

Towards autumn this provident little animal mounts the branches of oak-trees, strips off the acorns and buries them in the earth, as a supply of food against the severities of winter. He is most probably not gifted with a memory of sufficient retention to enable him to find every one he secretes, which are thus left in the ground, and springing up the following year, finally grow into magnificent trees. Pheasants devour numbers of acorns in the autumn, some of which having passed through the stomach, probably germinate. The nuthatch in an indirect manner also frequently becomes a planter. Having twisted off their boughs a cluster of beechnuts, this curious bird resorts to some favourite tree, whose bole is uneven, and endeavours, by a series of manoeuvres, to peg it into one of the crevices of the bark. During the operation it oftentimes fall to the ground, and is caused to germinate by the moisture of winter. Many small beeches are found growing near the haunts of the nuthatch, which have evidently been planted in the manner described."

Not less important, perhaps, are the results of the destructive than those of the constructive propensities and powers of minute creatures. Of the charming *Introduction to Entomology*, by Messrs Kirby and Spence, no less than five entire epistles are occupied with the injuries which we sustain from insects, while two are devoted to the benefits they yield us. The former is almost an appalling array; the injuries done to us in our field-crops, in our gardens, in our orchards, in our woods and forests, not to mention those which attack our living stock or our persons, by these most minute of creatures, are indeed well calculated to impress on us the truth of that Oriental proverb, which tells us that the smallest enemy is not to be despised.

The locust has been celebrated in all ages as one of the scourges of God; and the Holy Scriptures bear testimony how often in ancient times, and with what effect, it was let loose upon the guilty nations. To outward appearance it is a mere grasshopper, in no wise more formidable than one of those crinkling merry-voiced denizens of our summer-fields that children chase and capture; yet with what terror is it beheld by the inhabitants of the East! The speech which Mohammed attributed to a locust graphically represents the popular estimate of its power:—"We are the army of the great God; we produce ninety-nine eggs; if the hundred were complete we should consume the whole earth and all that is in it."

It is only a short time since the public papers were occupied with articles expressing the most gloomy fears for the noble oak and pine forests of Germany. It was stated that millions of fine trees had already fallen under the insidious attacks of a beetle, a species of extreme minuteness, which lays its eggs in the bark, whence the larvæ penetrate between the bark and the wood, and destroy the vital connexion between these parts, interrupting the course of the descending sap, and inducing rapid decay and speedy death.

In the north of France, the public promenades are almost everywhere shaded by avenues of noble elms. In very many cases these trees are fast disappearing before the assaults of a similar foe. And the grand old elms of our own metropolitan parks and gardens are becoming so thinned, that great alarm has been felt, and the resources of science employed for the checking of the mischief. Fifty thousand trees, chiefly oaks, have also been destroyed in the Bois de Vincennes, near Paris. In all these cases the minute but mighty agent has been some species or other of the genus *Scolytus*.

Fortunately in this clime we know only by report the consumptive energy of the termites, or white ants; "*calamitas Indiarum*." Wood, timber of all kinds, with one or two exceptions, is the object of their attacks; and so unrelenting is their perseverance, so incredible are their numbers, that all the wood-work of a house disappears before them in the course of a night or two; though individually they are about the size of the common red ant of our woods. They have an aversion to the light, and invariably work under cover: hence, in attacking a tree, a post, a rafter, or a table, they eat out the interior, leaving the thinnest possible layer of the outer wood remaining. It frequently happens that, after their depredations have been committed, no indication of the work appears to the eye, but the least touch suffices to bring down the apparently solid structure, like a house of cards, amidst a cloud of blinding dust. If, however, as in the case of the supporting posts of a house, any incumbent weight has to be sustained, they have the instinct to guard against the crash which would involve themselves in ruin, by gradually filling up the hollowed posts with a sort of mortar, leaving only a slender way for their own travel; thus the posts are changed from wood to stone, and retain their solidity.

Forbes in his *Oriental Memoirs* has recorded a curious, but by no means unusual example of the ravages of the termites. Having had occasion to shut up an apartment, he observed, on returning after a few weeks, a number of the well-known covered ways leading across the room to certain engravings hung in frames. The glasses appeared to be uncommonly dull, and the frames covered with dust. "On

attempting," says he, "to wipe it off, I was astonished to find the glasses fixed to the wall, not suspended in frames as I left them, but completely surrounded by an incrustation cemented by the white ants, who had actually eaten up the deal frames and backboards, and the greater part of the paper, and left the glasses upheld by the incrustation or covered way, which they had formed during their depredations."

