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The sense of birds.

[anonymous]

THE SENSE OF SIGHT IN BIRDS.

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AUDUBON has written an amusing book, I had almost said of fables, called Ornithological Biography. By a number of cruel experiments, he has proved to his own entire satisfaction, and that of many others, that vultures are led to their food by the sense of sight alone; the sense of smell, which they were supposed to possess in an exquisite degree, affording them not the slightest assistance. His experiments prove quite too much for his purpose, for they equally deprive the poor bird in question of both sight and smell. It is certain that this bird possesses both senses in great perfection, and equally certain that neither nor both are the sole means it employs for obtaining its food. Though the senses in animals are means of obtaining them food, they are not the sole means, as we very well know.

It is a most curious question, and well worth more attention than it has ever yet received. For want of a better explanation, we usually say there is an instinct that enables animals to find their food. Many go from great distances directly to it. Pigeons find out newly-sown fields immediately, and will frequently go several miles to a field the very first morning after it is sown. Wild ducks that feed at night, are equally quick in finding their food; and in this case, I would be glad to know what sense they employ. The red-deer invariably knows when the shepherd's patch of grain is fit for his food, and will frequently come down in such numbers as to eat up the entire crop in a single night. In fact, all birds, whatever their food may be, have an instinctive power of discovering it immediately, and that from such distances as no acuteness of either sight or smell will account for. Without allowing this, you cannot explain facts too numerous, and too well authenticated, to be doubted. It is precisely the same faculty, whatever it may be, that enables the carrier-pigeon to find its way home, take it what distance, and any way covered up, you will. Toss it up in the air, and, after circling for a few moments, it adopts its line of flight, without hesitation and without mistake. Audubon himself furnishes an instance of the exercise of this faculty, in his description of the razorbill. "The instinct or sagacity which enables the razorbills, after being scattered in all directions, in quest of food, during the long night, often at great distances from each other, to congregate towards morning, previously to their alighting on a spot to rest, has appeared to me truly wonderful: and I have been tempted to believe that their place of rendezvous had been agreed upon the evening before."

In disputing about the comparative value of the senses of sight and smell in birds, authors notice a much more curious fact—the great power birds possess of altering the focal length of their eyes. To see equally well an object at a distance of many miles, and a minute seed or insect an inch from the bill, may well amaze us. Observe the first person of your acquaintance you meet, who happens to wear spectacles. If he looks at an object near him, he looks *through* his glasses: if at a more distant one, *over* them. Go to a practical optician and desire him to construct an instrument that will enable you to do what birds are constantly doing in this, and he will, most likely, tell you the thing is impossible.

Man probably surpasses birds in extent of vision, as much as birds surpass man in sharpness. Ross, in his voyage to Baffin's Bay, proved that a man, under favorable circumstances, could see over the surface of the sea 150 miles. It is not probable that any animal can equal this for extent. In sharpness of sight, on the other hand, birds greatly excel us. The eagle, soaring at such a hight that he seems a mere speck, sees the grouse walking in the heather, which it so closely resembles in color as readily to escape the sportsman's eye. Schmidt threw to a considerable distance from a thrush a number of beetles, of a pale gray color, which the unassisted human eye failed to detect, yet the bird observed them immediately. Many birds readily perceive insects on branches where the sharpest sighted person can detect nothing.

The eyes of birds are remarkable for their great comparative size, the great convexity of the cornea, and for having the sclerotic coat formed anteriorly to a circle of bony plates. The optic nerves are very large, and unite so

intimately as to appear perfectly incorporated. The iris is exceedingly contractile—as all may have observed who have watched a bird dying. Birds do not expire with eyes open, as is the case with man and the lower animals, and when they are expiring, you may readily observe the great power they possess of dilating and contracting the pupil. The muscles, as in man, are six in number—four straight and two oblique. In many birds the eye-ball possesses very little mobility, and in some of the owls it is so closely fitted into the orbit as to be immovable.

How the eye adapts itself to near and distant objects is one of the most abstruse questions in physiology. Three explanations have been offered. 1. By bringing forward the crystalline lens nearer to the cornea, without altering the form of the whole eye or the crystalline itself. 2. By changing the figure of the globe of the eye, so as to increase the distance between the cornea and retina, as you pull out the joints of a common spy-glass; and 3. Without altering the general form of the eye, by increasing the sphericity of the crystalline, and thus increasing its refractive power. The first was the opinion of Haller and the earlier physiologists. The second was adopted by Blumenbach and many able men. The third was the opinion of Lewenhoek, Descartes, and Dr. Young, and is, perhaps, the true explanation. Sir Everard Home and Mr. Ramsden performed many experiments to elucidate the question, but they proved nothing.

FALL.

I HEARD a tree to its sole self complain,
Amid whose boughs of rust and scarlet stain
The solemn sunshine poured its golden rain.

Strange as the mournful sounds that steal through sleep,
As if a mist should strive in dews to weep,
The low, sad cadence past my sense did creep.

"Ah! little, tender, dancing leaves, that first
Out of my sere and wintry branches burst,
With mildest showers and April sunshine nurst;

"More verdant garlands, fresh with life and June,
Wherein the light winds played a fairy tune,
And set them glittering to the quiet moon;

"Then in their prime, the thick, green, summer leaves,
Lost in whose rustling depth the cricket grieves,
Or the quaint spider radiant tracery weaves;

"Swift ye forsake, slow fluttering to the ground,
These desolate boughs, no more with glory crowned,
Where every rain may breathe its sighing sound.

"One, and another, and another yet,
No time for grief to ripen to regret,
Full on my brow stands the sharp coronet.

"Did the cold terror, curdling at my heart,
Strike sudden death, and force your clasp apart,
I too were all too chill to feel ye part.

"But warm and fierce the vital torrent flows,
As keener thorns surround the brightest rose,
Death's bitterest draught life's ardor only knows."