

Ant - Hills.



STRIKING peculiarity of the white ant is that it is not an ant at all, but a termite. Any ordinary person observing it and its habits would call the insect an ant; but the learned men of science who settle these things tell us that it belongs to the order of Neuroptera, and is allied to the dragon-fly; whereas the ants are all Hymenoptera. Indeed, the very latest classification puts the termites in a class by themselves, somewhere between the dragon-fly and the cockroach. But the travellers who first encountered the termite in its different kinds were not scientifically exact in their nomenclature, and took the way of the ordinary person, calling the new insect a white ant.

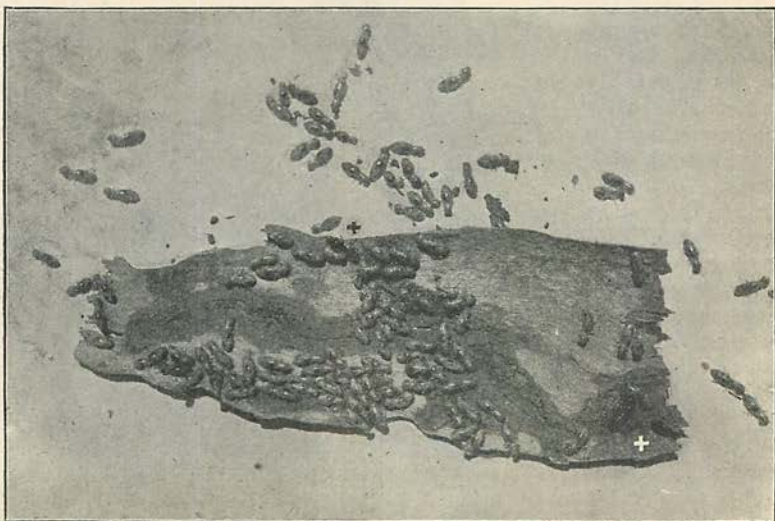
The termites are remarkable chiefly for two things—some sorts for one and some for the other. One is the building of most extraordinary nests, formed of particles of earth cemented together, and pierced by many tunnels, chambers, passages, and corridors; and the other is the destruction (internally) of anything wooden they can get hold of.

Mr. W. Saville-Kent, the distinguished naturalist, made a tour in Australia a year or two ago, taking photographs of many remarkable things, some of which were reproduced in his valuable work, "The Naturalist in Australia." We are indebted to Mr. Saville-Kent for most of the photographs from which we take our illustrations of termite life in the island-continent.

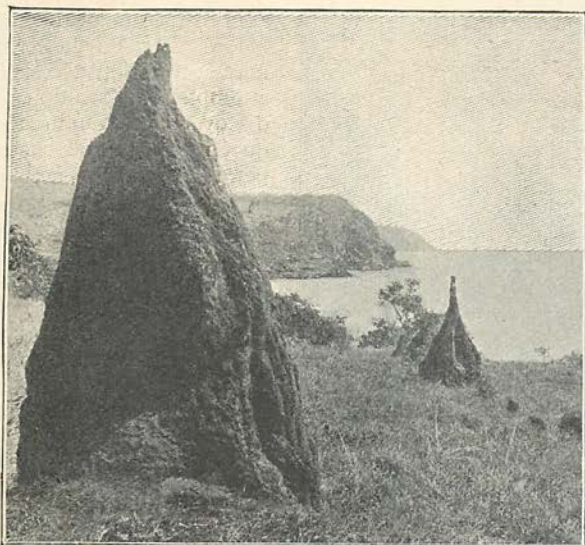
The termites of Australia have not yet been thoroughly examined, but the European species (*Termes lucifugus*) has; and in a nest of the latter there are found together eleven different types—which will give some measure of the complicated state of termite

society. The eleven types are: (1) the youngest larvæ, there being no discernible distinctions between them at this stage; (2) the semi-matured larvæ of the soldiers; (3) adult soldiers; (4) semi-matured larvæ of workers; (5) adult workers; (6) nymphs (with imperfect wings) of the first order, developing into kings and queens; (7) king; (8) queen; (9) nymphs of the second order developing into supplementary males and females; (10) adult supplementary males; (11) adult supplementary females. There is no reason to suppose that termite society in Australia is any less highly organized—in fact, it may be found to be more highly organized still.

