BREEDING PROJECT INFORMATION EXCHANGE

The following questionnaire was sent to cooperators; B.P.I.E. 17-26 are the reports returned to the RRF Breeding Committee and represent the status approximately at the end of 1970.

QUESTIONNAIRE

This data will be used to help the RRF and the NAFA Breeding Committees formulate procedures which are most likely to produce results in breeding captive raptors. As chairman of both these committees, I feel that so-called backyard projects, whether supported or unsupported, have sufficient merit to be counted strongly in the picture, but only if the experimentors are serious in cooperating and coordinating their efforts toward a common goal. Without this cooperation, a good case can be made for a large, exclusively governmental project. We greatly need your assistance; and since we feel this approach will help each of us to succeed, we are confident you will give it.

If you wish, the data you send will be kept strictly confidential (I will personally guarantee this). However, if you have no reason to want the data kept confidential, we would like permission to use it at our discretion in *RRF News*.

Please check: signature

Confidential ☐

Not confidential, but not for publication in RRN ☐

May be used in RRN ☐

If you have in any way attempted a breeding project this year (or in other years and have not reported same), it would be most helpful if you would take the time to answer the following questions. What you have done may be of real importance in helping solve the problems connected with captive breeding of raptors.

Sincerely,
Donald V. Hunter

1. Species

Male Female

2. Age
3. Origin:
   a. Eyess

b. Passage
c. Haggard
d. Unknown

4. Eyrie:
   a. Latitude of origin to nearest degree
   b. If not known, area of origin (e.g. Arctic, etc.)
   c. Latitude trapped (date, too)
5. Handling:
   a. Hatched?
   b. Manned?
   c. Flown Free?
   d. Flown at Game?
   e. Disposition?
   f. Imprinted?
6. Sketch the facility in which the birds were kept, giving approximate dimensions, size of windows, and direction of exposure of such windows. Also a brief description of materials and construction.
7. Was artificial used? (Wattage, number of bulbs, duration of light period, etc.)
8. Color and texture of interior - e.g. white, black, unpainted wood, beams exposed, etc.
9. Describe provisions made for nest.
10. Describe how birds were introduced to facility and to each other.
11. If not put in aviary together, which bird was first and by how long. Please give dates.
12. Observations of behavior toward each other.
13. Nest building?
    a. Materials provided?
    b. Did both birds build or help with building or making of scrape?
    c. If not, which one did?
    d. Describe giving dates.

    (If no nest or scrape was made, please so state)
14. Food. Give a description of food provided, amount, when given, consumption and observations of behavior while eating. Excess or old food removed?
15. Was copulation observed? If so
    a. Date
    b. Time of day
    c. Brief description of where and how it took place.

(For example, on nesting place, male mounting female from side.)

16. Eggs?
    Date for egg No. 1; No. 2; No. 3; No. 4; No. 5.
17. a. When did incubation start? Date
    b. Did both birds participate in incubation? Explain
    c. When did incubation cease? Date: Why?
18. Incubation temperatures: Did you take incubation temperatures? a. If so, what were they?
    b. Describe variations of air temperatures during incubation.
    c. Humidity?
19. Did you attempt artificial incubation?
    a. Describe incubator.
    b. Temperature?
    c. Humidity?
    d. Successful hatching? Describe, date in, date hatched, etc.
20. If you used a foster brooder, a. what kind?
    b. In what sort of nest?
    c. Successful hatching? Describe, as above.
21. If eggs did not hatch, a. were they fertile?
    b. If so, when did embryo die?
    c. Probable cause of death?
22. If parents did hatch eggs, a. dates for each
    b. Description of parental behavior.
23. If some eggs hatched and others did not, do you know which are which in respect to sequence laid? Explain.
24. Did you have unhatched eggs assayed or analyzed? Results.
25. Food. Describe food and feeding of young.
26. If death occurs to young, explain.
27. How long were surviving young kept with parents? Describe briefly parent-offspring behavior from hatching to removal of young or parents, and after if noteworthy.
28. Final description of F_1 generation.
29. Any additional information that you think important.
30. Suggestions for improving questionnaire.

Note: It may be easier to prepare a narrative answering the questions in order. This would be very acceptable to us, but we would like you to answer the questions in the narrative in order but not necessarily referring to them in the text.

B.P.I.E. No. 17. Erich Awender, M.D. (1317 La Cresta Drive, Freeport, Illinois 61032) reports on Prairie Falcon breeding project and adds a few comments on a Peregrine

project.

1. Species: Prairie Falcon

2. Age: male–2, female–5.

3. Origin: male–captive bred F_1 eyass; female–eyass.

4. Eyrie: Latitude of origin to nearest degree: male–St. Louis, Missouri; female–42°.

5. Handling: manned; flown free; flown at game; disposition–average for both male and female; imprinted–no.

6. Facility: room 10x15', highest point of ceiling 11'; window 4'x5'–southern exposure; brick and redwood construction, concrete floor, inside wood paneling and exterior plywood.

7. Artificial light: 2 recessed 150 watt white light bulbs in ceiling, at 45° angle to each other. During breeding time, lights on all the time.

8. Interior: ceiling–light blue, sides–light green and light gray.

9. Provisions made for nest: corner nest, exposed ledge 4' wide, inside coarse sand, landing platform cocoa mat.

10, 11. How birds were introduced: tiercel put in first, was very familiar right away, because setup resembles his birthplace (Henry Kendalls') very much, male in early October, 1969, 2 weeks later female added.

