

Natural History.

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QUAIL IN CONFINEMENT.

WINTERING BIRDS.

A RECENT request from the editor for some notes under the above caption, and several inquiries from private correspondents constitute the "reason of being" for this article; hence no apologies. But the writer by no means intends to set himself up as an authority on the subject named, and the suggestions herein, drawn largely from his own experience, are tendered for what they may be worth.

It is safe to assume that in a majority of cases persons procuring live quail to winter, have come into possession of birds lately captured. These are forced to undergo a sudden and violent revolution in their habits, and in the hands of dealers are, for the time, huddled into cramped and insufficient quarters. It is not to be wondered at that, under the two causes combined, the quail suffer a most serious decimation, and contract ailments which a few weeks later break out in the most unaccountable way, to plague and grieve the man who has fondly planned to stock a favorite shooting ground. It goes without saying then, that it is highly desirable to buy birds at first hands, and to obtain them as soon as possible after they have been taken. In this way the evils which arise from crowding large numbers of birds together may be reduced to a minimum, if not altogether avoided.

Having got our birds, where shall we put them? If at all practicable they should go outdoors, with the ground for the bottom of the inclosure. Outdoor air and ventilation are very greatly preferable to any arrangement possible indoors, and if we are to have strong, healthy birds to turn out in the spring, they need the tonic of the winter air. So far as temperature goes, it makes little difference how much (dry) cold the birds have to undergo, if they have shelter from the cold rains. It is difficult to freeze well-fed birds (unless they chance to be imprisoned by a sleet storm), but it is the coveys that have been gradually weakened and enfeebled by starvation that fall an easy prey to the cold and snows. My own coops (of which there are three) are four by sixteen feet each on the ground, and from two to four and a half feet in height—the sides and top inclosed by galvanized wire netting, with a portion of each roof tightly covered with boards so as to make a watertight shelter. The lowest coop has the entire top hinged with heavy strap hinges, so that it can be lifted and folded back for convenience in cleaning. All the coops are connected by apertures which close or open at will from the outside, and in this way it is easy to transfer the wildest birds from one coop to another whenever it is desirable to vacate either of them for any purpose.

The base of these coops is made by digging around the space to be inclosed a trench one foot in width and eighteen inches deep. In the bottom of this trench is packed six inches of tin clippings, the refuse from a tinshop, and upon it is placed a board a foot wide on edge, bringing the top of the latter level with the surface of the ground. On the upper edge of this board strips of tin are tacked, and a second board—also on edge—placed upon it. Now if the wire netting is carried up from a line an inch below the upper outside edge of the second board, you have a bottom for the walls of your coops which will defy all the rats or other vermin that may be in the neighborhood.

When I first built my coops I made the walls of heavy half-inch mesh and the tops of lighter netting with a mesh of an inch and a half. In building again I should make the roofs of mesh not larger than half an inch, solely for the purpose of keeping out the miserable thieving English sparrows. It is no exaggeration to say that last winter and this I have been obliged to feed six of these worthless tramps for every quail or other game bird in my coops. But all this will be stopped this week by the substitution of finer mesh for the tops.

It may be urged as an objection to the style of coop that I have described that they are too expensive. I am frank to say that mine are built for use all the year around. As to height, four and a half feet is none too high for convenience in entering and cleaning, and wild birds do not pound themselves so badly by flying against the top as they would by jumping against a lower roof.

Next as to food. Cracked Indian corn, buckwheat, German millet and rejected wheat and wheat screenings are valuable in the order named. The first two are especially desirable in cold weather. Of hemp seed the birds are very fond, and a little now and then is greatly relished, although it is too expensive to be used very freely. I was fortunate enough this winter to find a mill in Toledo where I can buy cracked corn delivered at my house at about fifty cents per bushel. Each kernel is broken into pieces about the size of a grain of wheat, and as a winter food for quail it would seem to be unequalled. At first I tried various forms of ground and cooked food, but came to the conclusion two years ago that for adult birds they are hardly ever desirable, and in some cases injurious. A little green food at occasional intervals is an excellent thing for quail in confinement—a leaf or two of lettuce, a leaf of cabbage chopped fine, or a bit of apple answers the purpose. During the summer and fall my birds generally got a little bunch of chickweed every day, and seemed to prefer it to all other green food. But they have very little food of this character during winter; it is scarcely necessary to furnish it more than two or three times a week (if so often) in captivity.

