

## AN ACCOUNT OF PRAIRIE FALCONS BRED IN CAPTIVITY—1970

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In the spring of 1970 at Slaterville Springs, New York, a pair of captive Prairie Falcons produced two clutches of eggs, in which eight were fertile. Two grown young survived. The adults in question were a three-year-old male and a ten-year-old female (UFO), both taken as nestlings. The birds had been together in the previous spring when one clutch with two fertile eggs was unsuccessful.

The breeding chamber in 1970 consisted of a wired-off section of an alley-way in a large barn. Since the barn was very loosely constructed, some light entered through cracks between boards, a fair amount through two small windows in the breeding cage and a good deal of light through large sliding doors at the entrance to the alley-way. The breeding cage itself was constructed of one inch chicken wire and its dimensions were 12 by 7 by 14 feet high. Four bales of hay were hung on the sides of the cage and provided the only perches, and a large wooden barrel with its end nailed against the wall high in one corner provided the nesting cavity. Fine gravel was placed on the floor of the barrel. One 150 watt floodlamp was placed within four feet of the bale of hay in front of the barrel. The flight cage was in visual range of other falcons tethered on blocks in the barn.

The birds were placed in the flight cage in early February and appeared to adjust well to the wire cage. Rarely did either bird fly against the wire. The ready availability of perches on the wire in the form of bales of hay may have solved that potential problem. On 1 March 1970 neither bird showed strong sexual activity nor any particular orientation to the nesting barrel, except occasionally the female roosted near its opening. Up to that time the large double doors at the entrance to the alley-way were opened early in the morning and usually closed after dark. Beginning on 1 March the floodlight was turned on at 7:00 a.m. and off at about 9:00 p.m. each day, giving a photoperiod of about 14½ hours. By 8 March both birds had shown a very pronounced increase in sexual behavior, attended by a good deal of bowing and clucking, and a scrape was now present in the

barrel. By mid-March, the female was in such high sexual condition that she would cluck upon hearing any outside disturbance, such as a door slamming on a car or house. By 17 March her abdomen was clearly distended and I could feel the presence of eggs. The eggs were laid at two-day intervals beginning on 21 March and ending on 29 March. Diet throughout the spring was mainly horsemeat and day-old chicks with occasional multiple vitamins.

Each egg was removed as it was laid and replaced with a dummy. The removed eggs were placed in a homemade incubator and held at 101° to 102° F. All but the first egg were fertile. On 29 March the four fertile eggs were placed in a forced air incubator at 99.2° F. and a humidity of 75%, and were automatically rotated 150 degrees every three hours. The eggs were held with their large ends up in the incubator. The second egg to be laid stopped development on about April 10. On 23 April the three remaining eggs were placed in a portable incubator. Egg No. 3 pipped on the 35th day of incubation, but eggs No. 4 and No. 5 died after about 32 days of incubation, before pipping. On 1 May the chick in the No. 3 egg was helped out of the shell. The yolk sac was not clearly absorbed, and the umbilicus was still fleshy. That chick died on the fifth day. It was strongest on the second day of life and ate by itself, though it was force fed at all other times. There was a rapid decline in its condition on the night of the second day and it was very weak on the third and the fourth. Brooding temperature was held at 95 to 98°. On the fourth day the chick was given oral tetracycline in an amount normally used to sterilize developing eggs. Autopsy showed that the yolk sac was still unabsorbed and it was suggested that the chick died of a bacterial infection of the yolk sac.

In the meantime, the Prairie Falcons started a second clutch. The five eggs were laid on 17, 19, 21, 23, and 26 April. As soon as egg No. 2 was laid, it and No. 1 were put in a portable incubator and were replaced with dummies in the barrel. Each of the remaining eggs was taken as it was laid and put in the incubator, except for egg No. 5. On the 26th of April the dummies were removed and No. 1 and No. 4 were returned to the nest barrel. Egg No. 2 was mysteriously cracked, and it was held in an incubator until 5 May. At that time the crack was covered with a small amount of paraffin and it was returned to the nesting barrel, but the embryo disintegrated within ten days. Egg No. 3 was infertile.