12. Observations of behavior toward each other: very compatible right away, sleep together touching wings or breasts.

13. Nest building: female made scrape; a. Materials provided–coarse sand, nesting triangle 5' above ground; b,c. Scrape made only by female; d. Describe giving dates–scrape present since New Year 1970, male began moult 1-1-70.

14. Food: staple diet is fresh chicken necks with flamen oil; twice a week freshly killed, plucked and gutted pigeon; pheasant and rabbits in season or roadkills as available.

15. Was copulation observed? No, but female pushed herself under male many times, all during January 1970.

16. Date for eggs–No. 1, 1-16-70; No. 2, 1-18-70; No. 3, 1-21-70; No. 4, 1-23-70.

17. a. When did incubation start? 1-23-70, also begin of F moult; b. Did both birds participate in incubation; Only female; c. When did incubation cease; Feb. 1st (eggs removed–dummies).

18. Incubation temperatures: not checked; inside room 40-50°F.; Humidity–not checked, bath water open all the time.

19. Artificial incubation; Yes; a. incubator–commercial quail incubator; b. Temperature–around 100°F; c.

Humidity–75%; d. Successful hatching? No.

21. If eggs did not hatch, were they fertile? No.

24. Did you have unhatched eggs assayed or analyzed? Gross examination by Dave McKelvey: two eggshells normal thickness, two below normal.

29. Additional information: Jesses from both birds removed for good.

ADDENDA ON PEREGRINES: My second pair consists of a 1968 eyass Peale's tiercel and a 1963 passage Peregrine, looks like tundra falcon but is large; this pair made no nest and no eggs, the male acts broody, but the hen is very indifferent, sometimes chases him off his perch; they are a beautiful pair, I hope something will happen next time, they are perfectly moulted and ready for anything, but don't like each other like the Prairies do; I even had a second tiercel in with them, for jealousy, but no results, so I took him out last month; my third pair consists of the tiercel just mentioned, a three year old large intermewed passage tundra tiercel, and a two year old large intermewed passage tundra falcon; the falcon is pugnaceous toward me, the male on the shy side.

B.P.I.E. No. 18. Robert B. Berry (Yellow Springs Road, Chester Springs, Pennsylvania 19425) reports on a Peregrine Falcon breeding project and adds a few comments on a Goshawk project.

1. Species: Peregrine Falcon (*tundrius*).

2. Age (Spring 1971): male-4, female-6.

3. Origin: b. Passage

4. Eyrie: c. Latitude trapped–Assateague Island, October.

5. Handling: b. Manned? male and female; c. Flown Free? female; d. Flown at Game? female; e. Disposition? male-nervous, female-tame (feeds readily from fist).

6. Facility: Open plastic wire enclosure 30x15x20 high–1 shelf 2x4 of sod with south and east exposure, frequented by birds in early a.m., shelf otherwise open to elements. Second shelf with south exposure against a building with overhang several feet above the ledge. Both shelves filled with sod. Virtually no activity this spring–some chattering by the female. Last fall, both birds very noisy, often facing one another with head down, tail elevated. Inspection of open air shelf disclosed a scrape of 1 to 1½ inches deep and 6 inches in diameter–don't know which bird responsible. Altered concept and placed birds in enclosed chamber 12x12x9 with open screened top in July of 1970. At sight of a strange Peregrine, both falcons were extremely territorial and aggressive, even with raptor at a distance. If I walk by their

pen with Peregrine or strange Gyr on my fist, female flies against the wire, male just screams. Feel even though they have apparently established territory that too much stress in open chamber. They are not aggressive towards me.

7. Artificial light: used 8 300 watt bulbs last spring, photoperiod increased in p.m. to allow up to 3 additional hours in March and April.

8. Interior: cedar posts, plastic coated IMCH wire mesh.

9. Provisions made for nest: sod—grass growing in shelves 2x4x4" high—plywood bottom with cedar sides (rounded tops).

10. How birds were introduced: no elaborate introduction, just placed in chamber.

11. If not put in aviary together: female preceeded male by 1 year.

12. Observations of behavior toward each other: female first hostile towards male—during past 3 years, attitudes changed, male appears dominant, then female; they now display a casual dislike for one another, both cover with food when keen and never offer food to one another.

13. Nest building; single scrape fall 1969; a. Materials provided? sod; b. Did both birds build or make scrape? unknown.

14. Food: has varied from chicken heads and pigeon in 1967 to virtually all chicken and horse meat since 1968—prior breeding season in 1969 and 1970—mostly chicken (fresh cockrels 4-20 weeks of age) supplemented vionate and in 1970 vionate and vitamin E (wheat germ concentrate).