In mild weather the birds should have fresh water once a day, given in such a way as to prevent them from fouling it. But in severe weather, when water freezes as soon as put out into the open air, the quail seem to get on very well without it.

Perhaps, however, there is nothing quite so essential to the health of quail in confinement as plenty of coarse sand or fine gravel. It insures good digestion and per consequence healthy and vigorous birds in the spring. Ground bone, burned oyster shells and seashells (such as are sold for poultry by the barrel) come under the head of luxuries, which the birds can do very well without, though they are undoubtedly beneficial. A box of road dust in the driest corner of the coop I have found to be the best possible preventive against lice, and as road dust is not very plenty at this season, a supply of dry coal ashes furnishes a good substitute. Even the wild birds soon learn to use it and are extremely fond of rolling and scratching in it. Last but not least in this connection, two or three inches of wheat or oat straw, under the covered portions of the coop, make an excellent place for the birds to pick and scratch in, and a warm and comfortable bed at night.

There are a few diseases to which quail in confinement seem to be especially liable, and among these are cholera, roup and inflammation of the bowels. The first of these is the quail keeper's worst enemy, since it not only works sad ravages among birds fresh caught, but is apt to attack birds that have been caged for years, and partly domesticated. Readers of the FOREST AND STREAM will recall a case of the latter kind cited in these columns some time ago, and another has come under my own notice this fall. Cholera is evidently caused by overcrowding, bad ventilation and improper feeding, and when it breaks out in a coop of birds it is reasonably certain to finish the whole lot. I believe it to be highly contagious, and even though birds apparently well are separated from the affected ones, they soon succumb. Its approach is marked by a drowsiness, which soon passes into a heavy stupor, from which the bird can scarcely be aroused, and the disease runs through an entire coop in from two to five days. Perhaps some one has a better name than "cholera" for this disease. I can only say that in my experience it has proved sufficient for all practical purposes.

Roup and inflammation of the bowels are wet weather diseases and pertain more particularly to spring and fall and to young birds. Since wet is the principal cause of these difficulties, perhaps it is sufficient here to suggest that if due care be exercised to keep the birds dry no trouble need be occasioned in the winter time. But this leads me to say that if the editor does not enjoin me, I should like later to write a second paper on "Breeding Quail in Confinement."

Perhaps it may be pertinent to say in closing that I am not a dealer in birds and have none for sale, and that I never shot a quail in all my life, though I have been a hunter for twenty-five years. But my telephone has just rung up a message from the express office announcing the arrival of another box of live quail, and I must go to look after them.

JAY BEBE.

TOLEDO, O., Jan. 6.

ARIZONA QUAIL.

Editor Forest and Stream:

Mr. Herbert Brown's article in the last number of FOREST AND STREAM is a very welcome contribution to our knowledge respecting the habits and distribution of the different species of quail found in Arizona, embodying as it does information which has been eagerly and more or less impatiently awaited by the ornithologists of the United States. I do not think, however, that Mr. Brown has demonstrated the specific identity of *Colinus ridgwayi*. Brewst. and the pair of birds, sent by Mr. Brown to Mr. Grinnell, which I identified as *Ortyx* (now *Colinus*) *graysoni*, Lawr. To make the matter perfectly clear it will be necessary to review the history of the subject, somewhat as Mr. Brown has done.

In FOREST AND STREAM for March 6, 1884, was copied from the Tucson Weekly Citizen an article stating that *Ortyx virginianus* occurred in the Barboquivari range, Southern Arizona. This record I questioned in the following number of FOREST AND STREAM, basing my objection on the well-known geographical distribution of *O. virginianus*, the most western form of which (*O. virginianus texanus* Lawr.) "not having been traced further west than Central Texas," as stated in my note, which further explained that, "if not the Massena quail, the bird referred to must be one of the Mexican species of *Ortyx* (perhaps *O. graysoni*), none of which, however, have been taken on our side of the boundary line."