We reproduce an instantaneous photograph taken by Mr. Saville-Kent at Derby, Western Australia, of a suddenly-disturbed community of white ants burrowing in wood. This is one of the most destructive insects in Australia. It is not a mound-builder, but it lives in subterranean passages, and in the borings it makes in wood. Nothing is safe from this pest. Furniture, rafters, floor-boarding, door-posts—it eats into all. A house left unguarded for a month or two may come to terrible grief. The whole of the wood-work, while outwardly apparently sound, will become a mere shell, with walls no thicker than paper. So that one puts his foot through the flooring as he would through



WOOD-DEVOURING WHITE ANTS.
From an Instantaneous Photo. by W. Saville-Kent.



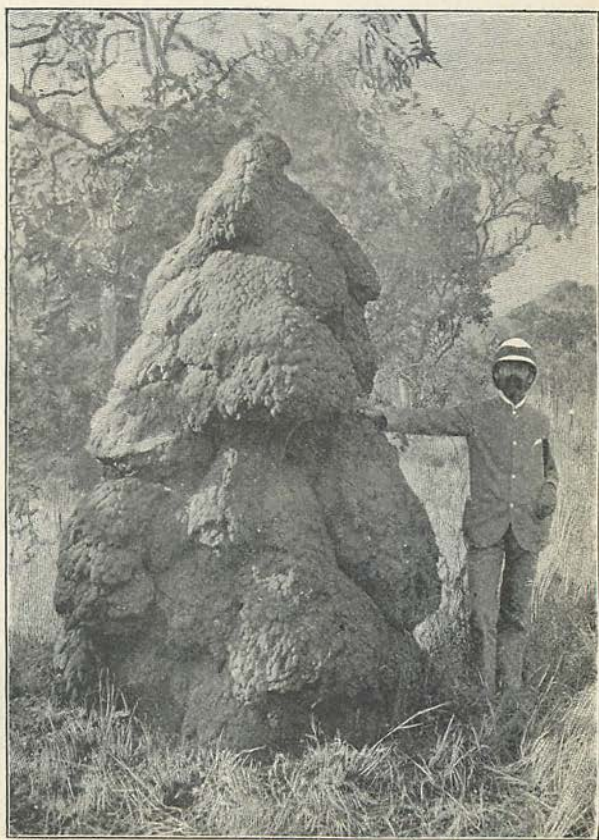
TERMITE MOUNDS, ALBANY PASS, NORTH QUEENSLAND.
From a Photo. by W. Saville-Kent.

food chambers that intersect their hillocks. And the various species erect mounds of varying shapes and sizes, particular shapes being produced by particular species. The accompanying photograph shows two mounds constructed by a species inhabiting Cape York Peninsula, in North Queensland; and the photograph was taken at the Albany Pass, in that district. These mounds are all of a roughly pyramidal shape, sometimes with the apex prolonged into a pinnacle, as in the case of the hinder mound in the picture. The hills grow gradually, of course, and when completed, range from 6ft. to 12ft. in height as a rule, though some reach 14ft. or 15ft. And it may be taken as a general rule that the habitation, or "termitarium," as it is correct to call it, extends as far downward under the surface of the ground as upward in the air. Thus we may get some