15. Was copulation observed? No

16. Eggs? None

30. Suggestions: excellent questionnaire

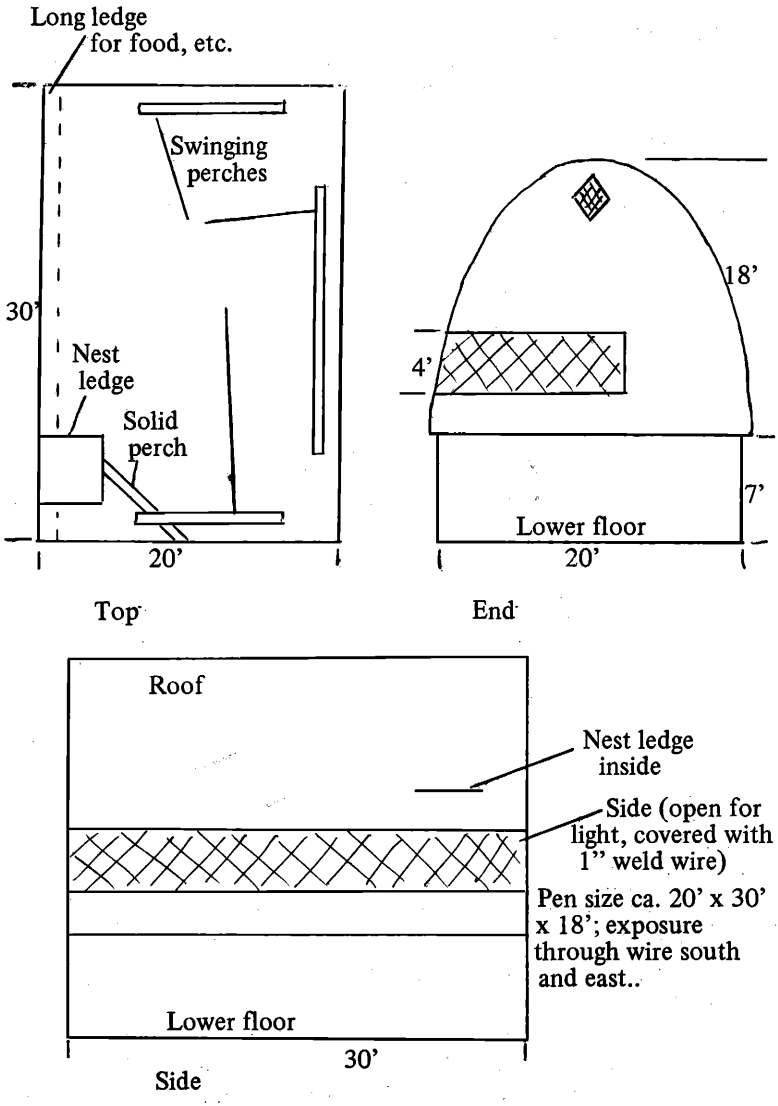
ADDENDA ON GOSHAWK: got four fertile eggs via artificial insemination. One embryo died age five, second age 12, she (hen gos) broke one egg, and fourth egg was ¼ piped when chick mysteriously died. This chick along with a 12-day embryo were incubated by a bantam, others by gos. Hen gos given Sparrow Hawk which she raised and successfully fledged. Chicken incubation temperature approximately 1 degree F warmer than Goshawk. Further information will be forthcoming.

B.P.I.E. No. 19. R. Fyfe (Ft. Saskatchewan, Alberta, Canada) reports on Peregrine Falcon breeding project.

1. Species: Peregrine Falcon (*pealei*).

2. Age: both 4 years.

3. Origin: Eyass.
4. Eyrie: a. Latitude of origin to nearest degree–53°N.
5. Handling: b. Manned–both; c. Flown Free–both; e. Disposition–both put up at 1 year.
6. Facility: pen size approximate 20'x30'x18', exposure through wire–south and east (see sketch).



7. Artificial light: no.

8. Interior: unpainted wood.

9. Provisions made for nest: nest ledge approximately 2½'x5', filled with gravel.

10. How birds were introduced: together from 3-4 weeks of age, moved into pen in August of previous year; put in together.

12. Observations of behavior toward each other: calling; courtship feeding by male; attracting female to nest by calling and behavior; mutual calling at nest; nest exchanges for incubation.

13. Nest building: several scrapes made in the one ledge; observed female making scrapes; a. Materials provided? gravel; b. Did both birds build or help with building or making of scrape? unknown, male definitely seemed to initiate use of ledge, female only observed making scrape.

14. Food: whole pheasants through winter, parts of pheasants in the spring.

15. Was copulation observed? No; however, back feathers of female disarranged several times.

16. Eggs? Date for egg No. 1, April 26; No. 2, April 28; No. 3, April 30; No. 4, May 2; second clutch No. 1, May 17; No. 2, May 19; No. 3, May 21; No. 4, May 23.

17. a. When did incubation start? May 24 (first clutch removed at fourth egg, incubation refers to second clutch); b. Did both birds participate in incubation? Yes; c. When did incubation cease? July 10; Why? when we removed eggs and provided young hawks for the pair to raise; eggs were found to be infertile and removed a few days after the normal incubation period.

18. Did you take incubation temperatures? No.

19. Did you attempt artificial incubation? Yes (eggs infertile).

21. If eggs did not hatch, a. were they fertile? No.

24. Did you have unhatched eggs assayed or analyzed? No.

25. Food, describe food and feeding of young (young introduced were downy Swainson Hawks): as above—pheasant.

27. How long were surviving young kept with parents? until fledged.

29. Additional information: The most obvious indication of nesting and I think the most important aspect in captive breeding is the acceptance of the pen as an acceptable breeding territory which is defended by the adults. This, of course, cannot be achieved unless both birds are in harmony

with the captive situation, human intrusion, and one another. The first two can be altered in pens (size, shape, furnishings, food, etc.) and more or less human intrusion.

