

stay here, eighteen thousand insects, and the young thirty thousand six hundred, which gives a total of forty-eight thousand six hundred insects destroyed from our own and our neighbor's trees; and it did not take us half an hour to prepare and put up these simple accommodations. Are not these facts eloquent? Then how interesting to watch the housekeeping arrangements of these beautiful little neighbors; to hear their welcome song when winter seemed still with us; to hear them debate the situation, and finally decide in favor of our apple-tree; to see them carrying up grasses and cotton and feathers, and weaving them together into a bed of down for the protection of their early-laid eggs; to watch their love-making, and all their gentle, affectionate ways towards each other; their jealousy of intruders, and their solicitous care of their eggs during the period of incubation; their final joy when the young break the shells, and are born to the light; and their untiring devotion in obtaining choice bits of insect-food for the nourishment of their offspring. Truly here is beauty at our door-yard, and poetry has taken up her abode in our apple-tree.

Purple martins and other members of the swallow tribe will readily occupy boxes put up for their use. Wrens, too, are interesting friends, and are easily induced to settle with us. We know of a case where a pair of bluebirds found a happy home in an old beaver hat which had blown up and lodged in an apple tree. A good bird-house may of a medium-sized flower pot, with the hole somewhat en-



Fig. 18.—Meadow-lark. *Sturnella magna*

larged, and the top covered with a board. Will not everyone who has a dozen rods of land make a bird-house of some kind, and thus help restore the proper proportions of the feathered and insect races?

### The Growth of Insects.

The following is from the pen of Prof. Rathvon, of the Lancaster Farmer—

"Many fancy that a little fly is only little because it is young, and that it will grow up in process of time to be as big as a blue-bottle. Now this is entirely wrong, for when an insect has once attained to its winged state, it grows no more. All the growing, and most part of the eating is done in its previous state of life, and indeed there are many insects, such as the silk worm moth, which do not eat at all from the time that they assume the chrysalis state to the time they die."—*Church Union*.

"That's so"—and yet it is only so in a qualified sense, for there are some insects that never attain to a winged state; that is, they are either totally wingless, or are so seldom seen in that state, that most persons never know otherwise than that they are wingless always. Especially is this the case with ants, fleas, spring-tails, and the females of some bugs, grasshoppers, crickets, beetles, moths, flies, and all lice, as well as many others. Although it is not strictly true that "insects never grow," yet it is true that they never grow after that stage of development when the large body of the insect world attain to a winged state; but there are some orders of insects to which the rule may be applied almost universally. There is nothing that is more likely to leave a false impression upon the minds of the superficial on this subject than the appearance—indeed we often meet persons thoroughly informed on many other subjects, who suppose that the different sizes in insects of apparently the same kinds are indications of different ages. Practically there are four more or less directly marked periods in the life of insects, and are the

ova, or egg state; the larva, or worm state; the pupa, or intermediate state, and imago, or adult state; and in one or the other of these states the species are perpetuated, or carried over from one season to another. In beetles, butterflies, moths, bees, wasps, hornets, flies, dragon-flies, and some others, these states, as a general rule, are very



House-wren. *T. adon*.

distinctly marked; but they are not so in bugs, cock-roaches, locusts, earwings, grasshoppers, treehoppers, crickets, and a number of others. In this latitude, perhaps, the one particular species (except the common house-fly) which impresses itself earliest and the most indelibly upon the minds of youth or adult age, is the common "tumble-bug" or "tumble-dung," from its habit of forming a ball out of animal excretions, and rolling it for some distance before burying it in the earth. This is the *Canthion larva* of entomologists, although there are various species of them. Now, from more than fifty years ago, when we made the first observation, down to five and thirty years ago, we were under the impression that the various sizes of these insects found in the droppings of cattle, were the young and the old of the same species. For, had we not over and over again deprived the industrious and persevering owners of these balls, opened them, and found therein a small black beetle, approximating in form to the former possessors of the ball, and what else, we thought, could they possibly be if they were not their legitimate offspring? These little black beetles, we subsequently learned, were not only different species, but belonged to different genera, *Aphodius*, *Onthophagus* and others. Nor did the fact that we sometimes found within these balls little beetles that were not entirely black—the hinder half of the body being mottled with clay yellow—astonish us any more than that we should occasionally see a Robin, a catbird, or a mouse, that was altogether or nearly white.



