

ONCE A WEEK

NEW SERIES.

No. 182.

June 24, 1871.

Price 2d.

THE PHILOSOPHY OF BIRDS' NESTS.



A PHILOSOPHY attaches to all things in nature. There are philosophies and philosophies, and ever have been since the world was young and men began to think for themselves. So for ages men have been puzzling their brains to search the infinite, to explain the material, and, last but not least, to know them-

selves. But the sweetest, truest, purest philosophy of all is that which deals with the veritable nature around us.

There are sermons in stones; and each of us who, in his rambles, turns aside to examine and reflect upon even the commonest object of nature is a philosopher—perhaps unconsciously. To the unwilling mind, all is barren. As Wordsworth said of the unappreciative peasant—

“A primrose by the river's brim,
A yellow primrose is to him,
And nothing more.”

But to the seeker after beauties or wonders in nature, a newer enthusiasm is ever rising into his heart. To him there is more than mere passing harmony in the song of the lark or the thrush. And this brings us to the subject of our notes. We have all of us admired that remarkable instinct or

innate sense, call it what you will, which directs the feathered creation in the construction of their dwellings; but few of us, perhaps, beyond admiration and wonder at the skill—almost art—displayed by the nest builders, have thought much further on the question.

The time-honoured notion, however, that birds build their nests by instinct, while man constructs his dwelling by the exercise of reason, has met with an opponent. Mr. Wallace, the author of “The Malay Archipelago,” in a series of very curious essays on the theory of natural selection, maintains that men and birds build their habitations on virtually the same principle—namely, that of imitation. He says:—“The habit of forming a more or less elaborate structure for the reception of their eggs and young must undoubtedly be looked upon as one of the most remarkable and interesting characteristics of the class of birds. In other cases of vertebrate animals, such structures are few and exceptional, and never attain to the same degree of completeness and beauty. Birds' nests have, accordingly, attracted much attention, and have furnished one of the stock arguments to prove the existence of a blind but unerring instinct in the lower animals. The very general belief that every bird is enabled to build its nest, not by the ordinary faculties of observation, memory, and imitation, but by means of some innate and mysterious impulse, has had the bad effect of withdrawing attention from the very evident relation that exists between the structure, habits, and intelligence of birds, and the kind of nests they construct.” Mr. Wallace here boldly throws down the gauntlet. He does not attempt to compare the work of birds with the highest manifestations of human art and science; but he argues that the phenomena presented by their mode of building their nests, when fairly compared with those exhibited by the great mass of mankind in building their

houses, indicate no essential difference in the kind or nature of the mental faculties employed. We, for our own parts, are far from altogether endorsing the author's theories; but it may be interesting to go briefly into some of his arguments. We will first take his contradictions to the original theory of reason, as hitherto supposed to be peculiar to man alone in the erection of his habitation. It has been stated that man, as a reasonable animal, continually alters and improves his dwelling. This our author emphatically denies. Man, he says, neither alters nor improves, any more than birds do. If we take the savage tribes, we find that their habitations, each as invariable as the nest of a species of bird, remain always the same, from generation to generation. The tents of the Arab are the same now as they were two or three thousand years ago. The mud villages of Egypt have scarcely improved since the days of the Pharaohs. It is hardly likely that the rude shelter of leaves which the Patagonian is pleased to consider his house and home, or the hollowed bank of the South African Earthman, were ever more primitive than they are at the present day. And, coming nearer home, the Irish turf cabin and the Highland stone shely are surely primitive enough; and, in our time at least, have made no advance towards an improvement in their architectural beauties.

This stationary condition, therefore, in the matter of house-building among the ruder tribes, would seem to dispose of the theory of instinct, and to prove nothing more nor less than simple imitation from one generation to another, and that civilization alone is the stimulus to those changes or improvements which make the difference between the rude hut of the savage and our own more pretentious edifices. Touching this question of instinct or imitation, we will suppose an infant Arab transferred to Patagonia or the Highlands. When he grew up, we should hardly expect to see our adopted child of the desert constructing a tent of skins for his habitation. He would follow the example of those among whom he had been reared and brought up. In Patagonia, he would content himself with the orthodox hut of palm leaves; if in the Highlands, he would shiver under the shelter of his stone cabin. But, it may be asked, how comes it that different tribes of the human race, in its primitive condition, have

first adapted to their use styles of dwellings so totally distinct? Some innate *reason* must have suggested the form of edifice necessary for their wants. The answer is at once found in the temperature of the climate in which they were placed; the raw material supplied to them by surrounding nature; and many other collateral conditions.

