

EXHIBIT TELLS STORY OF BIRDS' NESTS AND EGGS

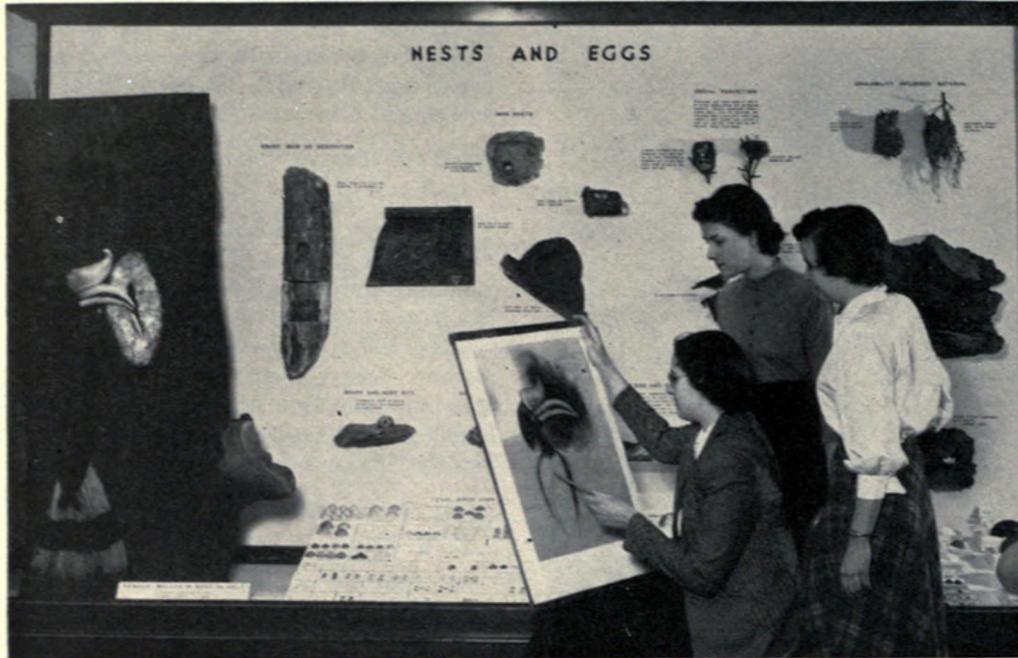
By AUSTIN L. RAND
CURATOR OF BIRDS

AN EARLIER bird exhibit in Hall 21 illustrated how nests may have evolved from crude and scanty structures to elaborate and well-made cradles for the young. In most arrangements in nature there are many loose ends—things that do not fit, special adaptations to unusual conditions. There may be lines of evolution that were "tried" and, although unsuccessful, have lingered on. This became evident in plan-

suggested. When the female finally does emerge, she simply bursts her way out.

INTERIOR DECORATION

Next to the hornbill nest is one of the crested flycatcher, which can be found in the Chicago area. The nest is in a crevice and the noteworthy feature is a snakeskin as though for decoration, something crested flycatchers almost always add to their nests and for which no adequate explanation has been offered.



GUIDANCE FOR STUDENTS

Margaret G. Bradbury, Museum Artist, demonstrating to two Antioch College girls how the new exhibit of birds' nests and eggs can be used as material for art work.

ning the first case of birds' nests because many nests did not fit into the series. Some of these nests were so striking, so illustrative of the ramifications of adaptation, that a second exhibit was planned for them, combined appropriately with an exhibit of birds' eggs.

The most conspicuous object in the exhibit is the hornbill's nest. A male giant hornbill is clinging to the trunk of its nesting tree. Inside the nest tree, in the nest hole, which is a natural cavity, is the female bird with only the tip of her bill visible, for the entrance to the nest hole has been plastered up until the opening is too small for her to come out. This is an amazing habit of many hornbills. At nesting time the male and female working together seal up the entrance to the nest cavity, the female from the inside. The female stays in the nest during the whole period of incubation and through part at least of the nestling period of the young. The male brings her all her food during her retirement and feeds her through the slit-like opening. This is a voluntary retirement of the female and not an imprisonment by the male, as has been

The mud nests shown are of four different types. A shelf-like black phoebe's nest built up of mud pellets and the flask-like nest of mud pellets of the cliff or eaves swallow, both stuck to a wall or a cliff, represent two types. The third is of mud throughout, the domed nest of the South American oven bird, whose Portuguese name, being interpreted, means "John of the mud." It is claimed in Brazil that *Juan do barro* will not work at its nest-building on Sunday. The fourth nest showing use of mud is that of the American robin, in which there is a concealed mud lining.

