COTYLE RIPARIA.

Sand-Martin.

Hirundo riparia, Linn. Syst. Nat., tom. i. p. 344. Cotyle riparia, Boie.

The Sand-Martin is the least of the British Hirundines; it is also the most universally dispersed: like the Swallow, it spends the winter in countries near the tropics, and the summer in more temperate and northern regions. Those individuals which make the British Islands their summer home arrive at the end of March or beginning of April; hence they precede the Swallow by a few days. In many parts of its economy the Sand-Martin differs from its congeners; for, small as it is, and frail as is its tiny body, it is a wondrous miner; and it is the bird which excavates the numerous holes in upright sand-banks, the sides of railway-cuttings, and all similar situations. In every English county little colonies of these birds may be observed, the young members of which assemble, and form the great masses which we see congregated on many parts of the Thames during the months of August and September. Those who have not seen these vast assemblages can form but a faint conception of the sight: it must be seen, and the myriads of their twittering voices heard, to be understood. I have frequently observed masses of these birds collect high up in the air, and, having performed certain circular flights and other evolutions, descend, with a loud rushing sound, to the willowbeds like a shower of stones—the willows upon which they settle being completely covered and bowed down by the united weight of these little birds, which sit side by side for the sake of warmth and the occupation of the least possible space. If the night be cold, and the morning ushered in by frost, these little creatures suffer severely, and hundreds may be found benumbed by the sudden lowering of the temperature; in this case, many of them die, while others take warning and, with wonderful instinct, wing their way southward, to the more congenial climates of Spain and Africa. A moment's reflection is, I am sure, all that will be necessary to convince every one of the immense amount of good that has been effected during the short period of their existence; for, if the birds are in countless thousands, what myriads of insects must have fallen a prey to these little aërial wanderers!

It is an exceedingly interesting sight to see these fairy birds perch, every night and morning for two or three weeks in autumn, side by side in thousands, on the telegraphic wires of the fine railway bridge which crosses our beautiful Thames at Taplow.

But let us now speak of the bird in its capacity of a miner. If for a moment we study its form, can we feel otherwise than surprised that so frail a structure, and so feeble a bill as I consider it to be, should be able to perforate holes in the solid sand-bank to the depth they are known to do? Yet this is the case; and all the members of the genus *Cotyle* do the same; while the common Martin (*Chelidon urbica*) builds a domeshaped nest of mud under the eaves, the Swallow (*Hirundo rustica*) in our chimneys, the Esculent Swallow (*Collocalia esculenta*) in caves, and the Swift in the church-steeple. Thus we see that each of these divisions or genera of the great family of the *Hirundinidæ*, or Swallows, construct their nests in a peculiar manner, and different from each other, both as to situation and materials; their eggs, too, are different.

"This little wanderer," says Mr. Yarrell, "frequents, as its nesting-place, high banks of rivers, sand-pits, and other vertical surfaces of earth that are sufficiently soft in substance to enable the bird to perforate it to the depth necessary for its purpose. In such situations, this tiny engineer forms circular holes in a horizontal direction, boring to the depth of two feet or more, with a degree of regularity and an amount of labour that is rarely exceeded among birds." The mode in which this perforation is accomplished has been well described by Mr. Rennie, in his 'Architecture of Birds,' in the following terms:—"The beak is hard and sharp, and admirably adapted for digging; it is small, we admit, but its shortness adds to its strength, and the bird works, as we have had an opportunity of observing, with its bill shut. This fact our readers may verify by watching their operations, early in the morning, through an opera-glass, when they begin, in the spring, to form their excavations. In this way we have seen one of these birds cling, with its sharp claws, to the face of a sand-bank, and peg in his bill, as a miner would do his pickaxe, till it had loosened a considerable portion of the hard sand, and tumbled it down amongst the rubbish below. In these preliminary operations it never makes use of its claws for digging; indeed, it is impossible it could, for they are indispensable in maintaining its position, at least when it is beginning its hole. We have further remarked that some of these Martins' holes are nearly as circular as if they had been planned out with a pair of compasses, while others are more irregular in form; but this seems to depend more upon the sand crumbling away than upon any deficiency in the original workmanship. The bird, in fact, always uses its own body to determine the proportions of the gallery—the part from the thigh to the head forming the