30. Suggestions for improving questionnaire: more room for behavior of adults.

B.P.I.E. No. 20. Lou Gaeta (12591 Heath Rd., Chesterland, Ohio 44026) reports on a Golden Eagle breeding project.

1. Species: Golden eagle.
2. Age: male - 11 years; female - 12.
3. Origin: male - haggard; female - passage.
4. Eyrie: male - unknown; female - Forsyth, Montana (trapped in fall of 1958, 1st week in October).
5. Handling: male - unknown; female - manned, flown free, flown at game, disposition nasty.
6. Facility: room was 15' x 10' x 8' with sliding doors with large holes for viewing.
7. Artificial light: Yes, three 150 watt lamps from 6:00 a.m. to 6:00 p.m. and a 25 watt blue lamp used from 11:00 p.m. to 6:00 a.m.
8. Interior: The walls were unpainted plywood and the ceiling beams were exposed. The main garage door was white and nailed securely closed.
9. Provisions made for nest: the platform was built 6' off the breeding room floor. It was 4' square and 2" deep. Straw, hay, and small evergreen branches were provided for her disposal.

10, 11, 12. Introduction of birds: February 20, 1968. For the first time, I put the male and female together. At first, the female wasn't too sure what to make of the male. The male did not pay any attention to the female, but it was different with the female. She would hold her head feathers very tight, and stretch her beak and neck. After about half an hour, she started to relax. Then she would raise the feathers on her neck and head and kept looking over to the male. She would then arch her neck and ruffle her head feathers only and place her beak in her chest. This went along very well until the male made a move and then the female took one dive at him. I then stepped into the room and once she saw me, she jumped back on her perch again. Both birds were a little nervous after that. After about one hour of this, I turned the lights out. I left both birds untied in the same room, but on different perches. I will return again in about an hour. After I returned, I noted that the female was the aggressive one; she jumped on the same perch with the male

and for about twenty minutes they just observed each other—they did not fight.

February 21, 1968. Things have been the same. February 25, 1968. I put the male in with the female again, and again she just chased him all over—did not appear too interested in him. February 28, 1968. The male started making vocal noise in the room next to the female. The female would hear, but could not see him. She did start to show interest. I did not put the male in where she could see him.

13. Nest building: a. Materials provided—evergreen branches (2-3 feet long); also straw and hay; b, c. Building—the female did all the preparation in building; d. Dates—March 9, 1968, built on platform.

14. Food: consisted of adult chickens, adult pigeons, beef and beef hearts, horse meat and rabbits. The amount given was ½ to ¾ pound daily, once a day, early in the morning hours.

15. Copulation observed: no.

16. First egg laid April 5, 1968 (6 oz.); second egg laid April 8, 1968 (6 oz.).

17. Incubation: because there was not copulation, there were no fertile eggs laid. April 14, 1968, three fertile Red-tailed Hawk eggs were placed in the nest in exchange for her eggs. The first Red-tailed Hawk egg hatched April 26. The second egg hatched May 2. May 4, she left the nest and ignored the third egg.

18. Incubation temperatures: Did you take incubation temperatures? No. b. Variations of air temperatures during incubation—air temperatures varied from warmest of 75° on April 14, 1968, to 50° on April 26, 1968. c. Humidity—unknown.

22. Female Golden Eagle hatched two Red-tailed Hawk eggs—a. April 26, 1968, May 2, 1968; b. Parental behavior—female eagle was extremely protective over the young hawks but did not know how to feed them; hence, the young hawks were removed from the nest.

25. Food: young Red-tailed Hawks were hand raised on beef hearts, beef liver, and dead day-old chicks.

27. Parent-offspring behavior: In relationship to young Red-tailed Hawks, the eagle was very, very protective. Would not allow myself or anyone else to come near nest at any time. The female eagle's attempts to feed the young hawks were unsuccessful and within twenty-four hours the chicks became very weak. All the lights in breeding room were turned off and the use of only a flash light and protective gear, worn by myself, was exercised so that the young hawks

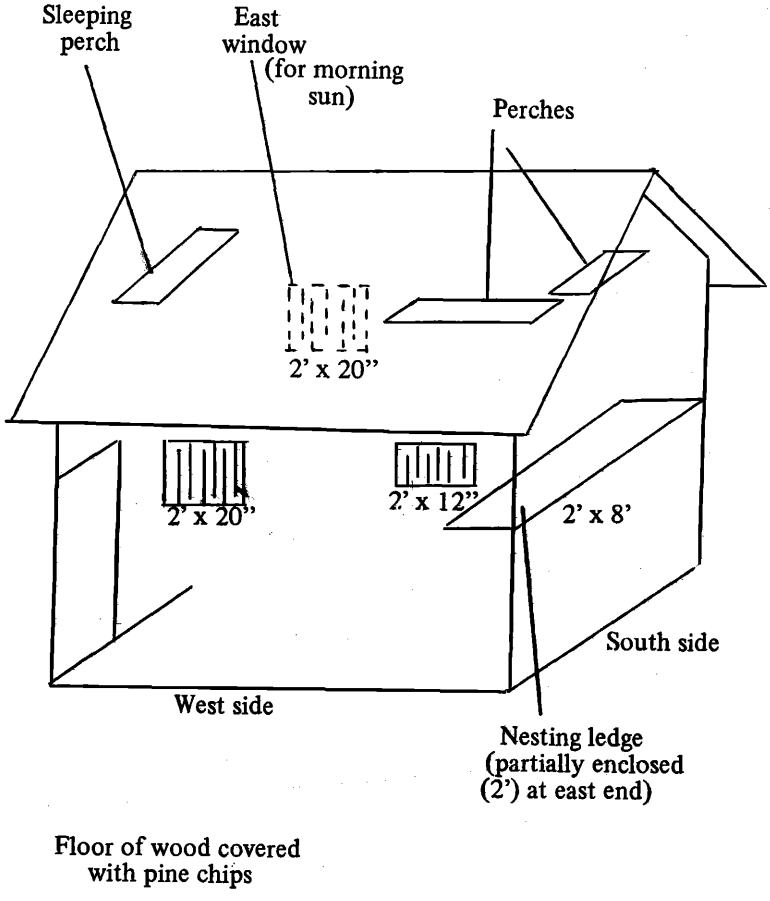
could be hand-raised.

