## SOME CURIOUS BUGS.

Everything is valuable in natural history; even the study of bugs is interesting in spite of the discredit thrown upon them by that horror of housekeepers and travelers, the bed-bug. The latter, however, is only one species of a large order of insects, the hemiptera, which are distributed over both the land and water, in Europe and America.

This order is characterized by an incomplete transformation; the only difference between the larvæ and the adults is their progressive development of wings and their smaller size. These are sucking insects, feeding both on animal and vegetable juices. They have a sharp, horny beak, curved along the breast when not in use, which contains, in a groove, delicate needle like bristles, and makes the punctures through which the insect sucks its food.

They have generally four wings, the upper two thick at the base and membranous at the ends, half elytra and half true wings, from which formation this order takes its name of hemiptera, meaning "half wings." In all species the lower wings are membranous, and in a few the upper wings are also; some others are wholly wingless, like the bed-bug. Most of these bugs emit a disagreeable odor.

In this order are found the tree hoppers, the harvest flies, and plant lice, which are so destructive to vegetation. Here belongs the well-known squash bug, whose odor is so disagreeable when it is handled.

In the genus *Lygorus* belongs the chinch bug that has caused so much damage to the fields of grain in the South and West. The white-winged species is about three-twentieths of an inch in length; its general color is black, with white wing covers, edged with black, and reddish yellow legs and beak. The young wingless ones are bright red.

Another species is the tree hoppers, which have the same habits as the harvest flies, but make no drumming sound. These hoppers can take flying leaps to a great distance, often as far as 250 times their own length. In a proportionally long jump a man would vault through the air over a quarter of a mile. These insects always stay on plants and trees, where, from their dark color and fixed position when in repose, they look much like thorns. Locust and oak trees, and many vines, suffer greatly from the sucking of the sap and the injury done to the leaves by these insects. Tobacco fumigation, or whale oil soap in solution, is sometimes an effectual remedy against them.

Some species of bugs live in fresh water, feeding on animal or vegetable juices, and their sharp-pointed beak will cruelly pick the fingers of any person who touches them. These are properly called water bugs, but are commonly known as water scorpions. They are divided into two classes, one with a long body, brownish-yellow above and yellowish-red below; the other has an oval body of a pale brown color, and a reddish yellow abdomen; of the latter class the nepa are an example.