Time-lapse motion pictures taken of the nest barrel in this period showed that the female incubated the eggs steadily. Egg No. 1 pipped on 24 May and I removed small pieces of

shell to facilitate the final hatching on 26 May. At that time the chick and the other two eggs were maintained under artificial conditions during our return to Colorado Springs. Egg No. 4 pipped on 27 May and hatched en route to Colorado Springs in Ohio on 29 May in a 12-volt incubator in the car. This chick received no help and hatched suddenly about 60 hours after the first pipping of the egg. Egg No. 5 pipped on 29 May and hatched on its own on 1 June. Humidity was kept as high as possible by means of absorbent material in a shallow pan of water in the bottom of the incubator, and the incubator temperature was held at 97-98° F. Despite the fact that we traveled over 1500 miles during the latter stages of incubation, the only problem encountered was with a bleeding umbilicus of chick No. 1 (the chick that we helped from the shell). The umbilicus lost two or three drops of blood freely and after that was swabbed with ethanol three times the next two days. As soon as the chicks hatched, they were removed to a cooler part of the incubator near the bottom, where the temperature was between 92 and 94 degrees for the first day or two of life. After that the temperature was lowered to 88 degrees.

All three chicks ate without forced feeding. Although no record was kept for chick No. 1, chick No. 4 ate five hours after hatching, and chick No. 5 ate on its own accord seven hours after hatching.

Upon arriving in Colorado, the chicks were maintained at about 85-90° F. for five or six days, but it appeared that if chicks are to be held at room temperature, they may not need added heat after the fifth day, but may be covered with a light cloth.

The chicks were all fed lean dove muscle (very little fat) until the third day, when finely crushed leg bones were added. The diet changed to pigeon after the first week, and a good deal of finely crushed bone from the pigeons was given at every feeding.

Chick No. 5, the last to hatch, died on the sixth day after apparently gaining weight normally. No clearcut cause for its death could be found. The other two chicks were fed by hand until they were near fledgling size and were always given all they could eat. Despite the fact that both chicks were fed by hand until six weeks of age, neither is tame. Both are males, in excellent health, and are virtually identical. Both are in excellent health as of 18 November 1970.

In early July 1970, the adult birds were placed on eight hours photoperiod by closing their old quarters until 11 o'clock in the morning. The birds were kept on eight hours of photoperiod until 16 October 1970, when artificial light was

turned on at 4:00 a.m. and off at 8:00 a.m. such that the total length of day was near fourteen hours. Artificial light was added by means of two 150 watt outdoor spotlights mounted within 3½ feet of the two straw bales used for perches. Hence there was no way in which the birds could avoid the light. The size of the breeding room in this case is 6 by 8 by 8 feet high.

At the time that the photoperiod was increased in the fall, neither bird showed obvious sexual behavior. Within two weeks both birds were clucking a good deal and a scrape, which had been intermittently present during late summer and early fall, was now regularly attended. At this writing (20 November) both birds appear to be in full breeding condition, and grease marks have been seen on the back of the female, suggesting that copulation has taken place. The abdomen of the female appears slightly distended.

A few general comments perhaps are in order. First, success in this case was achieved with a pair of birds that appear to be very well adjusted to each other and very tame in regard to people. Secondly, it does not appear—at least in this case—that intense light is necessary. The breeding cage in New York was fairly dark, with light below that necessary to take color photographs without a flash. The presence of other birds tethered about on blocks did not seem to disturb the nesting pair. It appears to be a mistake to try to aid the hatching chick; the result can well be hemorrhaging. Prairie Falcon eggs do not appear to develop well in incubators designed for hens eggs. I did place a thermistor in a dummy egg and place it under the incubating female falcon. At no time did the temperature exceed 95° F. in the center of the egg, although the tests were of too short duration to be conclusive. Young prairie falcon chicks can be reared by hand, although it is a task of inordinate demand. Finally, a pair known to be capable of successful breeding can be brought into full reproductive condition in the fall by the manipulation of photoperiod. Whether or not eggs can be produced from such a situation remains to be seen.

**Addendum.**—The following comments regard the outcome of the attempted induction of fall breeding in the above pair of prairie falcons. By 2 December 1970, the abdomen of the female had not become significantly distended, and the birds were returned to natural photoperiod. Despite the fact that both birds reached full behavioral condition in the six weeks between mid-October and the first of December, neither bird began a molt nor did the female become clearly gravid with eggs.