

for they always present themselves at the first appearance of very cold weather at the coming on of winter, and before the surface of such an immense body of water has had time to cool down after the summer heats.

You will see one of these streamers start up from its apparent bed of cloud, and, with a sort of wriggling, twisting motion, make its way upwards to a great height in a very few seconds, and drift slowly along with the wind, like a spindling but giant column of steam. They, in the meantime, undergo a slow but incessant change, and sometimes they gradually vanish at the top while being renewed from below, while at others they detach themselves at the base and float heavenward until they vanish in mid air or lose themselves in the overhanging and distant cloud.

The whole phenomenon reminds me very forcibly of the pictures of the solar streamers which are to be seen in various illustrated works on the sun, and the two are probably brought about by somewhat similar causes, although the difference in the degree of action must be almost infinite.

I have no means of determining the heights of these streamers except approximately. There is, however, a wooded island about one half a mile wide, and the distant shore of which is about five miles from the city. It is a common thing, under favourable circumstances, to see the streamers rise from the further side of that island to a height of from ten to twelve times the height of the tallest trees on the island, which would give a height of at least about 500 feet; and as the base of these streamers may be at some distance beyond the island, their height may occasionally be considerably above this estimate.

The continual shooting upwards of these, and their continual motion and change, offers a phenomenon at once very interesting and very beautiful. I have never seen the appearance at its best to last above five or six hours, and any second appearance is always inferior to the first. I may add that the same scene presents occasionally, in the spring, some of the finest mirages to be seen anywhere. N. F. DUPUIS.

Queen's College, Kingston, Canada, December 2.

On the Affinities of *Hesperornis*.

AMONG some very useful and important papers recently issued by the Museum of Zoology of the University College, Dundee, appears one by Prof. D'Arcy Thompson, "On the Systematic Position of *Hesperornis*." In this excellent scientific brochure, Prof. Thompson has critically compared in detail the skeleton of a diver (*Colymbus septentrionalis*) with the skeleton of *Hesperornis*, as presented us by Marsh; and the outcome of this investigation has fully convinced the author of the work in question of the kinship, which undoubtedly exists, between the extinct *Hesperornis* and the existing pogopodine birds, as the divers, loons, and grebes. We have long been satisfied of these affinities, and firmly believed that the *Colymbidae* were the descendants, perhaps direct descendants, of the toothed birds of the genus *Hesperornis*. It required but such comparison as has been so ably instituted by Prof. Thompson to make it quite clear to any thoughtful anatomist; and, as he hints, a similar comparison will probably go to show the fact that another extinct toothed bird-form, *Ichthyornis*, lies in the line of descent of the terns and their allies.

It is said by those who are opposed to these opinions that the agreement in skeletal characters between two such forms as *Hesperornis* and *Colymbus* are but superficial, and due to the fact that the birds did have in the case of the first, and now have in the case of the divers, similar habits.

The advocacy and adoption of such a view as this could but tend to mask their real affinities, impede the solution of the natural taxonomy of extinct avian forms, and be dangerous to the proper use of osteological characters in the premises. Hardly would "similarity of habits" produce morphological likenesses in such bones as the vomer, the pterygoids, the occipitals and the condyle they form, and a number of others which practically agree in *Hesperornis* and the *Colymbidae*, and are very different in the *Rallia*.

So far as such a bone as the sternum is concerned, the fact whether it be "keeled" or "not keeled" must be used with no little caution when we come to decide upon the affinities of bird-forms, be they extinct or otherwise. And were the fossil

remains of birds, which formerly existed upon the earth, in our possession in sufficient number and variety, I am quite sure that true avian kinships could not be established upon any such hard and fast lines as to whether or no their sterna were "carinated" or "non-carinated." We would undoubtedly meet with ostrich-types that could fly, and so have keeled sterna; and also ratite-types that enjoyed not such volant powers, and consequently possessed the "raft-sternum," as did *Hesperornis*, our great extinct ancient diver, which, as we know, was flightless, raft-sternumed, but withal, in the remainder of its skeleton, presenting all the fundamental characters of the now-existing Pygopodes, especially in so far as they are represented by the grebes and loons. R. W. SHUFELDT.

Takoma, D.C., December 5.

A Swallow's Terrace.

IN your issue of November 27, Mr. Warde Fowler gives a description of an unusually straggling nest of the swallow. An example to the contrary, of extreme neatness, which came under my notice a year or two ago, and which I still preserve, is the following:—My brother, on entering an old cottage in Somersetshire which had been empty for a long time, found in one of the rooms a lath, broken at one end, depending from the ceiling at an angle of about 30°. The lath was about 18 inches long, and on the free end was a swallow's nest containing four very handsome eggs, heavily marked with large blotches of purple-brown. The nest was perfectly circular and shallow, like a tea-saucer, its external dimensions being about 5 inches diameter by 2 inches deep. It was built of the usual materials, the exterior being of mud, with which it was secured to the lath, and the lining of hay with an inner lining of feathers. Close by were other swallows' nests, just inside the top of a chimney and quite open to the sky, so that a covered site does not seem indispensable if the nest be sufficiently sheltered. In view of this and the preceding description of nest with its fragile support, it would not appear surprising to hear of a swallow building on the branch of a tree provided it were in a well sheltered situation. ROBERT H. READ.

Cathcart, Glasgow, December 17.

Nests of the Red-backed Shrike.

WHILST writing on the subject of nests, I would like to remark that I examined three nests of the red-backed shrike this last summer, and that the colour of the linings appear to bear out the remarks of a correspondent which appeared in NATURE some months ago. Two of the nests contained eggs of a pale pink ground-colour, whilst the eggs in the third were of a creamy-white ground-colour. In the third nest the lining was of roots, a few black horsehairs, red and white cowhair and a little wool. In the first two nests there was no white hair or wool, the lining consisting chiefly of roots and red cowhair. Although this seems to corroborate the experience of your correspondent, yet the difference in ground-colour of the three sets of eggs was so comparatively slight that I would not like to infer from these three nests alone that the colour of the nest-lining had any significance from a protective point of view.

Cathcart, Glasgow, December 17. ROBERT H. READ.

"Fire-ball" Meteor of December 14.

IT will probably be of interest to many besides your two correspondents—whose letters are respectively dated from Sittingbourne in Kent, and Loughton in Essex—to learn that the remarkable meteor they describe was also observed about the time mentioned by them (9.45) in this neighbourhood.

Dr. Dixey, of Finchley, described it to me on the following day (Monday), remarking that "it would be sure to be in the papers"; and, moreover, the staircase of this house was brightly lit up, through the skylight above it, also at 9.45, I observing to my wife, who came to tell me of it, that the light probably came from a large meteor. My friend Dr. Dixey told me that he did not notice any trail. JAMES TURLE.

North Finchley, Middlesex, December 18.