The four-storied yellow warbler's nest was an attempt of the female yellow warbler to avoid hatching a cowbird's egg. The cowbird makes no nest of her own and lays her eggs in the nests of other species of birds, to have her young raised by foster parents. She is a social parasite like the common cuckoo of Europe. Instead of docilely incubating the intruded strange egg, the yellow warbler will occasionally bury it, sometimes along with some of its own, in the bottom of the nest, and this process may be repeated more than once if the cowbird lays again in the same nest.

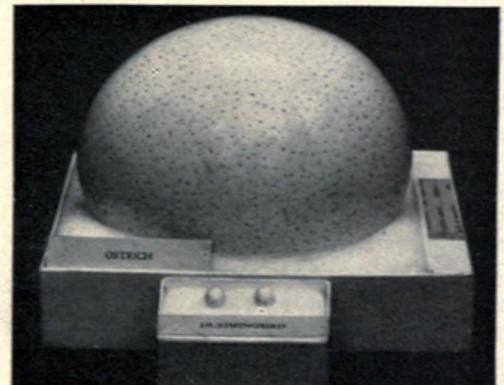
People sometimes put out string, yarn, or cotton wool for birds to use in building their nests, and the birds, which use whatever is available and suitable, may then make gaily colored nests, as is shown in the exhibit by comparison of the oriole's nest of string and yarn with one of natural fiber.

SOME WANT SPACE

There is usually a rough correlation between size of nest and size of bird; the stork or the eagle may make a nest yards across, while that of a sparrow will be only inches across. But the relation between size of nest and size of bird is only approximate as is shown in the exhibit by the olive-sided flycatcher, with a small, neat, cup-shaped nest, and the dipper, a bird about the same size as the flycatcher but with a much larger nest of living moss.

The swifts are the only birds of which I know that use a secretion from their salivary glands as nest material. Our common chimney swift's nest is made mostly of sticks, but they are stuck together as well as stuck to a hollow tree or the inside of a chimney with the bird's saliva. In the Orient there is a group of cave swiftlets that makes its nests entirely of saliva, and these are the nests that are used in the making of "bird's-nest soup." In the exhibit we show not only a chimney swift's and a cave swiftlet's nest but also a sample of the cave swiftlet's nest material as it is sent to market and a sample of the prepared material as it is sold in packages in Chicago ready to be put into soup.

We have pointed out that size of nest does not correspond exactly with size of bird, and the same is true of eggs. The most obvious discrepancy is between two birds of almost the same size where one has "altricial" young (hatched blind, nearly naked, and helpless) and the other has "precocial" young (down-covered and active soon after hatching). The precocial young



CONTRASTS IN SIZE

An egg of the largest living bird, the ostrich, and the tiny eggs of a hummingbird.

need more food in the egg and the eggs of precocial birds are correspondingly larger than the eggs of altricial birds of the same size. This we have illustrated with the

spotted sandpiper and the robin and their eggs, and in the adjoining case on the breeding habits of birds.

CONCEALING COLORATION

Concealing coloration in birds, that is, matching of the color of the eggs or of the birds with their background so that a predator may not find them easily, is one of the striking adaptations in the animal world. The nighthawk's eggs in the exhibit blend so well with the pebbles on which they are laid that it is not easy to tell one from the other.

Shape in an egg may correlate with where it is laid, as we illustrate with the murre's egg on a ledge of rock. Its sharp taper causes it to roll in a small circle when it is disturbed, and thus is it less easily rolled off the ledge than if it were of normal egg shape. The floor of the case is devoted to the general topic of birds' eggs. "Egg-shape" as a term is usually restricted to the shape of the hen's egg, ovate or a modified oval, broader at one end. But the shapes of birds' eggs vary widely, approaching roundness in the owls, sharply pointed at one end in murrens and shore birds, and elongate, with both ends nearly equally rounded, in the albatross.

While the size of eggs does not correlate exactly with the size of the birds, the largest eggs are certainly laid by large birds and the smallest eggs by small birds. They vary from the tiny pea-sized egg of the hummingbird to that of the ostrich, giant among living birds, and the still larger, extinct *Aepyornis* or elephant bird. For comparison, the following measurements are of interest:

Species	Length of Egg Inches	Weight of Egg Grams
Humming bird	.5	0.5
Leghorn fowl	2.4	58
Ostrich	6.6	1,400
<i>Aepyornis</i> (Madagascar, extinct)	12.2	12,000

The glossy eggs of tinamous, which gleam like polished gems, contrast with the chalky egg shell of the cormorant, in which the blue color of much of the shell is hidden by an outer limey deposit. These show two extremes in the surface texture, with the egg of a duck and hen somewhere between. Other variation is seen in the pebbled surface of the cassowary and emu egg, in which each raised pebble is a spot of darker color against the depressed, paler background, and in the little pits in the surface of the ostrich egg.