In the same note I stated that "in order to settle the question, it is very desirable that a specimen be sent for examination." Unfortunately, however, I added that "merely a wing, with a portion of the breast with the feathers attached, would be sufficient to insure identification," for it did not occur to me that there might exist in Arizona a species, as yet unknown to naturalists, so closely related to *O. graysoni* as to be distinguishable by the coloration of the head alone. Hence these tedious explanations.

It was not long, however, before Mr. Grinnell received from Mr. Brown, in response to my suggestion, fragments ("portions of wing, breast and tail") of a male, and the dissipated carcass (not "almost perfect skin") of a female, both rescued from the street, alley or vacant lot, long after they had been thrown away. These imperfect specimens were sent me by Mr. Grinnell for inspection; and upon comparing them with examples of *O. graysoni* from Western Mexico, they were found to correspond exactly so far as they could be matched "part for part." Obviously, therefore, the only thing which could under the circumstances be done was to report to Mr. Grinnell, as I did, the result of the comparison. *O.* (or *C.*) *ridgwayi* was at that time an unknown species to naturalists. It is (scientifically) a more recent discovery, with which my identification of Mr. Brown's specimens could not possibly have anything to do.

It has been stated above that the only obvious difference in plumage between *O. graysoni* and *O. ridgwayi* is in the coloration of the head in the adult male. The former has the throat and a bold, superciliary stripe, pure white; while the latter has the head entirely black. It should therefore be unnecessary to state that had Mr. Brown sent an entire specimen of the male there would have been no occasion for any mistake—granting that one has been made, which I cannot without further evidence concede.

In Southern Mexico are found in nearly if not quite the same districts two species of quails—*Colinus pectoralis* and *C. coyolcos*—which exactly represent the more northern *C. graysoni* and *C. ridgwayi*, respectively, the former having the bold white head markings and the latter with the head entirely black, both likewise having the under parts uniform rufous or cinnamon. These two species are much smaller than their northern representatives, and differ from them in some other particulars. *Colinus graysoni* being a common species in the vicinity of Mazatlan, some 600 miles south of the United States boundary, and the intervening territory almost a complete terra incognita ornithologically, it is not at all impossible, or even improbable, that it should extend its range northward to across the border, just as several other Mexican species, previously observed no further north than Mazatlan—and some of them not nearly so far north—have been found to do.

In conclusion, I would state that much additional material, including specimens in better shape than those already examined, is necessary to determine the question of whether *C. graysoni* occurs in Arizona, and also that of its relation to *C. ridgwayi*; and to assist observers who have not the opportunity or "knack" of making specimens, I give the following artificial key (based on the males alone, the females

¹ This last statement of course refers to specimens taken by naturalists or professional collectors, and duly recorded in some publication.

² The exact circumstances of their recovery were stated in Mr. Brown's letter, but I have forgotten the details. These fragmentary specimens are still preserved in the collection of the U. S. National Museum, where they are numbered 96,763 and 96,764, respectively.

being practically undistinguishable from one another) of the species of *Colinus* found along our southwestern border, including the *C. graysoni*:

- A. Lower parts whitish varied with bars and v-shaped marks of black. . . . 1. *C. virginianus texanus*.
 B. Lower parts uniform rufous or cinnamon-color—
 a. Head with the whole throat and a broad superciliary stripe pure white. . . . 2. *C. graysoni*.
 b. Head uniform black. 3. *C. ridgwayi*.
 ROBERT RIDGWAY.

³ There is a bare possibility that *C. coyolcos* and *C. pectoralis* may be individual color-phases of one species (*C. coyolcos*), and that *C. graysoni* and *C. ridgwayi* bear the same relation to one another. But this is merely a suspicion which I have been from time to time led to indulge by certain circumstances which it is not worth while to mention here.

A FLORIDA MUSEUM.