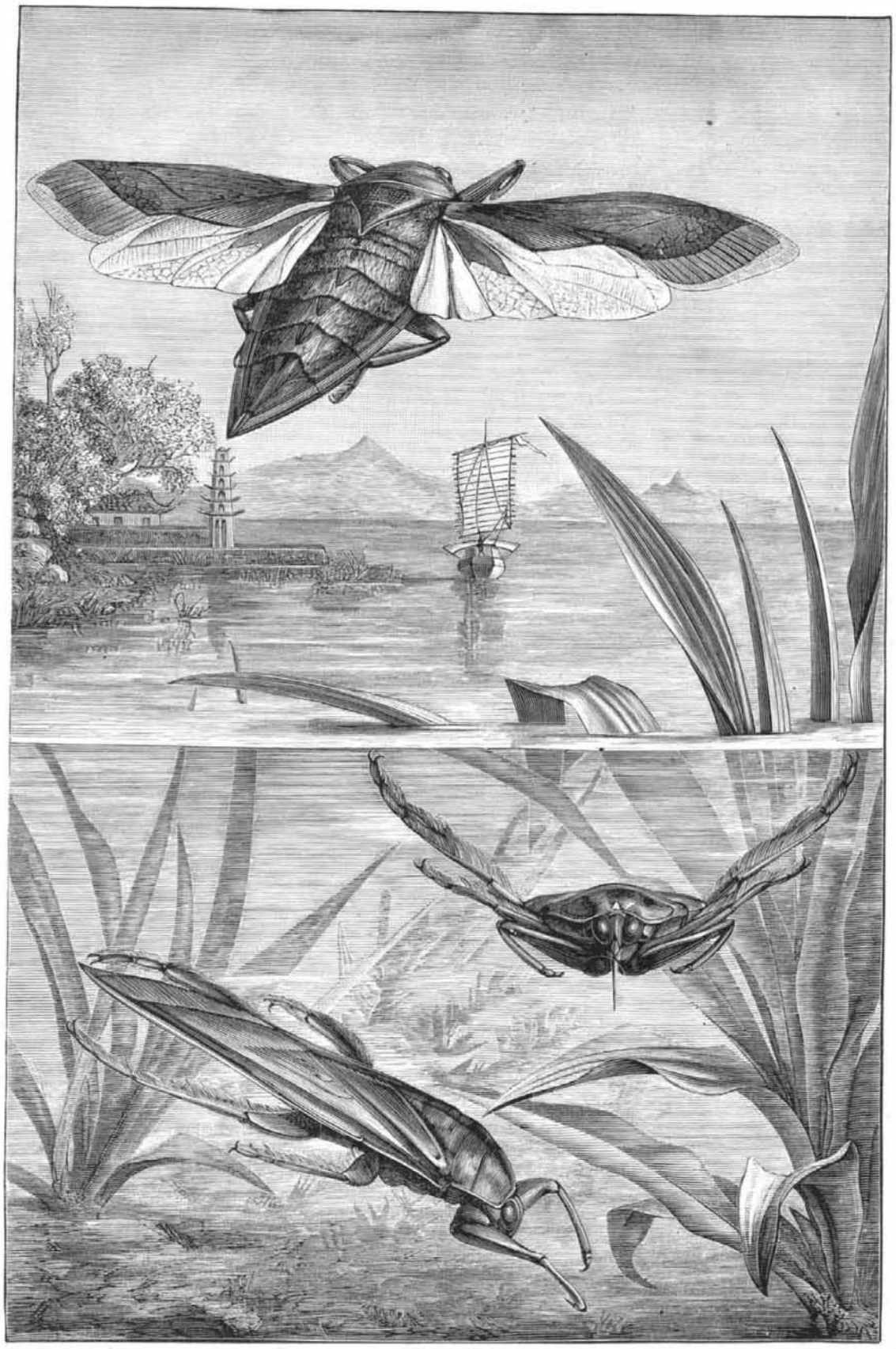
In both, the abdomen ends in a tail formed of two long tubular threads, a sort of lungs, by means of which the insect can rise to breathe at the surface of the water. These bugs are not lively; they move slowly along the bottom of the puddles or ponds among the slime and mud, and can be easily taken. They swim very swiftly, using their four posterior legs as oars; occasionally they can be seen swimming on their back. They feed on insects, mollusks, and young fish, which they seize with their front legs or nippers, and stick their sharp beak into their prey and suck the blood through the puncture. These species are found in stagnant ponds in America and Europe, on the edges of the pool among the water plants, to which the females attach their eggs. They have a very extended geographical distribution, as all aquatic species have, on account of the nearly uniform temperature of the water.

The largest known of the water bugs is the *Belostoma*, of which we give a life-size illustration. These are enormous insects, which inhabit the warm fresh waters of both continents, of similar habits to the *Nepa*. They have a long oval body; the abdomen, very flat on the sides, ends in a point. The head is proportionally small, is triangular, and inclined almost vertically to the body; the eyes are large and projecting; the beak has three joints, and the thorax is terminated by a triangular shield. The upper wings are pointed, and, when folded, cover the abdomen; the lower ones are large and membranous. Their legs are very strong; the front legs are curved, and have a groove on the underside that fits into a corresponding cavity in the body, and forms a cruel trap to hold the victims of this voracious insect. The other legs are bordered with a long fringe or cilia, and are used like oars to enable the bug to swim rapidly after its prey.