29. Additional information: It was my feeling that even though I was not able to obtain fertile eggs of another bird of prey, I did not break the reproduction cycle of which the eagle had well adapted to in captivity. Even though she was not successful at feeding the young, I feel that the young hawks were so much smaller than her normal off-spring would be that if they were of her own species, she would have been successful.

A day-by-day narrative and photographs are on file in the Raptor Research Foundation office.

B.P.I.E. No. 21. Richard A. Graham (Colorado Springs, Colorado) reports on a Peregrine Falcon breeding project, and adds a few comments on projects with Prairie Falcons and Gyrfalcons and a second one with Peregrines.

1. Species: Peregrine Falcon (*brookei*).
2. Age: male–1968, female–1967.
3. Origin: Eyass.
4. Eyrie: Madrid, Spain
5. Handling: b. Manned–male-no, female-yes; c. Flown Free–no; d. Flown at Game–no; e. Disposition–male-very gentile, female-tame, but aggressive; f. Imprinted–male-unknown (but possible, taken by farmer out of nest at undetermined age); female-no.
6. Facility: 12' x 8' building; 12' high at peak, 8' basic height. See sketch.
7. Artificial light: no.
8. Interior: unpainted wood, beams exposed.
9. Provisions made for nest: two foot wide ledge running x-wise at end of building–8 feet across; this inset with three inches of loose dirt and sand mix; partial screening of ledge for two feet at one end.
10. How birds introduced: birds were placed in room together; previously they had spent the year together. Tiercel was one year younger than female; male (flightless because of broken feathers) was put with female at about 5 months of age–female had at this time completed first moult; female clucked, etc. the following spring and "pushed" the first year tiercel; he did not respond in any way, her action was for two-week period before starting moult.
12. Observations of behavior toward each other: in 1969 birds moved to Colorado in November; tiercel and female both finished their first and second respective moults; in February of 1970, female began to cluck and display nesting behavior; back and forth to nesting ledge; tiercel can only be



described at this time as "innocent"; he seemed not to be as interested as she; both birds fed together on same food carcass and spent much time inches apart; at this time birds began to roost side by side which was a change from previous behavior; female continued active behavior; as the male started into moult he began to give the impression of maturity; half way through 2nd moult, tiercel began to make trips back and forth to nesting ledge–falcon's interest had waned to this point, but she now made a scrape; no eggs, no additional behavior; both birds started moult in March or early April and were complete in September–hard penned.

13. a. Materials provided: only a bath was provided which was used; b. Did both birds build or help with building or making of scrape? not observed, but assume female only.

14. Food: Food was primarily that used by H. Kendall

previously, i.e., four-week old chickens raised on high protein diet; other birds also given, but for most part only chickens; skin color increased remarkably during spring period, though food remained the same; in July or so, coloration of feet and cere diminished; tiercel almost orange at one time, falcon very waxy yellow.

15. Was copulation observed? No.

ADDENDA On Prairie Falcon, Peregrine Falcon, and Gyrfalcon. In addition, there were a pair of old (four year) Prairies which H. Kendall had and which laid eggs in their third year. I received birds February 12, 1970. Birds went wild in new cage. Cage was room with south and west windows, 12 foot high, ten foot long and 7 foot wide. Birds finally calmed down about June, and female started clucking in June and extremely so in July. Built four or five very nice scrapes–but no eggs as in previous year. She is still clucky today, tiercel now also–not previously. No nest making since August or so. Lesson learned is that birds are very attached to old home. I had to put falcon in another room to work on lighting system last month as she would attack me, and she went absolutely wild in room next door. When put back in her "eyrie" she clucked and clucked, went to her nesting ledge and really seemed to relax. Quite a sight–anxiety is certainly a problem.

Second pair of Peregrines–nothing, but then female made a scrape of sorts, not as good as the other birds made. Her tiercel got out in May or June and has never been seen. She was wild in cage unlike other birds. Room same as for Prairies, except east and south window. This bird now being flown and handled on leash, and is taming down, etc.

Gyrs together my three year white and H. Kendall 3 yr grey. The white female would not accept the male on any terms. Scream, grab and very anxious anytime Jerkin was near her. Jerkin went nuts for two weeks when taken from Kendall and put in new mews. Size 14 by 10 by 12 ft. high. Both birds moulted clean by September. White was passage, Jerkin was eyas.