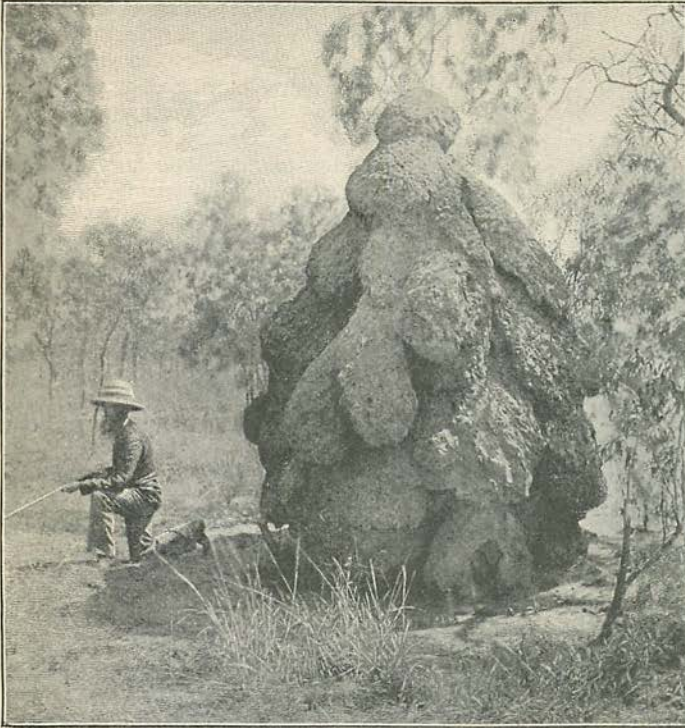
a stretched newspaper, and the legs of seemingly sound chairs and tables crush to dust and splinters between the finger and thumb.

Among the crowd visible in the photograph are two soldiers, near each of which a cross is placed—a black cross near the middle of the wood, at the upper edge of the picture, and a white cross at the right-hand bottom corner. The soldier termites are distinguishable by their darker colour, and by their larger heads, which are almost black. These termites, it may be observed, as well as other species, secrete a sort of acid, which will eat away even glass and lead. There are many instances of the metal capsules of bottles being pierced, in order that the insects might get at and eat the corks. And in these cases the surface of the glass was plainly eroded along the line where the termites had laid their covered passages towards the corks. Lead sheeting of considerable thickness has also been perforated by white ants eager to get at wood behind it.

The food of the mound-building sorts seems to be chiefly dried grass. They are mound-builders and haymakers. They collect great hoards of grass blades finely cut up, and store them in the myriad



NEST MOUND OF WHITE ANTS, "KIMBERLEY TYPE," DERBY, W. AUSTRALIA.
From a Photo. by W. Saville-Kent.



NEST MOUND OF WHITE ANTS, "KIMBERLEY TYPE," DERBY, W. AUSTRALIA.
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notion of the immensity of the architecture of these industrious insects, in comparison with their insignificant size. The colour of the mounds is commonly a rust-red, much

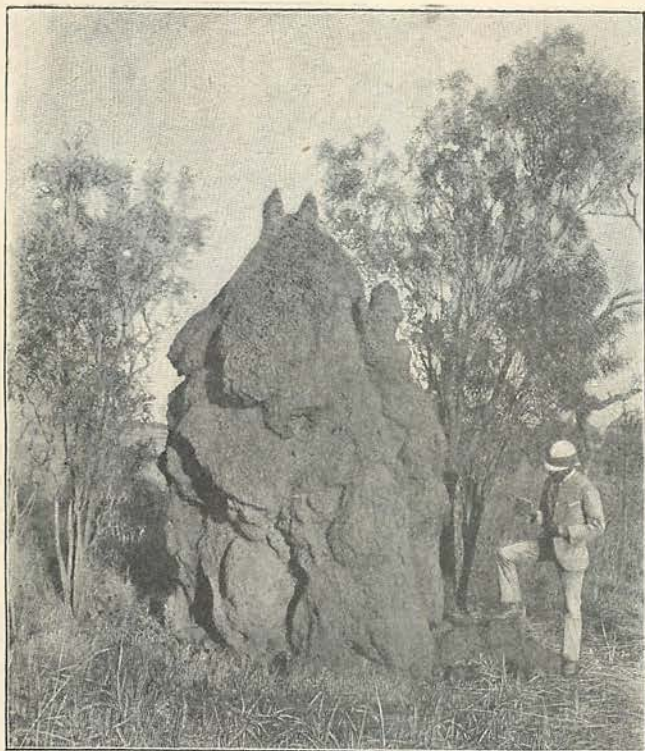
bringing it in, repair all the breaches before daylight.