The palm leaves, bamboo, or branches, the building materials of some tribes, were used because nothing else could be so readily obtained. The form and mode of structure, too, were decided by various considerations, which the rudest intelligence, on the old principle that self-preservation is the first law of nature, would at once recognize. Whether the country was hot or cool, whether swampy or dry, whether rocky or plain, whether frequented by wild beasts or whether subject to the attacks of enemies—all these things had to be considered, and acted upon accordingly. The Egyptian peasant is sadly off for building materials. He has nothing but mud—not even wood—and of mud he must construct his habitation. The Malay races are especially a maritime or semi-aquatic people. A canoe is with them a necessary of life, and they will never travel by land if they can do so by water. Thus, they build their houses on posts in the water, as a security against inundations. And all these different types of building have been the same for ages. The original models have been accepted and copied, with scarcely any difference, generation after generation; and, unless the more cultivated ingenuity of civilization steps in, they bid fair to remain the same for generations yet.

Granting this theory of imitation *versus* reason in mankind to be correct, we now come to the question of that instinct with which our friends of the feathered tribe have always been credited. In the first place, why does each bird build a peculiar kind of nest? White, in his "Natural History of Selborne," says:—"It has been remarked that every species of bird has a mode of nidification peculiar to itself, so that a schoolboy would at once pronounce on the sort of nest before him. This is the case among fields and woods and wilds; but in the villages around London, where mosses, and gossamer, and cotton from vegetables are hardly to be found, the nest of the chaffinch has not that elegant finished appearance, nor is so beautiful with lichens, as in a more rural district; and the wren is

obliged to construct its house with straws and dry grasses, which do not give it that rotundity and compactness so remarkable in the edifices of that little architect. Again, the regular nest of the house-martin is hemispheric; but when a rafter, or a joist, or a cornice may happen to stand in the way, the nest is so contrived as to conform to the obstruction, and becomes flat, or oval, or compressed." White, as everybody knows who has read his charming book—and who has not?—was a strong believer in the old orthodox idea of instinct. It seems, however, that the same remarks which apply to man in his savage state apply to birds. Man uses the materials which he can most readily obtain, and builds in situations which he thinks most fitting for his own security and comfort. The birds do the same. The wren, for instance, frequenting hedgerows and low thickets, builds its nest generally of moss, the material most abundantly found in its haunts. Rooks dig in pastures and ploughed fields for grubs, and thus continually come across roots and fibres; these they use to line their nests. The crow—feeding on carrion, dead rabbits, and lambs, and frequenting sheep-walks and warrens—chooses fur and wool to line its nest. The kingfisher makes its nest of the bones of the fish which it has eaten. Swallows use clay and mud from the margins of the ponds and rivers over which they find insect food. And so we might multiply instances, showing that the materials of birds' nests, like those used by savage man for his habitation, are those which come first to hand. The advocates of the instinct theory argue, however, that it is not so much the materials as the form and structure of the nests of various birds that differ. But the delicacy and perfection of the nest must always depend on the size and habits of the bird. Take a few instances. The wren—remarkable for the neat construction of its nest—has a slender beak, long legs, and great activity; it is therefore able, without any difficulty, to form a well-woven nest of the poorest materials, and places it in thickets and hedgerows, which it frequents in its search for food. The titmouse—haunting fruit trees and walls, and searching in cracks and crannies for insects—builds in holes, where it has shelter and security; while its great activity, and the perfection of its bill and feet, enable it readily to form a beautiful receptacle for its eggs and young. Pigeons, on the other hand,