B.P.I.E. No. 22. Frances Hamerstrom (Plainfield, Wisconsin 54966) reports on a Golden Eagle breeding project.

1. Species: Golden Eagle.
2. Age: male–±9; female–±8.
3. Origin: a. Eyass.
5. Handling: b. Manned, both; c. Flown Free, female; d. Flown at Game, female; e. Disposition, variable; f. Imprinted,

who knows?

6. Facility: described in *An Eagle to the Sky*.

8. Interior: unpainted wood, beams exposed.

9. Provisions made for nest: platform.

11. If not put in aviary together, which bird was first and by how long: tried male first, then tried female first.

12. Observations of behavior toward each other: hateful.

13. Nest building: excellent by female, sloppy by male; a. Materials provided: sticks, hay, etc.; b. Did both birds build or help with building or making of scrape? yes, but not the same nests.

14. Food: chickens and road-killed mammals; excess or old food was not removed.

15. Was copulation observed? male mounted female every day after breakfast.

16. Date for egg No. 1, Mar. 19 or 20; No. 2, March 23; No. 3, Mar. 27.

17. a. When did incubation start; Mar. 19 or 20, 1970; b. Did both birds participate in incubation? only female had a chance to; c. When did incubation cease? May 17, Why? finally lost interest.

19. Did you attempt artificial incubation? a. Describe incubator, only for 5-40 minutes each day in a 1 doz. hen egg incubator; b. Temperature? 99°F.

21. If eggs did not hatch, a. were they fertile? unknown; c. Probable cause of death? a period of traumatic disturbance; I threw Chrys some dead 1-day cockerels and she tried to adopt one.

29. Additional information: see question 22, I think this may be important.

30. Suggestions for improving questionnaire: add questions on artificial insemination.

B.P.I.E. No. 23. David Hancock (The Wildlife Conservation Centre, Saanichton, British Columbia, Canada) reports on breeding project with three pair of Peregrine Falcons (Peale's).

1. Species: Peregrine Falcons (Peale's).

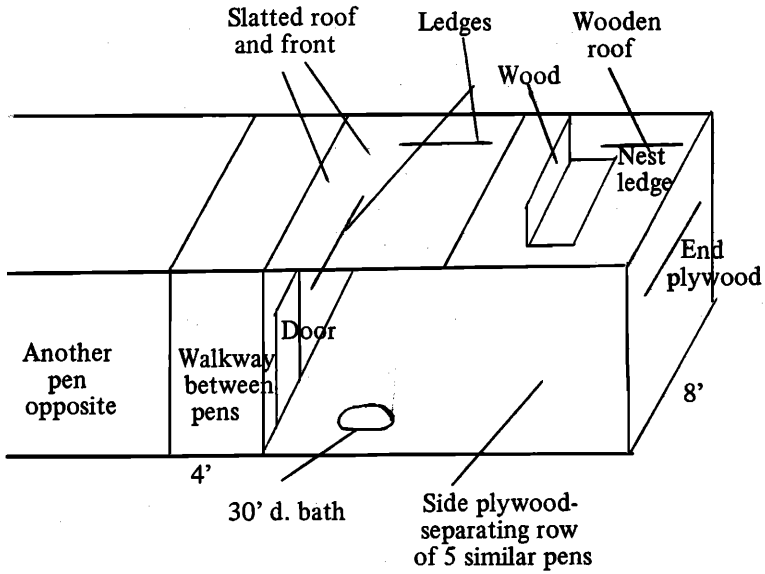
2. Age (June 1970): pair 1–3; pair 2–male 3, female 2; pair 3–male 1, female 8.

3. Origin: a. Eyass–pair 1, 2; b. Passage–pair 3.

4. Eyrie: pair 1, 2–unknown; pair 3–male, Arctic, female, unknown.

5. Handling: c. Flown Free–pair 2 female, pair 3 female; d. Flown at Game–pair 2 female, pair 3 female; e. Disposition–pair 1 female, aggression; pair 3 female, gentle.

6. Facility: nest ledge is 24x60" and 4' off ground, end has plywood panel separating ledge from main open area and people servicing pen from walkway; all pens similar; see sketch.



7. Artificial light: no.

8. Interior: unpainted wood, beams exposed.

9. Provisions made for nest: 24x60" platform, 2x2" laid around edge, 2 buckets of gravel placed on top.

10. How birds introduced: just placed in their facility; pair 1. male and female put together into new pens, 1967; pair 2. 1967; pair 3. male given pen 1 month first, then female placed in December 1969.

13. Nest building; pairs 1 and 2 both made scrapes by late February, pair 3 no attempt at scrape; a. Materials provided? gravel; b. Did both birds build or help with building or making of scrape? unknown.

14. Food: excess chicken (heads and chopped up whole bodies) plus vitamins; sometimes removed daily—when on eggs not disturbed at all and none removed.

15. Was copulation observed? pair 3 seen "possibly" mating by assistant; female on nest ledge with wings

outspread.

16. Eggs? Pair 1 (first clutch). May 15–1, 2 eggs, May 19–3 eggs present and removed; (second clutch). June 6–3 more eggs observed and left. Pair 2. May 3, 4 eggs (1 on ground and 3 spread on ledge), May 14, 7th egg found today.