We come now to the mounds of what Mr. Saville-Kent calls the "Kimberley type,"



From a Photo. by] NEST MOUNDS OF WHITE ANTS, "KIMBERLEY TYPE," DERBY, W. AUSTRALIA. [W. Saville-Kent.

akin to the line of the soil below. Mr. Saville-Kent made several unsuccessful attempts, by excavation, to discover and examine the queen in her royal chamber, in the midst of certain of the mounds. But the skill and diligence of the worker-termites rendered his efforts unsuccessful. So rapidly did they wall up all approaches to the chamber at the first alarm, that it became, apparently, a mere lump of clay, indistinguishable from the many others around it. In many cases it was possible to trace clay-covered galleries for several hundred feet along the surface of the ground from the bases of the hillocks. It is supposed that the termites make innumerable holes in the walls of these galleries in the night, issue forth, gather their harvest of grass, and,

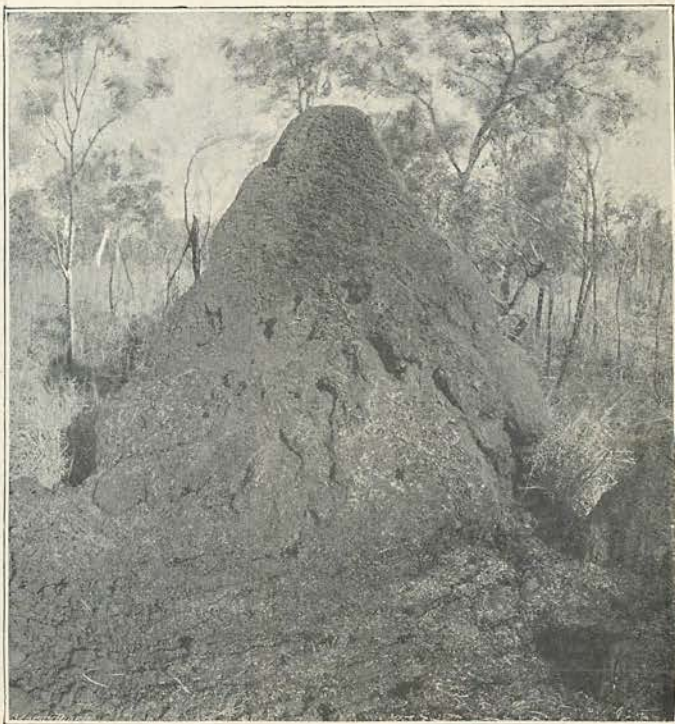


FULLEST DEVELOPMENT OF ANT-MOUND.
From a Photo. by W. Saville-Kent.

since he came across them in the Kimberley district of Western Australia. Our next four photographs illustrate these in various ways. The peculiarity of shape which distinguishes them from others will be noticed at once. It is as though they had been roughly thrown up with pailfuls of thick mortar; each pailful being inverted over those that had preceded it, and each overflowing and overlapping before finally setting firmly. The tallest nest of this sort which Mr. Saville-Kent measured was 14ft. high; we give a picture of it above. It has reached its fullest development, and, as may be seen, it is becoming a little worn at the top by weather. The shapes of these termitaries vary a great deal, and some present odd and grotesque forms. The

larger and foremost of the two in our third picture of these Kimberley mounds, shown at the bottom of the preceding page, is topped by a final "pailful," with a strong likeness to the head of a lop-eared spaniel.

