

November 11th, 1947.

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Vice-President, in the Chair.

Dr. EDWARD HINDLE, F.R.S., Scientific Director, gave a report on the additions to the Society's Menagerie during the month of October, 1947, and drew attention to a collection of East African animals in which was included a Grevy's Zebra, *Equus grevyi*, a Black Rhinoceros, *Diceros bicornis*, two Kenya Striped Weasels, *Ictonyx striatus*, and a male and female Hippopotamus, *Hippopotamus amphibius*. The Hippopotamuses are the first to be caught in the wild in Kenya.

A number of species new to the Collection were added during the month of which specimens of the Ornate Pigmy Frog, *Microhyla ornata*, *Arthroleptis poecilnotus* and *Phrynobatrachus plicatus* were exhibited.

Dr. R. J. PUMPHREY gave a theory of the ears of Owls, genus *Asio*, which as a group are characterized by a difference in size and shape between the right and left auditory meatus. In this respect they are exceptions to the general vertebrate rule of bilateral symmetry for the organs of special sense. Since the eyes of all owls are of nocturnal type and therefore of poor resolving power both by day and by night, it seems reasonable to associate the structural peculiarity of the ears with the ability of these birds to find their prey by auditory clues alone. This conclusion is consistent with their hunting behaviour (cf. Miss E. L. Turner on the Short Eared Owl) and with the extraordinary silence of their flight.

Human attempts to locate a source of pure tones are both inaccurate and ambiguous. Accuracy is increased and ambiguity eliminated for complex sounds in the horizontal plane provided they have a sufficiently extended frequency spectrum and provided also, that they are either familiar to the hearer or persistent enough for his head to be moved before they cease. It can be inferred that accurate localization involves an unconscious comparison of the signals at the two ears for at least two distinguishable frequency bands for which the ears have sensibly different polar diagrams. In man and mammals this difference is attributable to the shadowing effect of the pinna at high frequencies.

Completely to eliminate ambiguity for transient signals in any direction, it can be shown that in addition to antero-posterior asymmetry of the polar diagrams, such as is introduced (in mammals) by the pinna, a further degree of asymmetry is required (which might be either up-down or left-right), together with the ability to make simultaneous binaural comparisons in at least three component frequency bands of the complex signal.

Since the cochlea of owls is of exceptional length, longer even than that of song birds and parrots, it is reasonable to infer that owls have the requisite peripheral mechanism for frequency analysis. A departure from bilateral symmetry in the dimensions of the external ear is consequently to be expected if it can be shown that structural asymmetry results in the necessary asymmetry in the polar diagrams of the two ears for some bands of frequency in the expected range. An elementary physical treatment of the meatus+operculum as a slit radiator makes this plausible, the asymmetry being probably of the up-down variety for *Asio* and of the left-right for *Sirix*. An experimental proof of the inferences drawn is obviously practicable but must await a more determined cooperation between naturalist and physiologist than usually occurs.

Mr. NIALL RANKIN, F.R.P.S., exhibited a large number of lantern-slides of photographs, in which was included a series of the courtship of the Wandering Albatross, taken during a bird investigation trip to South Georgia. He remarked that as so few of the naturalists who have worked in the Antarctic

regions have had an opportunity of spending any great length of time in any one place, usually being members of some expedition with exploration as its primary task, and being compelled to move on with it, he therefore had set out to spend, as far as possible, an entire breeding-season inside a limited area, so that the same birds might be kept under observation throughout that period.

The area chosen was the island of South Georgia, on which could be found almost all the birds which breed in the Antarctic. The speaker had taken with him his own small twin-screw motor-vessel of 20 tons, and was therefore completely independent in the way of transport.

The Wandering Albatross was the principal object of investigation. This bird nests in large numbers on the islands and headlands of the north-western area of South Georgia. Egg-laying begins about Christmas and incubation lasts 70-72 days. Several marked nests were kept under observation from December until April. The eggs weigh 1 lb. and contain  $\frac{3}{4}$  pint of liquid, equal to about eight hens' eggs. The parent birds were weighed and measured in every case, the largest male having a wing-span of 10 ft. 7 ins. and weighing 26 $\frac{1}{2}$  lb. The young birds began to hatch early in March and growth was extremely rapid. Throughout the long Antarctic winter these little birds are tended and fed by the parents, which have the difficult task of keeping the nest cleared of drifting snow. Sometimes toward the following spring the young bird is abandoned, and, about the time when the colonies begin to be repopulated for the coming summer, the yearling birds make their way to the sea.

Even more interesting is the strange courtship dance which the birds indulge in, both before pairing takes place and in the post-pairing stage before the egg is laid. A series of slides was shown illustrating this.

Of the four species of penguin inhabiting South Georgia the King penguin invariably seizes the public fancy. Seven colonies are found on the island, the largest containing about four thousand pairs. The egg is incubated on the feet, enveloped with a fold of skin let down from the lower part of the abdomen. The period is 52 days, and as the young grow older they are herded into crèches, attended by adults detailed as nurserymaids, where they remain, clothed in heavy fur coats, throughout the winter. The parent birds go fishing and hand over their catches to the first hungry mouth that presents itself—a highly centralized communal system.

Sir GEOFFREY DE HAVILLAND, C.B.E., exhibited and made remarks on a series of lantern-slides and a cinematograph film of African animal life. Some of the animals were photographed in a forest close to the Aberdare Mountains, some on the Serengeti Plain during the course of a three weeks' safari, and others in various parts of Kenya.

The studies of the animals in the forest near the Aberdare Mountains were taken from a house constructed in a tree, overlooking a large natural salt lick, which is a great attraction to animals. This house, named "Treetops," makes an excellent hide, and for the purpose of watching and photographing animals has probably no equal in any part of the world.

The lantern-slides were mainly of game animals and the first reel of the film showed pictures taken in Kenya during February, 1946, of White Storks and Kites flying over a locust swarm, photographs of Lions, herds of various Antelopes and Giraffes taken in the N'Gong Hills, and a mock fight between two Rhinoceroses photographed from "Treetops." The second reel included coloured photographs of Giraffes in the Nairobi Game Reserve, a close-up view of "safari" ants, and a herd of Elephants at play and bathing with a close-up view of a bull Elephant digging salt with the right tusk.