Upper fig. Snow-bird. *Junco hyemalis* Lower fig. Song sparrow. *Melospiza melodia*.

But since then it has been demonstrated to us a thousand times, clear as the light of the living day, that these beetles do not grow or acquire any new beauty after they have assumed the beetle form—nor any other species belonging to the same order—and that all the different sizes indicate different species, or varieties of the same species. The eggs, however, of some insects do very perceptibly increase in size, and the larva or grub grows, and sometimes grows very rapidly, in all of them.

THE American Berkshire Association, head office Springfield, Illinois, offers a premium of \$100 for the best essay on the diseases of swine, their causes, preventives and remedies, said essay to be forwarded by Jan. 1st, 1877.

### Shortcomings in Farming.

In driving along the road to attend a ram sale it was our lot to have for a companion a gentleman whose knowledge of farming was evidently founded upon many years of practical experience, to which he had brought to bear a tutored mind well capable of grasping the theoretical views connected with his subject. From such a man, then, it could hardly fail to be anything but painful to us to hear the remark, "Farming is going back; things are not so well done now as they were ten years ago." This was in relation to arable farming. Now, as this is an opinion in which we fully concur, we proceed to offer a few remarks on the present aspect of agriculture.

A few years since a marked improvement could be noted almost everywhere. Hedges were kept in due bounds, waste places were lessened, all the operations of a farm, as hedging, ploughing, drilling, mowing, sheep-shearing, &c., were done to perfection; and the laborers, incited by prizes offered by different agricultural societies, were proud of their work, and did it as perfectly as possible. Now, within the last few years, the agitator has found his way into the villages, where he at first made it his business to persuade his too willing dupes that they were serfs if they did what was required of them, their golden rule being that all men should be paid alike, and all be taught to do as little as possible.

Well, the natural result of all this is that farmers employ as few laborers as they can manage with. Labor-saving machines are multiplied, and with these important work, such as hay and corn harvest, is done in half the time,



Bobolink. *Dolichonyx oryzivorus*.

and though the wages for the work are tempting, it is soon over. A mowing machine, for example, cutting its twelve acres of grass a day, costs the farmer scarcely more than the price of cider required by the hand-mowers for cutting the same quantity. In wheat harvest the machine easily cuts twelve acres a day, which can be tied and shucked by six men; and though they are paid for this work 5s. an acre, with cider, yet the drink only flows for the day, whereas in hand work four times as much would be required.

Now with these labor-saving machines we have no complaint to make of slovenly work, as we quite think that work done by both the mower and reaper is not only expeditiously, but more perfectly performed; and where machines can be got so to act, there is no doubt that they will be in future in constant and extended use. But in such work as hoeing, though the horse-hoe is extensively used, we are quite sure that the work is not improved, and we indeed conclude that all the work connected with roots is not done with that degree of perfection which prevailed a few years since. Certainly, hand-hoeing and regulating are not done with the same care as when the men on the farm did them, and it was a matter of pride to look constantly over the work. As it is now, the regular laborer cannot do the work he used to, and the consequence is that hoers are got from the pasture districts; and men, and even boys, who have no interest in the farm, and little knowledge of arable farming, scamp over as much as they can, to get extra pay and extra drink in the summer season, with the result of being laid up—real or pretended "rheumatics"—and on the parish during the greater part of the winter.

But where the shortcoming on arable farms is chiefly observable is in a want of neatness in ploughing, drilling, hedging, thrashing, and the like. Formerly prizes were