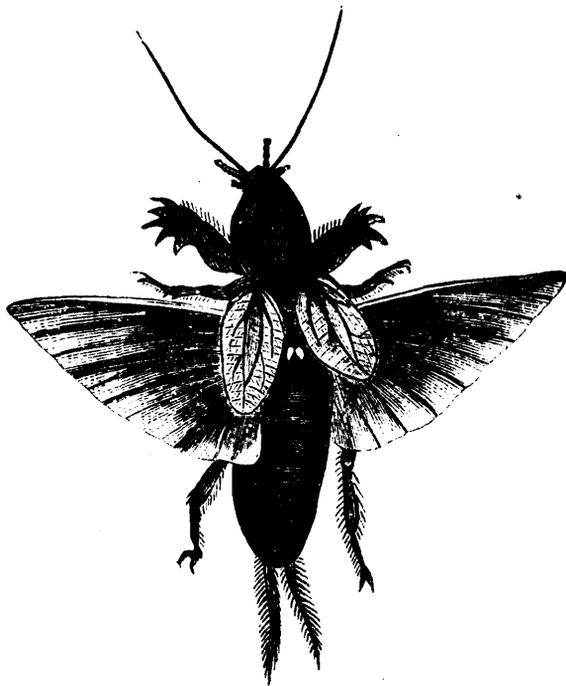


THE MOLE CRICKET.

This insect is one of the most curious of all the *orthoptera*, to which order earwigs, crickets, grasshoppers, cockroaches, locusts, and the strange looking leaf and stick insects also belong; it is widely distributed over the world, from the torrid zone to the arctic circle; allied species inhabiting Java, China, Australia, Van Diemen's Land, North



and South America, and even Melville Island. It has been variously called eve-churr, churr worm, jarr worm, and crocker, names derived from its peculiarly jarring song; also fen cricket, earth crab, and mole cricket, the last being by far the most appropriate, and that by which it is generally known. With its powerful fore limbs it burrows underground, raising ridges in its progress. Its shape is long and cylindrical (a full-grown specimen measures $2\frac{1}{2}$ inches in length by barely half an inch across the thorax), just that best fitted for locomotion through long narrow galleries; its color is a rich, dark, velvety brown of various shades, its thorax is very hard, and so formed that the head can be withdrawn into it, much after the manner of some tortoises; its whole body is covered with fine down. It has a long sensitive pair of antennæ or horns projecting in front of its head, and another pair on its tail, projecting backwards, also very sensitive; and as it moves with equal facility either forwards or backwards, should danger threaten from front or rear, it is ready to escape without turning round, an operation which would be difficult or almost impossible in its narrow tunnels. Like all the crickets and grasshoppers, its nearest allies, its hind legs are formed for jumping; though perhaps not often employed for this purpose, they form the ordinary locomotive organs of the animal, both below and on the surface of the ground; the middle pair being comparatively weak, while the fore pair are carried raised up.

The fore limbs are rarely used in walking, but are the tools with which the insect burrows. They bear a very close outward resemblance to the fore pairs of a mole.

LATHE TOOLS AND TOOL POST SLOTS.

For the performance of a large quantity of work by the lathe, no greater necessity exists than for heavy turning tools. The numerous attempts of thirty and of ten years since to use cutting points for turning have all ended in practical failure. No nicety of shape or fitness to meet the exact requirement for easy cutting of metals will recompense for want of material, both in continuity and in mass, to conduct away the heat of the cut and of friction on the cutting surfaces. The smallest working tool for turning iron should be $1\frac{1}{4} \times \frac{1}{4}$ steel in the shank, the slot of the tool post of the lathe, which swings 10° only over the ways, should take this dimension easily; $1\frac{1}{4} \times 1\frac{1}{4}$ steel is not excessive for tools for the thirty inch lathe, where profitable return for use of the lathe is expected. The posts themselves, with their gripping screws and bearing rings, can hardly be too heavy, while they can easily be too weak. For a 48 inch lathe it does not harm to have the slot in the post $2\frac{1}{4}$ ", or $3 \times 2\frac{1}{4}$ ", or $2\frac{1}{4}$ ", with a two inch screw. The refinement of spring tools for heavy cuts or for long cuts without re-sharpening, are well enough for tool rests with V slides, or lathes where the ways have V's; but neither excellence of workmanship, nor speed of running, nor heavy cuts, will result from makeshifts of lathes, or of turning tools, however well the makeshifts may be contrived.

Discomforts of the Sick.

Those only who have passed weary days and wakeful nights in weakness and pain on a bed of sickness, with powers of endurance enfeebled, and every form of physical and mental sensibility acutely active, can comprehend the multitude and misery of the discomforts which beset the sick. Noise in its hideously infinite variety; creaking boards, which no deftly-made screw has been devised to secure; rattling china and ware, not yet replaced by ingeniously-devised substitutes—perhaps the old wooden bowl and platter on dumb waiter for food, and articles partially protected with rubber for general use; falling coals and cinders, surely preventable by the employment of wooden tongs and silent ash-pans; harsh door fastenings, possibly avoidable by special apparatus constructed for use with locks temporarily fastened back; glaring lights, that irritate the wakeful, and make the dozing dream and start; puzzling shadows, or lugubrious darkness, evils instantly remediable if only it were possible to secure a soft and shaded light. These are a few of the surface grievances of the first stage of illness, when the head aches, the faculties of hearing and sight are preternaturally intensified, and a morbid fancy extracts suffering and bewilderment from every disturbing circumstance, however small.

Then comes the stage of helplessness, when the sick person lies in the paralyzing grip of his malady, perhaps unconscious or delirious, and those about want all the aids which skill and thought can bring to their assistance to minister to his necessities safely, promptly, and with the least distress or disturbance to the patient and his surroundings. It is seldom possible to say precisely how little or how much the surroundings of a seemingly unconscious person affect him. In this period of an illness, apparatus, contrivances, and arrangements of every class, for the ministration of comforts to the sick, play a not unimportant part in the treatment, and should be so regarded. It is discouraging to observe the meager results of the enterprise bestowed by designers and producers of appliances useful in this phase of sickness. For example, a thoroughly efficient feeder suitable for use in the case of an adult does not exist, and expert nurses revive the old-fashioned butter boat. A shaded hand