WALKING along the sea wall at St. Augustine the other day—or perhaps I should say river wall, for the people of the quaint old town insist on calling the beautiful sheet of salt water in front of the place a river—I caught sight of a little old display window full of curious things. It had an air different from that of the ordinary curiosity store, and I crossed over to it. A genial gentleman, Dr. J. Vedder, met me and talked to me about his wonders. Perhaps the most interesting of them all is his collection of Florida snakes, alive and exceedingly well caged for display. Chief among them is an enormous diamond rattlesnake. In the front room, stretched on a board, is the moulted skin of this monster. It measures seven feet and one inch in length and six inches wide, showing the living snake to be twelve inches in girth. If five inches be allowed for the rattles and something for the shrinking of the dried shell, his living snakeship cannot be much less than eight feet long. The Doctor tapped the case and the huge reptile threw himself into position to strike. The head was drawn back in splendid pose, and in the center of the swelling coils of his body the end of the tail was thrust up, the rattles quivering in rapid vibration and sending forth the ominous sound which has caused many a hunter to check his course through thicket or meadow. There was no longer any doubt in my mind as to how the rattlesnake produced his warning signal. The whole process was visible. If you go to St. Augustine it will be worth your while to see this process, though you may feel as I did—like standing back a little lest the snake should crash through the glass and reach you.

In another case were two chicken snakes. The Doctor put a live mouse into the den and both snakes started for it. One seized it and in an instant had wrapped it in his coil. A moment's struggle and the little rodent was dead. Cautiously the reddish brown folds loosened their grip, and then the mouse soon disappeared down the snake's throat. Plainly the chicken snake, which is not large, and would be more valuable about a house than a cat, is a true constrictor. There were glass snakes, moccasins, coach whips and gopher snakes, all interesting in their way.

A fine glossy coated otter, fully four feet long, roused himself from his noonday nap to eat a fish thrown in to him, beginning, as the keeper said he invariably did, at the tail. The whole museum seems to be kept on fish—"yellow tails"—caught easily in the river with net or hook. The pelicans would catch the fish in their huge mouths, carefully turning them so that the heads would go down first. The whooping cranes, vain birds and fond of notice, dancing in a fantastic fashion at their master's command; the little white egrets running about under everybody's feet; the darter or water turkey, a shy bird with long beak and neck, the latter held much in the shape of a figure 2, all begged for fish and caught them dexterously in their bills.

A great horned owl looted mellowly at command. A black vulture went tilting from one end of his cage to the other, acting precisely as if he were ashamed of himself and were trying to hide. That rare bird, the monkey-faced owl, stood solemnly asleep on one foot, and when roused began a curious weaving, swaying motion which made it look weird and strange.

There were bears, wildcats, alligators and other strange creatures to complete this interesting and altogether unique museum, to which a visit may very profitably be made by any one interested in animal life. RICHARD GEAR HOBBS.

HARE AND FISHER.

Editor Forest and Stream:

Your correspondent "H. R." in your issue of Dec. 31, thinks he saw an otter chasing a hare on the ice, making, as he says, quick, clean jumps, about the same as the hare. Now the otter does not make clean jumps, but just gathers speed by one or two short jumps or gathers, and then slides—sometimes quite a distance—say from ten to twenty feet, then gathers for another slide. I never in all my hunting life of twenty-five years saw where an otter made clean jumps in running. I have frequently followed them in light snows, and sometimes on top of four feet of snow, over mountains from one stream to another—they making a straight course, as if they knew the way. Neither hare nor otter ever seen where an otter chased a hare. They subsist on fish alone, I think, as any one may observe by the fish bones and scales on and about their slides—I never observed any other bones in their signs.

What "H. R." saw following the hare was doubtless a fisher (*Mustela pennanti*, Erxl.). They subsist chiefly on the hare, and they are very adept at capturing them. I once saw a hare come out of the woods on to Lake Molychunkeunk, running at great speed, and immediately after a fisher on his track. They followed down the lake about a mile, when the hare commenced to circle—quite large at first, and continually making the circle smaller—the fisher always keeping inside the circle of the hare, and so gaining quite a distance in every round, or rather not having to run so fast to keep the hare on his speed, the fisher seeming to take it very leisurely, until the circle became so small as to end at a point—and the fisher was there as soon as the hare, and made short work of him. I had followed down the lake as fast as I could, in hopes of getting in a shot, and so had an excellent chance to see the whole maneuver, but the fisher saw me, and dragged his prey ashore and fled into the woods. J. G. R.

BETHEL, Maine.

Editor Forest and Stream:

The animal that "H. R." saw chasing a hare was without a doubt a fisher, or, as they are called here, "black cat." They are rabbit hunters. STANLEAD.

HIGHGATE, VT., Jan. 2.