resistance follows by the turkey struggling to get free. This latter attempt is invariably defeated from the fact that the cord employed is so long that it allows the hooked bird to run about, without ever thinking to pull the long twine taut with the view of making the effort to tear the hook out, — an almost impossible feat at the best, especially if the bait has been entirely swallowed. Loose corn is always sprinkled around for several yards in all directions over the ground where the hook end of the string is set. This tends to deceive the feeding birds, and, sooner or later, one of them is pretty sure to pick up and swallow the one on the hook, and is at once made fast. Later on the negro will bag him by a knock on the head with the stick carried for the purpose. There is nothing to prevent baiting several localities in this way on the same day and evening, or setting several baits in any particularly good place where, in former times, a flock of turkeys were known to assemble.

With this brief account of the Wild Turkey's destruction in Virginia I close my remarks, and pass them over to our protectors of birds in this country.

Faithfully yours,

R. W. Shufeldt.

Washington, D. C.
31 Oct., 1910.

Concealing Coloration.

To the Editors of 'The Auk':—

Dear Sirs:— Now is the season for country readers of 'The Auk' to notice how the snow-covered roofs of houses match the sky, and are often all day, and generally all night, indistinguishable from the sky. Were men taller than these roofs, and were the snow confined to the roofs while the earth remained dark, they would see them against this dark ground and find them conspicuous just as they now do white birds, etc., that they commonly look *down* upon. Apparently naturalists are the only class of men who do not here recognize a principle that must of course apply to all white upward-facing surfaces seen against the sky. In England, in the Norfolk Broads, dark sails are now in use, because white ones did not show against the sky, and caused many collisions at night. (Dark sails are common in the harbors of many countries.) Yet, while these navigators thus show their knowledge of the invisibility of white against the sky, many naturalists still insist that white birds and other white or white-topped animals that need to be invisible against the sky are conspicuous from all view-points.

At the recent meeting of the A. O. U. I gave a short series of out-door demonstrations of the fact that the completeness of an animal's concealing-coloration depends upon his wearing samples of all the characteristic details of his back-ground. First I showed that a simple counter-shading conceals an object when it reproduces the one tone of a plain back-ground.

Then I introduced into this back-ground some white pebbles, until the spectator began to be able to detect the object by the extent of its eclipse of these pebbles. To restore its complete effacement I then gave its upward surfaces a few white spots that imitated the white pebbles of its back-ground, and instantly all suspicion of its existence was again removed. (All this is, of course, clearly set forth in our book.) Having thus called attention to this optical principle, I proceeded to show a typical example of its working in the vast class of species that are looked at by their prey or enemies against the sky, or *foliage with sky-holes through it*, and among whom upward-facing white markings are very common. Nature's wide-spread use of these white marks on aerial species is in startling contrast to the apparently total lack of them upon the vast world of species which, living away from water, dwell too low down, close to the ground, often to be looked at against the sky or sky-spotted foliage. My typical example was as follows: I showed a small stuffed deer placed just above the level of the eye and wholly indistinguishable, because, while his counter-shading reduced him to the uniform flat tone of the twiggery before and behind him, two bright white stripes running down his sides from his dorsal ridge, and a white spot on his head, absolutely passed for the sky seen through the flat twig element represented by his counter-shaded body, thus, as in the former case, perfecting the illusion. Not one of the two score or more spectators could detect the slightest difference between these counterfeit sky-holes and the neighboring real ones of the foliage back-ground, and of course not one of them, consequently, detected the deer, although each in turn stood within ten yards of him *and was shown exactly where to look.* For each spectator in turn I pointed right at the animal. They all agreed that it was the white sky-counterfeits that most completely prevented their detecting the deer. Ultimately I removed these white patterns, and the same spectators then easily distinguished the deer, although it occupied the very same place.

Upper surface white marks abound on aerial creatures and on such terrestrial ones as stand or leap high enough to have for their back-ground either sky or foliage with sky holes through it, and on all these species they work constantly the same magical effacement. Persons interested in this subject should read our book very carefully, as well as my letter to 'The Auk' of July, 1910, and my article in the 'Popular Science Monthly' for December, 1909. (I shall be delighted to send a copy of this latter article to any applicant.)

Let me add here a word about the flamingo to show how entirely his coloring belongs to the same class as that of all other sky-matching costumes of which my white striped deer was so convincing an example. (It is at least absurd to assert positively that the large denizens of the water he wades in, anacondas, alligators, etc., are not dangerous to him. C. G. Schillings found a goose in a crocodile's stomach.)

These birds are largely nocturnal, so that the only sky bright enough to show *any* color upon them is the more or less rosy and golden one that

surrounds them from sunset till dark, and from dawn until soon after sunrise. They commonly feed in immense open lagoons, wading, in vast phalanxes, while the entire real sky above them and its reflected duplicate below them constitute either one vast hollow sphere of gold, rose, and salmon, or at least glow, on one side or the other, with these tones. Their whole plumage is a most exquisite duplicate of these scenes. Whenever any student of this subject comes to believe that any sky matching whatever, like, for instance, a deer's, is adaptation and not accident, he will not continue to be astonished that this flamingo, having at his feeding time so nearly *only* sunrise colors to match, wears, as he does, a wonderful imitation of them. The public will soon be astonished when I show them a dawn picture *made out of* the entire skin of one of these birds simply 'mosaicked' into the sky of a painting of one of their lagoons. I am now making such a picture. I have already nearly finished a picture of a Himalayan gorge made wholly of the skins of Monaul pheasants; and another one of a New Hampshire snow scene similarly done with magpies. Artists are positively amazed by both of them.

Two other points I wish to cover in this letter. The first is based on the obvious fact that the most critical moment an animal ever *survives* is that one in which he barely escapes death. Imagine a crouching hare stalked and at last sprung upon by a fox or lynx. If the hare bound away in time, the arc of the predator's leap inevitably brings his face *down to the very ground* at the spot which the hare has just left, and from this viewpoint the hare's rump is *well up against the back-ground patch-work of foliage pierced with sky-holes* so absolutely counterfeited by his own white rump and dusky flanks. (If most people refuse to take the trouble to put their faces to the sod and see for themselves they must simply trust what I say.)

My other point is merely a clear reiteration of the little noticed fact that matching the background does not always mean coalescing with what chances at the moment to be behind the animal. It means matching the *potential* back-ground; in other words, presenting such an appearance as the beholder's eyes would naturally expect to see in such a situation. It is especially important to understand this principle in such a case as that of the flamingo. Under his circumstances to be a picture of dawn or sunset whose rosy hues are the strongest characteristics of the place and the hour, could not make him conspicuous to the minds of his sub-aquatic neighbors. It is simply his best gamble.

A. H. Thayer.

Monadnock, N. H.,
Dec. 8, 1910.