Smeathman tells of a pipe of old Madeira wine having been tapped and entirely lost by a band of these insects, who had taken a fancy to the oak staves of the cask. And Sir E. Tennant appears to have fared no better; for he complains that, in Ceylon, he had a case of wine filled, in the course of two days, with almost solid clay, and only discovered the presence of the white ants by the bursting of the corks.

They find their way into bureaux and cabinets, and greedily devour all papers and parchments therein, and "a shelf of books will be tunnelled into a gallery, if it happen to be in their line of march." Hence, as Humboldt observes, throughout the equinoctial regions of America,—and the same is true in similar climates of the Old World, indeed, in all, where very special precautions are not taken against it,—it is infinitely rare to find any records much more than half a century old.

But though the exercise of their instinct brings these little insects into collision with man, and so far they act as his enemies, abundantly making up in pertinacity and consociation what they lack in individual force,—we shall greatly misunderstand their mission if we look at it only in this aspect. As an example of mean agents performing great deeds, we must see them far from the haunts of man, engaged as the scavengers of the forest-wilds of the tropics; the removers of fallen trees, of huge giants of the woods, commissioned to get rid of those enormous bulks of timber, which, having stood in stately grandeur and rich life for a thousand years, have at length yielded to death. Not long does the vast mass lie cumbering the soil beneath: the termites attack it, enter its substance from the ground, and in the course of a few weeks succeed in so emptying it, as to leave it a mere deceptive shell, on which if you step, to use the comparison of Smeathman, "you might as well tread upon a cloud."

We presume that, in the following description of a scene in Brazil, we may understand the insects of which we are now speaking, though the traveller calls them "ants":—

"A number of tall, prostrate trees were lying about, upon which large columns of ants of all kinds moved busily to and fro. In penetrating into the depths of the primeval forest, one sees evidence at every step that these minute creatures are the destroyers of the colossal trees, whose strength braves all the attacks of storm and wind. A striking instance is this of how small are often the means which the Creator employs to produce the mightiest results; for what greater disproportion can be imagined than between an ant and one of these giants of the forest? No sooner is a tree attacked by them than it is doomed; its size and strength are of no avail; and frequently these little insects will destroy it in such a manner that the bark alone remains, and all the woody fibres crumble away, until the tall tree falls at length to the ground with a tremendous crash, a prey to the united and persevering attacks of millions and millions of the ants. Besides these proofs of the destructive power of these insects, the forests along the Estrada exhibit evidence of their skill in the pyramidal ant-hills, similar to those we had seen on the coast of the province of Rio de Janeiro. We also observed large trunks of trees pierced with deep holes, having the appearance of filigree on a grand scale. This, too, was probably the work of these destructive insects."

In Africa, there are flies which are the actual lords of certain extensive districts, ruling with so absolute a sway, that not only man and his cattle are fain to submit to them, but even the most gigantic animals, the elephants and rhinoceroses, cannot stand before them. There is the *zimb* of Abyssinia, the very sound of whose dreaded hum sends the herds from their pastures, and makes them run wildly about, till they drop with fatigue, fright, and hunger. There is no resource for the pastoral inhabitants but instantly to vacate the country, and retire with their herds to their nearest sands, where they will not be molested. This they would do, though they knew that hostile bands of robbers were waylaying them. Such is the terror of a fly.

Quite as formidable in the southern portion of the same continent is the dreaded *setse*, like the *zimb* one of the *Talbarida*, though a different species. This insect, which is scarcely larger than our house-fly, reigns over certain districts, attacking the domestic animals. Its bite is certain death to the ox, horse, and dog; yet, strange to say, it produces no serious inconvenience to the human body, nor apparently to the wild game of the country—the buffaloes, giraffes, antelopes, and zebras, which roam by millions over the same plains.

The effect on the smitten beast is not immediate, nor does the buzz produce the terror which that of the *zimb* does. It is not till after several days that the poison begins to manifest its effect: then the