17. Incubation: I have no exact dates on incubation. b. Did both birds participate in incubation? don't know; I only saw female on eggs.

19. Did you attempt artificial incubation? Yes, b. Temperature? 102-103°F at top of egg and 99° at bottom; c. Humidity: atmosphere, but increased by addition of water at 3 days to anticipated hatching; d. Successful hatching; None.

21. If eggs did not hatch, a. were they fertile? Not fertile.

24. Did you have unhatched eggs assayed or analyzed? Not yet, but have made arrangements.

B.P.I.E. No. 24. Frank Kish and Gary K. Clarke (Topeka Zoological Park, 635 Gage Boulevard, Topeka, Kansas 66606) report on a Golden Eagle breeding project.

1. Species: Golden Eagle.

3. Origin: b. Passage female; c. Haggard male.

4. Eyrie: U.S.

5. Handling: e. Disposition? male timid, female tame, aggressive when breeding.

11. If not put in aviary together: male first, then 2 females, and female Bald Eagle; 1 female and bald eagle removed at first breeding.

13. Nest: b. Did both birds build or help with building or making of scrape? male carried bulk of nesting material to female which arranged material, male kept bringing nesting material throughout incubation period while female was incubating.

15. Copulation: b. Time of day–mostly 4 p.m., beginning 2 weeks before 1st egg laid; c. Brief description–log perch next to nest, once on ground.

16. Eggs? 3 eggs laid in 1970, artificially incubated–no hatching: 2 eggs incubated by same parents right after first 3 eggs were removed. No hatching from last 2 eggs either.

19. Artificial incubation: a. Describe incubator. American, Lincoln Model 96 forced air cabinet; b. Temperature? 99½-99¾°F; c. Humidity? 86%.

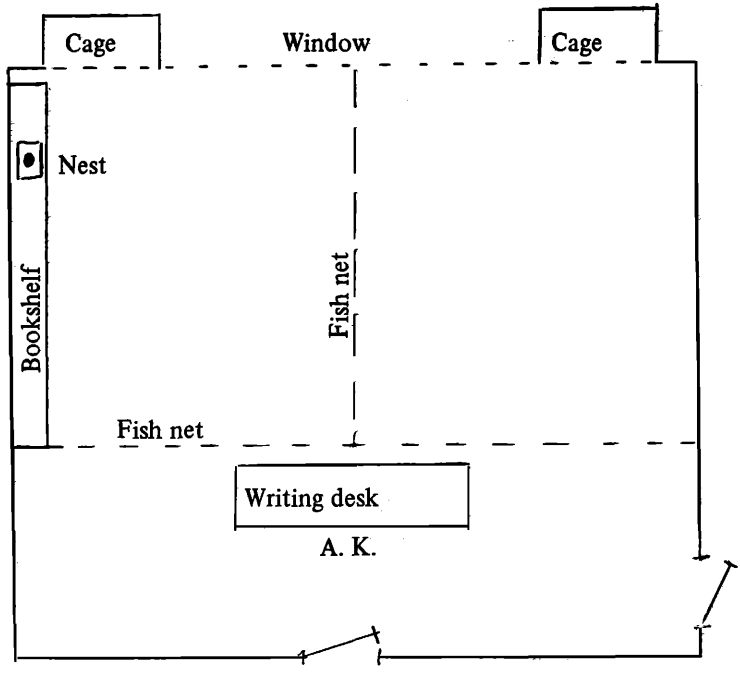
21. If eggs did not hatch, a. were they fertile? could not tell, eggs were rotten.

29. Additional information: See *International Zoo Yearbook* 10:26-29, 1970 (Frank Kish–Egg laying and incubation in American Golden Eagles *Aquila chrysaetos*

canadensis at Topeka Zoo).

B.P.I.E. No. 25. Frau Amelie Koehler (Zoologisches Institut, Albert Ludwigs Universitat, Katharinenstr. 20, 78 Freiburg im Breisgau, Germany) reports on a Red-headed Falcon breeding project.

1. Species: Red-headed Falcon (*Falco chicquera*).
2. Age: both 3 years
3. Origin: b. Passage, both.
4. Eyrie: probably India;
6. Facility: part of my office, 260x200x280 cm, whole room twice as large, fish net partitions, window 280x140 cm, with cages outside before the window, accessable to the birds at any time 60x35x95 cm. See sketch.



7. Artificial light? 200 W, other lamps in the back of the room, not accessable to the birds. Day length 12 hrs, birds active at dusk too, never absolutely dark at night.

8. Interior: nearly white, but bookshelves, cages and so on covering most of the walls.

9. Describe provisions made for nest. cardboard box with wood shavings on the uppermost bookshelf.

10. How birds introduced: living together from their first winter.

11. If not put in avairy together, which bird was first and by how long: aviary—male July 8, female Sept. 2, 1967; separated later for about 4 weeks, the female being ill; reunited in my lab in mid October; again the male lived there for some time already, when the female came in. Male courted and fed the female, moved the nesting place. Sitting very often together near the nesting site outside before the window.

13. Nest: probably both birds made the scrape.

14. Food: mice and one day old chicks, rarely crickets or locusts. Excess food removed but generally given no more than they would eat, 1-2 chicks or 2-3 mice or a handful of baby mice each bird.