having heavy bodies and weak feet and bills, construct rude, flat nests of sticks, laid across strong branches, which will bear their weight and that of their young. Taking a few of the sea-birds by way of example, we find that the same rule holds good. Many terns and sandpipers lay their eggs on the open sands of the sea-shore. This is not because they are unable to form a nest; but because, in such an exposed situation, they would most likely have their trouble for their pains, for a nest would be more easily discovered. Gulls, again, vary much in their modes of nesting, according to their habits. Hence they build either on a bare rock, on ledges of sea cliffs, or in marshes or on weedy shores. Here, again, the materials are those easily found, being sea-weed, tufts of grass, or rushes, piled together in the awkward manner which their webbed feet and clumsy bill compel. Returning to the question of instinct, it is generally supposed that a young bird will build a nest precisely like the conventional nest of its species, even if it has never seen one. If this were true, the instinct side would have it; but recent naturalists deny that there is any proof of this. Facts, so far as they have been ascertained, speak to the contrary. Birds brought up from the egg in cages do not make the characteristic nest of their species, even when supplied with the same materials used by that species in building their nests. Often, indeed, they build no nest at all, but merely collect the materials together in a rude misshapen heap.

This would certainly imply that the young birds require lessons from the old ones before they can form the proper nest, and is a striking argument in favour of the imitation theory. But we think that, until a series of careful experiments has been made upon this interesting question, the advocates of the new doctrine can hardly claim a conclusive victory.

Another argument of the imitationists—if we may be allowed to coin a word—we had almost forgotten, and is worth at least citing. Perfection of structure and adaptation to purpose are not such universal characteristics of birds' nests as might be thought. The passenger pigeon of America often crowds the branches with its nests till they break, and the ground below is littered with shattered nests, eggs, and young birds. The nests of rooks are often so badly built that, during high winds, the eggs tumble out. The

window-swallow, however, is the most unlucky of all in this respect. Our old friend, White, of Selborne, tells us that he has seen them build, year after year, regardless of experience, in places where their nests are liable to be washed away by a heavy rain, and their young ones destroyed.

Le Vaillant gives a curious account of the process of building by a little African warbler, which shows that a very beautiful nest may be built up with very little art. The foundation was formed of moss and flax, interwoven with grass and tufts of cotton, and presented a rude mass, five or six inches in diameter and four inches thick. This was pressed and trampled down repeatedly, thus making it into a kind of felt. The birds pressed it with their bodies, turning round upon them at every direction; so as to get it quite firm and smooth before raising the sides. These were added bit by bit, and trimmed and beaten with the wings and feet, in order to felt the whole together, projecting fibres being now and then worked in with the bill. By these simple and apparently inefficient means, the inner surface of the nest was made almost as smooth and compact as a piece of cloth.

Another interesting fact connected with nidification is, that birds alter and improve their nests when altered conditions require it. This alone goes far to prove that the uniformity in the nests of each species of bird, which has always been attributed to a nest-building instinct, is in proportion to the uniformity of the conditions under which each species lives. New conditions of place or circumstances induce modifications in architecture as well with birds as with men. The chimney and house-swallows are an every-day evidence of a change of habit, since chimneys and houses were built; and, in America, this change has taken place within about three hundred years. Thread and worsted are now used by many birds in building their nests, instead of wool and horsehair; and, as Mr. Wallace quaintly remarks, the jackdaw shows an affection for the church steeple, which can hardly be explained by instinct. In the United States, the Baltimore oriole, rather than take the trouble to go farther afield for single hairs and vegetable fibres, prefers to adapt to its use such materials as it can find ready to hand—such as pieces of string, skeins of silk, or the gardener's matting; and with these it forms its beautiful pensile

nest. In almost every village and farm in America, empty gourds or small boxes are stuck up for the use of the purple martin; and several of the American wrens will also build in cigar boxes with a small hole cut in them, if placed in a suitable position. Perhaps the best example of a bird modifying the shape of its nest according to circumstances is to be found in the orchard auriole, also an American bird. When the nest is built among firm and stiff branches, it is very shallow; but when, as is often the case, it is suspended from the slender twigs of the weeping willow, it is made much deeper—so that, when swayed violently about by the wind, the eggs or the fledgelings may not fall out. Naturalists have also noticed that the nests of the same species of birds differ in the Northern and Southern states in the matter of compactness of building. Those built in the warm South are much slighter and more porous in texture than those of the same species in the colder North. We need not go further, however, than our own familiar house-sparrow for a good instance of adaptability to circumstances. This pert little chirper, when in his wild state, away from houses and buildings, and left to his own resources, forms a well-made domed nest, perfectly fitted to protect his offspring. As we know him, however, where he can find a convenient hole in a building, or among thatch, or in any other well-sheltered place, he takes but little trouble, and forms a very loosely built nest. We will here quote a curious example of a recent change of habits which occurred in Jamaica:—"Previous to 1854, the palm-swift (*Tachornis phanicea*) inhabited exclusively the palm trees in a few districts in the island. A colony then established themselves in two cocoa-nut palms in Spanish Town, and remained there until 1857, when one tree was blown down, and the other stripped of its foliage. Instead of now seeking out other palm trees, the swifts drove out the swallows who built in the piazza of the House of Assembly, and took possession of it, building their nests on the tops of the end walls, and at the angles formed by the beams and joists—a place which they continue to occupy in considerable numbers. It is remarked that here they form their nest with much less elaboration than when built in the palms, probably from being less exposed."