The oldest known species of *Belostoma* is found in Guiana and Brazil; this is about two inches in length. Mlle. Sibylle Meriam, who drew the animals and insects of Surinam nearly a century ago, represented this insect holding in its powerful nippers a little frog that it is trying to bleed to death.

The Indian water bug is still larger; the great water scorpion of M. Stall attains a size over three inches long; it is a pale greenish-yellow color; the prothorax and shield are brown with bands of yellow; the legs are yellow, striped with black.

This species is represented in the engraving, both flying and swimming, in the vicinity of an aquatic plant of the extreme East, the *Acharons japonicus*. This gigantic bug, like all its class, is not well known; it is occasionally found among the insects bought from Chinese merchants, and is supposed to be distributed through China, Java, the East Indies, and possibly in the neighborhood of Cairo and Algiers.—*La Nature.*



**THE INDIAN BELOSTOMA.**—(Natural size.)

## MISCELLANEOUS INVENTIONS.

Mr. Moriz Weinrich, of Vienna, Austria, has patented an improved method of and apparatus for the production of refined sugar in plates, sticks, and other like forms. The object of this invention is to facilitate producing highly refined and pure sugar, which can easily be reduced to small cubical blocks or to lumps without any alterations of the claying rooms in use at present and without requiring any additional expense. The invention consists in a pan connected with a suction pump, and also provided with transverse bars for supporting the sugar-receiving boxes, which are subdivided by partitions or plates according to the shape and thickness of the desired slabs or sticks of sugar that are to be produced.

Mr. Madison T. Shadduck, of Shunk, Pa., has patented an improvement in tug buckles which consists in hinging the tongue plate to a lever which, in turn is hinged by connecting rods to a crossbar of the frame and adapted to be held in a locked position by a spring bolt engaging an eye bar of the frame.

Mr. John H. Atwater, of Medford, Minn., has patented an improved washing machine. In using the machine the clothes to be washed are inserted between an endless apron and a cylinder of corrugated rollers, and as the machine is operated the clothes are carried around the cylinder of rollers and are squeezed and rubbed by and between them and by the smooth rollers acting behind the apron. With this construction the corrugated rollers travel faster than the endless apron, so that the corrugated rollers will move forward upon the clothes, and will operate more effectively upon the clothes than they would if the rollers and clothes traveled at the same speed.

A novel automatic hatchway-door operator has been patented by Mr. John L. Peters, of New York city. The invention consists in an arrangement of circular racks attached to the pivoted ends of the swinging hatchway-doors, combined with sliding rack bars on the guide standards, which carry boxes at the upper ends containing sliding bolts and an angular latch lever for withdrawing the bolts when the doors have been opened. Projections on the elevator car strike against the projecting ends of the bolts and press them and the rack bars downward, and these racks will turn the circular racks, swinging the hatchway doors open. The latch levers then strike against studs and withdraw the bolts, permitting the car to descend further, the car holding the doors open. When the cars has passed, closing springs swing the doors back into their original positions.

Mr. John Murray, of New York city, has patented a novel toy savings bank, consisting of the figure of a chicken thief seated on a hencoop. At the end of a long platform, and near the opening for receiving coin, there is a fixed figure of a man and a movable figure of a dog. On dropping the coin into the bank the dog is released, and goes for the chicken thief, who runs out his tongue and rolls his eyes while the heads of chickens peep from holes in his hat, affording evidence of his guilt.

### New Welland Canal.

The new Welland Canal was opened April 20, with twelve feet of water throughout its length. The increase of depth (two feet) is having a marked effect upon the commerce of the lower lakes. Most of the vessels plying between ports on Lake Ontario and the upper lakes, and which are known as "canal vessels," have a carrying capacity of about 24,000 bushels of grain, but they have hitherto been able to carry only about 18,000 bushels through the old Welland Canal on ten feet draught. They can henceforth carry full cargoes. The first coal fleet from Oswego took on, for the upper lakes, about 700 tons each vessel instead of 500 tons as before.