

THE FOUNTAINS AT ARANJUEZ.

About thirty miles to the south of Madrid, the capital of Spain, lies a princely domain surrounding a magnificent country mansion. This is Aranjuez, the summer residence of the King. It was designed and constructed under the directions of Philip the Second, and is reached by a well constructed road connecting it with the capital, as well as by the Madrid and Alicante railway. The palace of Aranjuez contains many noble works of art; but the chief attraction to natives as well as visitors is the park, with its ornamental gardens and fountains. Our engraving represents the Triton fountain, which stands in a shady and secluded spot. The arrangement of the water jets and of the bronze and marble sculpture is exceedingly artistic and effective. Broad double avenues of elms traverse the park, leading to the center; and the walks are lined with box and laurel hedges. The purple buds of the cactus and aloce stand out against the green of the rare shrubs; and the air is filled with the fragrance of the orange blossom.

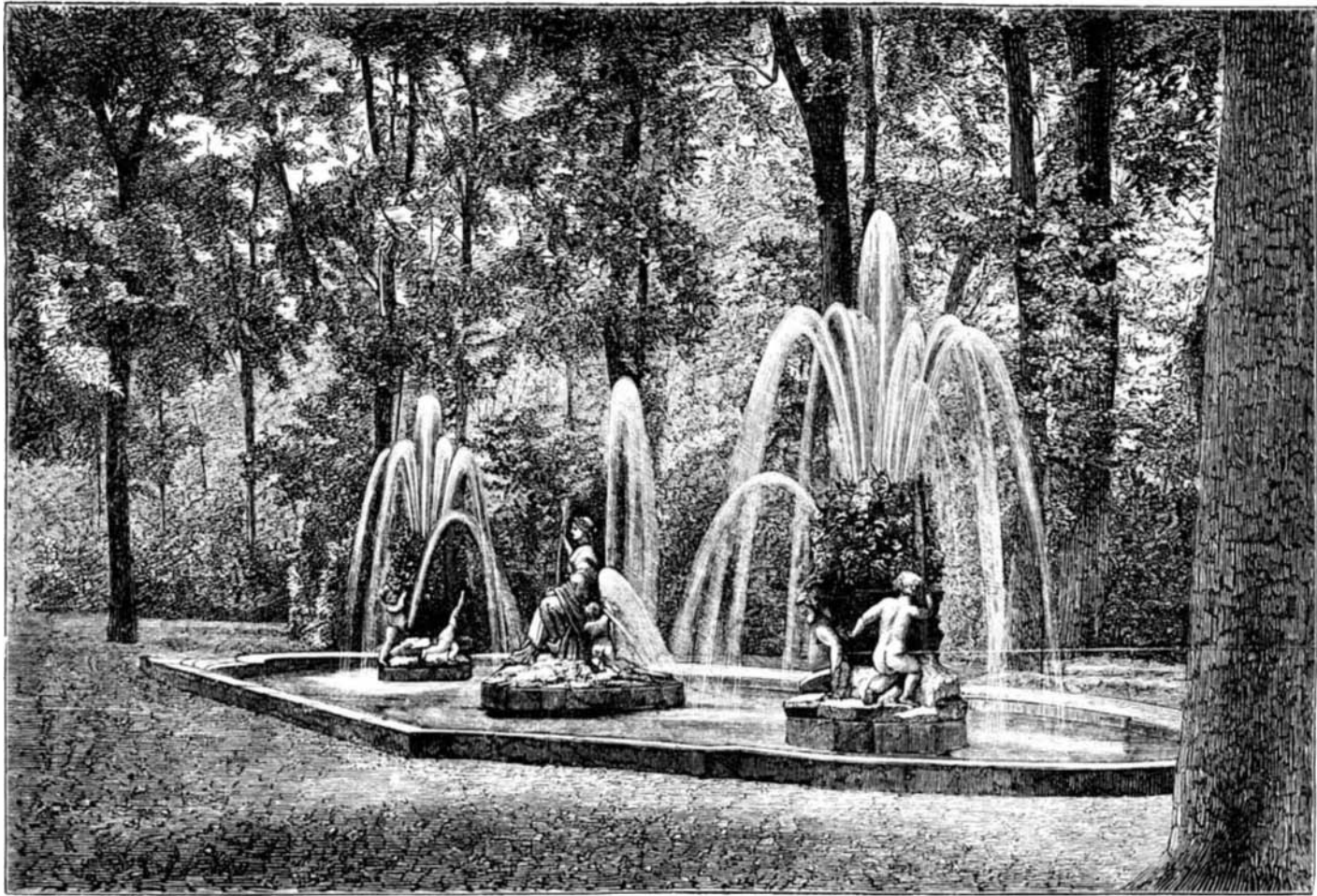
CALIFORNIAN SEA LIONS.