Before concluding these brief notes on the

subject of birds' nests, it may not be altogether out of place to cite some interesting facts connected with birds themselves. The differences of colour and plumage, according to the sex of the same class of birds, are very remarkable. As a rule, the male bird has a more ostentatious plumage than the female. But this rule has its notable exceptions. Peacocks, pheasants, grouse, birds of Paradise, and—perhaps hardly to be mentioned in such gorgeous company—our own black-bird, have very dull and unobscure mates; yet the female toucan, bee-eater, parrot, macaw, and tit are, in almost every case, as gay and brilliant as the male. This anomaly has been explained by recent naturalists by the influence of the mode of nest-building. The true principle, with very few exceptions, seems to be that, when both sexes are of strikingly gay and conspicuous colours, the nest is secreted, or such as to conceal the sitting bird; while, whenever there is a striking contrast of colours, the male being gay and conspicuous, the female dull and obscure, the nest is open, and the sitting bird exposed. This important theory is best illustrated by a few examples. We will first take some of those groups of birds in which the female is conspicuously coloured, and in most cases exactly like the male. In some of the most brilliant specimens of the kingfisher species, the female exactly resembles the male. Kingfishers mostly build their nests in a deep hole in the ground. The male and female of the showy mot-mots are exactly alike in colour, and their nest is in a hole under the ground. Puff-birds are often gaily coloured. The sexes are exactly alike. The nest is in a sloping hole in the ground. The barred plumage and long crests of the hoopees are common alike to the male and female, and the nest is in a hollow tree. The barbets are all very gaily coloured; and, what is remarkable, the most brilliant patches are disposed about the head and neck, and are very conspicuous. The male and female are exactly alike, and the nest is in a hole of a tree. The same remarks apply to the ground cuckoos, save that they build a domed nest. In the great parrot tribe, adorned with the most brilliant and varied colours, the rule is that the sexes are exactly alike. All build in holes, mostly in trees; but sometimes in the ground, or in white ants' nests. If, on the other hand, we take the cases when the male is gaily coloured,

while the female is much less gaudy, or even quite inconspicuous, we find a totally different system of nest-building. Take, for instance, the chattering. These comprise some of the most gorgeous birds in the world—vivid blues, rich purples, and bright reds being the most general colours. The females are always obscurely tinted, and are often of a greenish hue, not easily distinguished among the foliage. In the extensive families of the warblers, such as thrushes, flycatchers, and shrikes, as also in the case of the pheasants and grouse, the males are mostly marked with gay and conspicuous tints, while the females are always less pretentious in the matter of external beauty, and most frequently are of the very plainest hues. Now, throughout the whole of these families the nest is open; and hardly a single instance can be mentioned in which any one of these birds builds a domed nest, or places it in a hole of a tree, or underground, or in any place where it is effectually concealed. In these facts, the larger and more powerful birds are not taken into consideration; because, with these, brilliant colours are, as a rule, absent, and they depend principally on concealment to secure their safety. The apparent reasons for this difference in the colour of the plumage of the sexes of different species is very naturally explained. We have seen that, when the female bird has been in the shade as regards rivaling her lord and master in the way of "fine feathers," the nest was always an open one. The female bird, while setting on her eggs in an uncovered nest, would be much exposed to the attacks of enemies; and any modification of colour which might render her more conspicuous would often lead to her destruction, and that of her nestlings. Those birds, on the other hand, who, male and female, can boast equally attractive plumage, build their nests in holes and crevices, and have, therefore, much less to fear upon the score of discovery.