15. Was copulation observed? too shy, probably once heard from a neighboring room.

16. Eggs? Date for egg No. 1-Jan. 27, No. 2-Jan. 29(?), No. 3-Jan. 31(?), No. 4-Feb. 2(?).

17. a. When did incubation start? Jan. 31; b. Did both birds participate in incubation? Yes, first days mainly the male, then mostly the female, the male relieving her generally twice a day in the forenoon and late afternoon.

18. Incubation temperatures: air temperatures during incubation: 20-25°C. c. Humidity? not enough at hatching though the room was then sprayed with water at least once a day.

19. Did you attempt artificial incubation? no.

22. If parents did hatch eggs, a. dates for each—4 young, March 4-8. Had to help the second. b. Description of parental behavior—male very active at apportioning food, very much interested in the young, but the first young was not fed during the first day, only after the second one had hatched. In the beginning only the female, afterwards both parents fed the young.

25. Food: same as the parents.

27. How long were surviving young kept with parents? hand raised from 15-19 days of age, but parents would have raised them as well.

28. Final description of F_1 generation: 2 male, 2 female, very healthy, given to the owner of the old ones on June 1st, where the two males escaped through a hole in the aviary.

29. Any additional information that you think important: parents stay with me.

30. Questionnaire: questionnaire seems all right.

B.P.I.E. No. 26. Daniel P. Mannix 4th (Sunny Hill Farm, RD No. 2, Malver, Pennsylvania 19355) reports on a Bald Eagle breeding project.

1. Species: Bald Eagle.

2. Age: male 5 years, female 32 years.

3. Origin: a. Eyass–male; b. Passage–female, first year but flying.

4. Area of origin: male, Alaska; female, New Jersey.

5. Handling: b. Manned? yes; c. Flown Free? yes; d. Flown at Game? male- no, female-yes; 3. Disposition? male nervous, female tame and aggressive; f. Imprinted? No.

6. Facility: see sketch..

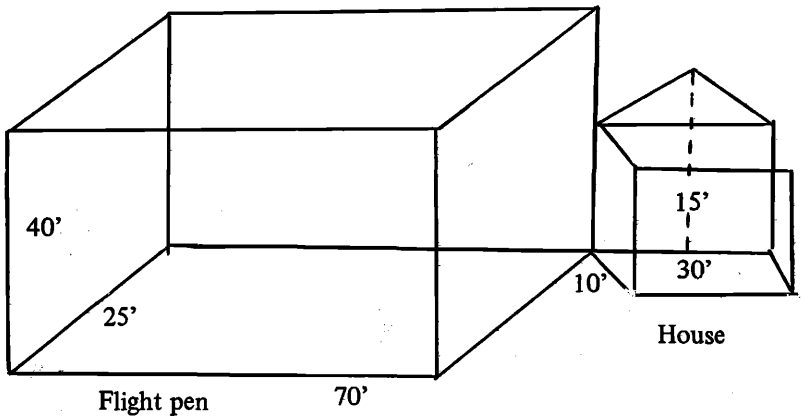
7. Artificial light: no.

8. Interior: white.

9. Provisions made for nest: straw, small branches, dead leaves.

10. How birds were introduced: kept on adjoining blocks for a month, then male liberated in flight cage; female put in three weeks later.

12. Observations of behavior toward each other: female



tended to bully male; still does but to a much less extent and only over food. Female very aggressive, attack me when I tried to enter the house; during most of the year, the male never entered the house even in bad weather; from Feb. until April spent most of his time there; when first egg laid, sat on perch at entrance to house but did not enter.

13. Nest building? nest on floor of house; a. Materials provided: straw, small branches, and dead leaves. b. Did both birds build: no, only female. d. Describe giving dates: female nested since 1968; this year (1970) she started nest building April 10; used only straw on floor, making a depression but did bring in a few small sticks from flight cage and some dried grass; first egg laid during night of April 11-12.

14. Food: Fed daily at five; each bird eats about a pound a day, the male slightly less; rabbit, chicken, beef hearts, fish (once a week) and occasionally a pigeon; vitamins on beef hearts. Food put in at opposite ends of flight pen or female will drive male off. Also, she is much tamer than he is; only in last few months will he come to me when loose in flight cage; female comes instantly, even attacks.

15. Was copulation observed? I never saw copulation definitely completed; I don't have the dates, but in early April or late May he would attempt to mount the female while she was on a horizontal perch; she was nervous but not aggressive.

16. Eggs: 3; Date for egg No. 1 April 12, No. 2 April 14, No. 3 April 17.

17. a. When did incubation start? April 9; b. Did both birds participate in incubation? no; c. When did incubation cease? May 16, female buried eggs in straw and deserted nest, apparently realized eggs weren't fertile.

18. Incubation temperatures: none taken. b. air temperature during incubation: light frost some nights, up to 70° during day. c. Humidity? don't know but humidity is generally high.

29. Additional information: Big problem, as usual, is that female is stronger and more aggressive than male. He is a little afraid of her. Ordinarily she does not bully him and sometimes he even assumes a dominant role and she submits but in general he is nervous with her. The birds were first put together in March 1968 but never observed attempts at copulation until this year. Incidently, in case you're curious I have a federal permit to keep these birds for experimental purposes. I have had the female since 1939 when she was two years old.