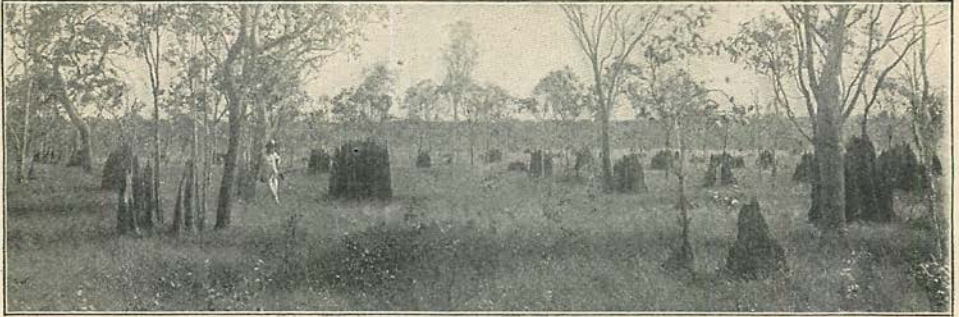
Next after the photograph of the largest of these termitaries we show a complete section made through another. With the aid of a pickaxe and a cross-cut saw, this mound was divided exactly in half, and the thousands of inner chambers and passages exposed. They are almost too small to be distinguished in so small a photograph, and the longer and very irregular holes, mostly near the centre, are not supposed to be intentionally constructed chambers, but merely spaces accidentally left between the successive layers of clay. From the centre upward and out to the sides the chambers were almost wholly filled with the stored food, in the



From a Photo. by]

SECTION OF AN ANT-MOUND.

[W. Saville-Kent.



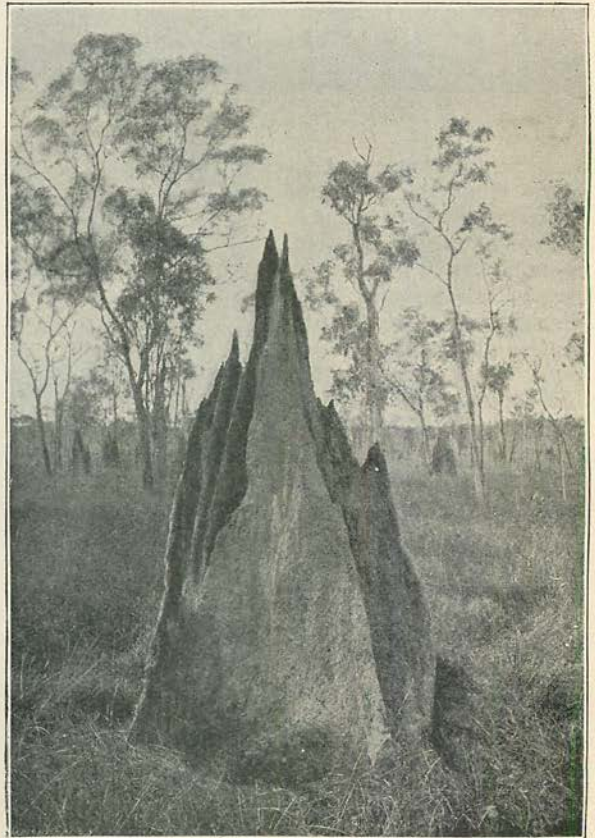
From a Photo. by] GENERAL VIEW OF NEST MOUNDS, MERIDIAN VARIETY, LAURA VALLEY, N. QUEENSLAND. [W. Saville-Kent.

shape of finely chopped grass. Much of this is seen lying at the foot in the photograph among the *débris* of the destroyed half of the mound. In the centre, however, and a little below, was a collection of smaller cells, apparently the nurseries, devoted to the rearing of the young ants. These cells, however, were found to be unoccupied when laid bare, the young having doubtless been carried away at the first sign of disturbance. Here again nothing could be discovered of the queen ant.

