of a broken egg were found in this nest. In 1927, the earliest eggs were noted February 6.

On February 7, 1926, one of the mated females was found dead,

but the other pair in the same aviary was sitting. Now and then either the male or female would pursue the widowed male if he became conspicuous. On February 24, the two eggs were found broken and dried in the nest. Meanwhile, in another aviary a third pair was observed nest building on February 21, and two eggs, presumably theirs, were found on the 24th. This pair, though making frequent false starts at nest building, and laying an occasional egg, never settled down to serious duties. On February 28, courtship was again in full swing with the two pairs. The widowed male in one aviary came in for a good deal of pursuit.

The following incomplete calendar presents the data concerning the rearing of the pair of young:

March 14, 1926: Nest, but no eggs. Very arduous pursuit of female during preceding week. Also abuse of widowed male by both male and female.

March 21: Not yet sitting.

April 10: Sitting.

April 23: Egg shells on ground.

April 30: A glance into nest at 6:15 P. M. showed male sitting, one blackish, half fledged squab, with eyes open, beside him; the other under him.

May 4: One squab on ground. Other flew from nest. Though their tails were very short and they appeared only about three-quarters fledged, they walked well. One apparently remained on the ground overnight, for I found it there on the morning of the fifth. The other had flown up to the nest, six feet above the ground and with no intervening perches. It seemed to me a remarkable procedure for so young a bird.

May 5: The widowed male started to pay addresses to the mother of the squabs. He was savagely rebuffed, being struck at and chased by her. In what appeared to be fury, she then chased other pigeons, pulling feathers from a *Gallicolumba rubescens*, and then assaulting her own mate. He immediately retaliated, however, and chased her about, finally pausing to coo.

May 10: Both squabs were in the nest this morning and both are evidently able to fly up from the ground. Both are marked with longitudinal broken-line streaks of black on the back.

May 15: One young one was seen feeding for the first time, with its parents.

May 16: New nest under construction. Male chased one squab a bit. Squabs look longer-legged than parents, probably because feather growth is incomplete.

May 17: Squabs perch by themselves. Parents still nest building.

May 22: Both squabs feeding themselves. Tails now quite long. Parents not sitting, though one egg in nest.

May 23: Egg deserted. Nest building renewed.

June 6: Treading.

June 22: Female moulting extensively around head.

June 25: Both adults and young moulting. In adults, the tail feathers especially being replaced, also face feathers. In two adults the feathers around the eyes and beak had all been shed at one time, so that the new pin feathers looked like a gray mask.

August 4: One young bird moulting tail feathers.

August 7: No signs of mating.

October 1: The two young are indistinguishable from the adults. They show no modification in the direction of *Zenaidura carolinensis*. On August 22, a young bird which had been received from Mr. Herbert Bright, of Liverpool, England, was moulting around the face. It was evidently somewhat younger and therefore later in moult than the two young I had reared.

November 25: Parents resume courting.

I failed to ascertain the period of incubation, but Mr. J. W. Steinbeck, who has also bred the species, informs me that it is seventeen days, thus being considerably in excess of the usual fourteen days of most pigeons.

Zenaidura graysoni is definitely a crepuscular feeder, indulging in a meal after my various Geotrygoninae, with the exception of *Oreopeleia chrysia*, have sought their perches. *Chrysia*, however, does not feed in the dusk, nor does *Phaps chalcoptera*, which like *chrysia* walks nervously and restlessly about and occasionally flies, as though desirous to make an evening flight to some distant roosting place. *Graysoni* devotes the minutes of gathering dusk to eating and then quietly retires to its perch, after perhaps a few flights around the aviary. I have seen them feeding at 7:40 P. M. on May 26, and at 7:50 P. M. on June 17.

Much time is spent in flying apparently for the mere pleasure. Yet with all of the flying there is no bumping against the wire

sides of the aviary. Indeed, the species is very graceful on the wing, though perhaps not quite so graceful as *Zenaidura carolinensis*. The flying does not seem to be due to fretfulness at confinement, but rather for the pure joy of it. Nor is there any fretful pacing back and forth along the wire in an attempt to escape confinement. Immature birds try their wings frequently, flapping them slightly while held quite straight up and raising themselves thereby a foot or two above the ground.

Young birds and females bluff adult males, rushing at them and jabbing with the beak at the same time, and sometimes striking also with one wing. The adult usually retreats. This may take place not only at feeding, but at other times. One evening I saw a young bird or female standing behind a male and making jabs at him with the beak, in an effort to make him fly. As he had his back to the aggressor he could not see what was happening, and as the latter was not actually striking him, he seemed unaware of what was going on. A young bird or female with a sore tarsus was particularly pugnacious. Although such valiant bluffers of their own species they give ground quickly before the attacks of *Gallicolumba rubescens*.

I have frequently noticed a high degree of pugnacity in young Pigeons and in crippled adults. It seems as though there were some correlation between the degree of helplessness and the boldness of front displayed.

Graysoni takes to a hose bath with enthusiasm. Rarely one attempts to bathe in the drinking water receptacle which is only about three inches in diameter. One day I saw one dip its breast in, shake itself, and at the same time raise one wing to catch under the wing the spray thus created. For rain or hose spray, the usual position is reclining on one side with the opposite wing uplifted. Sunbaths are usually taken lying belly down with one wing spread out on the ground, so that the sun strikes the upper surface of the wing and back.

Like other pigeons, *graysoni* sinks its beak deep in water when drinking. The throat is often expanded immediately afterwards, which I am prone to anthropomorphize as registering enjoyment of the deep, cool draught.

"Exceedingly inquisitive" characterizes the attitude of this

species towards man. When outside of the aviary, but with my face against the wire, they come within six inches. Inside the aviary, if one sits down, they are soon busy picking at the metal hooks on one's shoes or pulling at the metal ends of the shoe strings.

They seem to be strictly graminivorous in diet, declining to eat the meal worms of which *Gallicolumba* and *Starnoenas* are excessively fond.

That temperature controls the breeding impulse in these tropical Pigeons seems to me very doubtful, since mating takes place with the thermometer as low as 40° F. I think that abundance or scarcity of food is a far more important factor than temperature. The temperature at 7 A. M. on the morning the young *graysoni* hatched was 53° F, no doubt considerably lower than the minimum temperature on Socorro during the hatching season. When incubation began on April 9, the temperature was also 53° F. at 7 A. M. Between the 9th and 23rd the lowest temperature at 7 A. M. was 49, the highest 57. During the two weeks after hatching the lowest temperature at 7 A. M. was 51 and the highest 61. On May 4 when the squabs left the nest the temperature at 7 A. M. was 57. Temperature appears to me as a factor only in so far as it falls low enough to cause the death of squabs left alone in the nest without the warmth of the parent's body. Two squabs will survive in a lower temperature than a single squab, because of keeping one another warm.

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