VARIATION IN COLOR

It is the beauty of color in birds' eggs that started many a boy of an earlier generation to making an egg collection. We have shown in the exhibit some of the variations in color: the uniform white egg of the shear-

water, the dark blue of the catbird, the greenish color of the duck, and the gray of the tinamous. Other ground colors, such as buff and pink, are heavily marked with specks, spots, splashes, blotches, or lines. Pink or some shade of reddish brown to almost blackish is the common color for markings. Often some of these have a gray



VARIABILITY WITHIN UNIFORMITY

The eggs of one kind of bird tend to be of a characteristic color, with characteristic markings. Variability is the rule in nature, however, and the murre's eggs shown, all of one species, illustrate extreme variation.

or lilac tinge, which is produced by the color spot being below the surface and overlaid with shell color. Sometimes, as with the black tern and the ptarmigan, the spots cover more of the egg shell than does the ground color. The blue and white eggs of the guira cuckoo are strikingly different from all the others in having a dark blue background and white markings.

Each kind of bird lays a special kind of egg, but there can be wide variation within the species. In the case is a set of golden eagle eggs, one of which is of normal color while the other is white. A set of ptarmigan eggs has one freak white egg and one runt egg. In addition to freaks there is normal variation, greater in some species than in others. This is shown by the murrens' eggs with background from white to green and blue, which vary from almost immaculate to heavily marked.

Sometimes relationship is indicated by eggs, as is the case with the pointed eggs of auks, murrens, etc., and of the shore birds. Most New World blackbirds have eggs with "scrawls" on them. Within a family there may be great diversity, as indicated by the exhibit of sparrows' eggs, which show types ranging from white to heavily colored, immaculate to heavily marked, and markings from specks to heavy blotches and lines.

The number of eggs a bird lays is more or less constant for a species. Some species, like albatrosses and shearwaters, some penguins, and some tropical pigeons, typically lay but a single egg; two is the normal set for our mourning dove, ruby-throated hummingbird, and nighthawk. Many of our common garden songbirds lay from three to six eggs. Many ducks, grouse, and quail

ZOOLOGISTS WILL STUDY ANIMALS OF BORNEO

The animal life of Borneo, third largest island in the world, will be studied by members of an expedition leaving the Museum on March 19. D. Dwight Davis, Curator of Vertebrate Anatomy, and Robert F. Inger, Assistant Curator of Fishes, will first fly to Singapore, where they will consult with scientists in the Raffles Museum. At Kuching, capital of Sarawak, they will discuss plans with local naturalists who have lived in Borneo for many years. The expedition will make its headquarters at Sandakan, capital of the province of North Borneo, and will remain in the field for about six months.

Borneo is famous chiefly for the head-hunting "wild men," stock in trade of circuses a generation ago, and for the great red-haired orang utan and grotesque proboscis monkey, whose colossal nose looks like a caricature of "Schnozzle" Durante. But as often happens, the smaller animals are of most scientific interest. It is from these smaller fry, most of them even lacking common English names, that biologists hope to get some of the answers to the greatest riddle of all, the riddle of evolution.

Field zoologists in the past have concentrated mostly on collecting and preserving animals, working feverishly to get as large a sample as possible during their all too short stay in the field. Such collections form the basis for the relentless search for new species, the gigantic task of inventorying the animal life of the world that is still far from completed. Little can be learned of the habits and behavior of animals from these dead specimens, and lack of exact information of this kind is a serious handicap to many kinds of biological research. Davis and Inger hope to concentrate on studying the habits and behavior (such as locomotion) and ecological relations of the animals of North Borneo rather than amassing as large a collection of preserved specimens as possible.

Visitors desiring to use wheel chairs may rent them at the Main (North) Entrance for a fee of 25 cents an hour. A deposit of \$1 is required on each chair. Attendants must be furnished by the applicants.

lay large sets of eggs. The largest set in our collections is a bobwhite quail clutch of twenty-two eggs.

The eggs of local nesting birds are represented by a selected series of some of the commoner species.

A hen is only an egg's way of making another egg.

SAMUEL BUTLER, in *Life and Habit*



Rand, Austin Loomer. 1950. "Exhibit Tells Story of Birds' Nests and Eggs." *Bulletin* 21(3), 4-5.

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