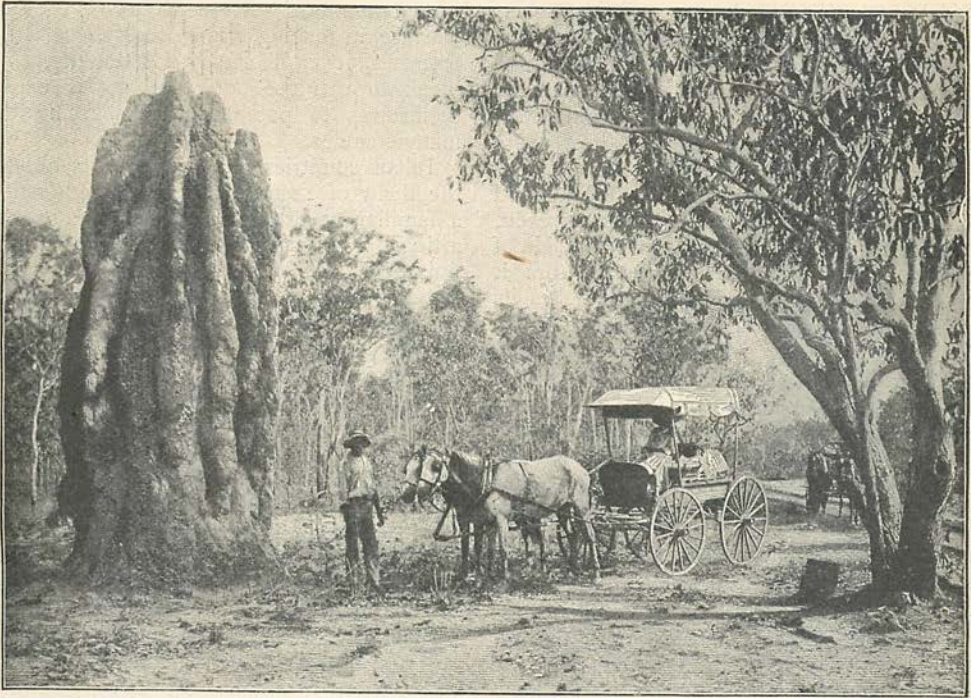
A mound partially destroyed in this manner is never abandoned. The termites instantly set about rebuilding the destroyed side, and in course of two or three years no sign is visible that the termitary has ever been interfered with. As a matter of fact, Mr. Saville-Kent paid a later visit to this same termitary, and found the work of rebuilding well forward.

A third class of Australian ant-mound is shown in our next two photographs. It is called the Magnetic, Compass, or Meridian Ant-hill, from a very noticeable peculiarity. Every one of these termitaries is in plan of a roughly elliptical shape, or, at any rate, it is narrow and compressed, so as to be very much longer than broad. And every one of these mounds points, in the direction of its length, *exactly north and south*. In the valley of the Laura River, about sixty miles inland from Cooktown, North Queensland, these termitaries abound. In one of our pictures nearly fifty are in view, some at a considerable distance. The other illustration shows one of the largest of the nests as seen from the end, looking north. It will be noticed that this class of nest

differs totally in outward conformation from those we have already considered. It rises in a multiplicity of sharp pinnacles, with some remote resemblance to the roof of a Gothic cathedral. This particular form of meridian or magnetic termitary does not attain any very great elevation, 8ft. being the height of the tallest measured. But, as we shall presently see, there are in other parts of Australia termitaries of very different shape, rising to a much greater height, and



NEARER VIEW OF MERIDIAN ANT-MOUNDS.
From a Photo. by W. Saville-Kent.



From a Photo. by]

ANT-MOUNDS OF COLUMNAR TYPE, PORT DARWIN.

[Paul Folsche.

yet characterized by the singular north and south direction. To guess the reason of this extraordinary orientation has been a puzzle to many men of science, and all sorts of theories have been expressed. It seems agreed, however, that magnetism or anything of that sort has nothing to do with it. The most probable suggestion yet offered is that the mounds being of such a shape and so placed, their larger surfaces are in the least possible degree exposed to the direct mid-day rays of the sun, and therefore convey to the interior a minimum degree of heat. A large surface facing directly the noon rays of the tropical sun would become extremely hot, and would retain its heat for the rest of the afternoon. If this explanation be the true one, it adds one more to the many wonderful instances of termite sagacity. And, indeed, so must any other explanation. For it is plain that these little insects, working in the interior of their habitations, "box the compass" with perfect accuracy, through all the tortuous windings of the myriad passages which they traverse. *How* they, in the dark of their habitations, know with such perfect precision the exact direction of north and south, and how they carry that knowledge with them through the mazes they traverse, is a thing science may some day determine, though we scarcely expect the re-

velation very soon. There is another variety of Meridian mounds familiar in the neighbourhood of Port Darwin, which not only point due north and south, but are also *convex* on the broad east side and *concave* on the west. Here is a more complete demonstration still of an underground knowledge of the cardinal points.

Still another form of Meridian termitary is found in Australia, also in the Port Darwin district. This is the largest of all the ant-hills in the continent. It differs in shape from all the others, and its height is immense, as may be seen from the photograph we give, taken by Mr. Paul Folsche. This particular example was 18ft. high, and one may test the figures by comparison of the mound with the man, the horse, and the wagon standing near. Mr. Saville-Kent calls this the "Columnar" variety. Strong ridges or buttresses are built against these mounds, adding much to their strength. By the rule we have already mentioned, which makes the depth underground of these habitations equal to their height above it, the total height of this colossal structure, visible and invisible, is 36ft.

Many other kinds of Australian termites erect very small mounds of 2ft. or 3ft. high; and it is a curious fact that certain species of birds drive holes in these mounds, and build

their nests there. A sort of kingfisher, distinguished by a white breast, behaves thus in the southern parts of Western Australia. In Central Queensland, a parrakeet excavates into the small termitaries in the same way, and deposits its eggs in the nest there formed. But another kingfisher—the White-tailed—selects a particular form of mound which is a curiosity in itself. It is an even, regular, *egg-shaped* mound. Into the side of this the kingfisher burrows, and within it makes its habitation and lays and hatches its eggs. Mr. D. Le Souef, the director of the Melbourne Zoological Society's Gardens, has taken a photograph of such a termitary as this, showing the entrance to the kingfisher's nest within, and this photograph we reproduce. After the irregularities to which the other forms of white ant-mound have accustomed us, this regular construction comes as a surprise.

Not only birds, but lizards, rats, snakes, and scorpions thrust themselves as visitors on the unwilling termites and make their homes in the mounds. Man, also, has found a use for the habitation of these insects. He does not go into them as a lodger, but he breaks them up and uses them for road-making. Tertiary earth, used as a top layer, binds and hardens under stress of weather into a firm mass, like cement. Then the knowing bushman will select a small termitary mound, hollow it with dexterity and care, and use it as a temporary oven wherein he performs surprising feats of cookery.

It is to be remembered that the termites work at their building operations in the night time only. This is the rule, but it is a rule

with exceptions. It seems to be the rule because, in making some fresh extension of premises, it is necessary for the insects to break through the outer wall, and so expose themselves to possible attacks from their many enemies.

In all countries where white ants abound the flight of swarms of the winged sort is a familiar occurrence. They crowd over all artificial lights at night, and become a great nuisance. In Massachusetts they are each season observed to fly in a thick cloud, accompanied by numberless birds, which gorge themselves with the insects until unable to close their beaks. There are fifteen different species of birds that take part in this feast.

In India and in many parts of Africa, termites are used as food by human beings, and European travellers have testified that, nicely roasted, a handful or so of white ants is a delicacy not to be despised. But in Australia, low as is the development of the aborigines, and unpromising as are many of their articles of food, the termites are not eaten. But, what is, perhaps, more singular still, the natives about the Kimberley district of Western Australia eat large quantities of the earth of which the mounds are composed. Mr. Saville-Kent has frequently

observed a native break off a piece of white ant's nest and devour it with much relish. And it was not from the promptings of imperious hunger, for the natives in question were in European service, and well and regularly fed. Mr. Saville-Kent suspects that certain secretions of the termites, together with a minute fungoid growth, conspire to render the clay attractive to the native palate.



From a Photo. by]

OVATE MOUND WITH NEST BURROW.

[D. Le Souef.