Of the family of *phocidae* or seals, the *otaria*, comprising the so-called sea lions and sea bears, are especially interesting. Like most members of the seal family, they are easily tamed, and are affectionate and docile; they can be taught to sit

up, to bow, to kiss the hand, and to perform many tricks. Many of our readers have probably seen the southern sea lions (*otaria jubata*) in the Zoological Gardens in London, and also the northern or Californian sea lions (*otaria Stelleri*) in the Thiergarten at Hamburg, Germany. The sea lions in Central Park, and at the Aquarium in this city, are of the latter species; and the intelligence and affec-

and their eyes are large, full, and expressive. The jaws display, when open, formidable teeth. Their snouts are furnished with long drooping, silver-white bristles. They are found along the coasts on the Northern Pacific Ocean, from Behring's Straits to California and to Japan, and are hunted for their fur, as well as for their flesh, which is a favorite article of diet in the Aleutian Islands. Our

readers will at once notice the comparative smallness of the heads and length of the necks, the latter being elongated at will. The prominence of the shoulder blades gives them a hump-backed appearance. They are much more agile than would be supposed from their size and weight, and they move lightly and gracefully through the water. Their bodies are very flexible, and they can scratch their heads, as dogs do, with their hind paws. Their bellowing can be heard at a great distance, and the males are fond of exhibiting their vocal powers; the sound is disagreeable, resembling the cry of a child

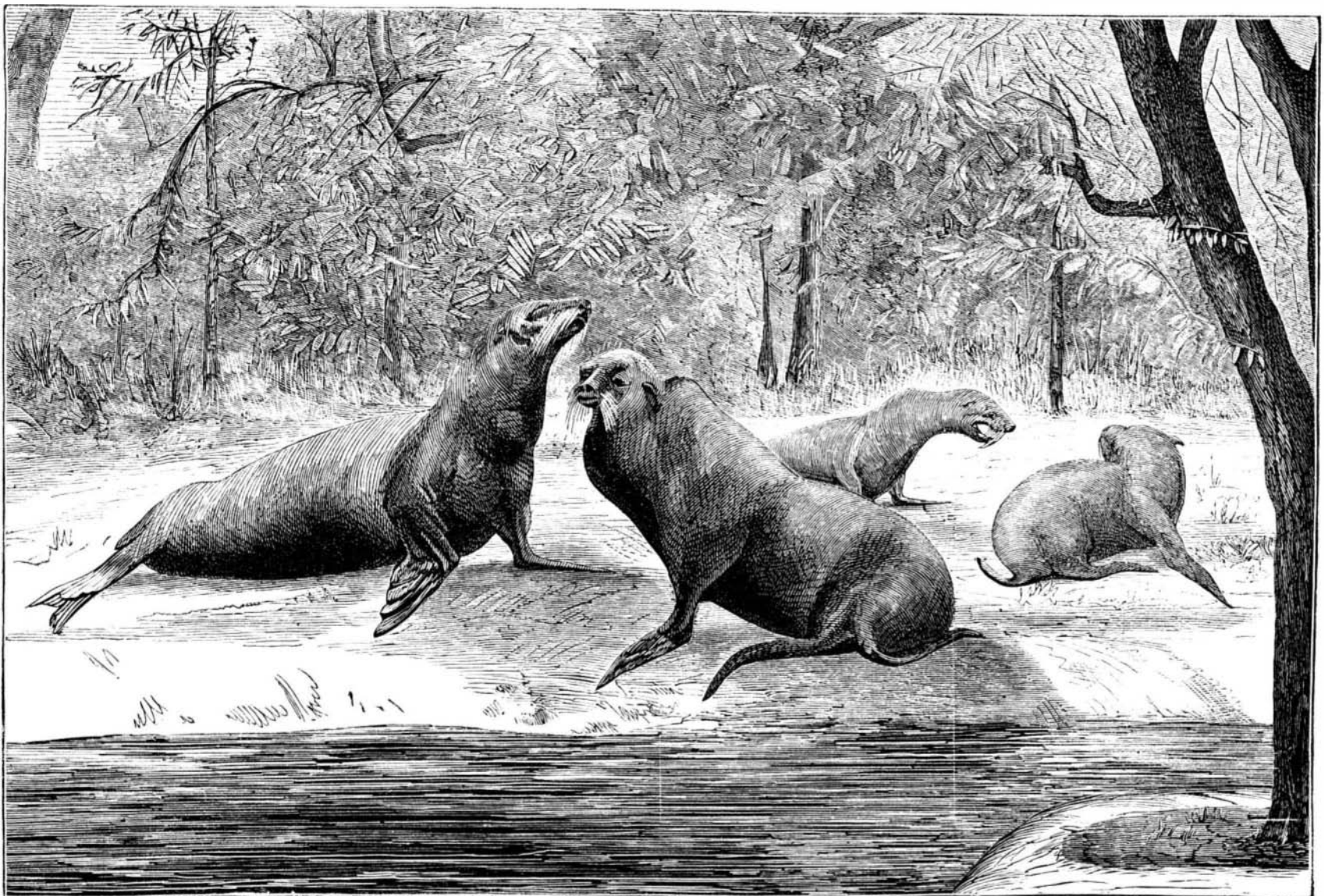


THE TRITON FOUNTAIN IN THE PARK AT ARANJUEZ.

tion for their keepers which they manifest, and their efforts to raise themselves out of the tanks of water in which they are kept, in order to reach their master, are very amusing. Our illustration shows the specimens in the Hamburg collection above mentioned, the animals being quite young. The males of this genus are about 5 feet long when fully grown, and the females about 4 feet. They yield fur of a golden brown color. Their ears are small, pointed, and pendent,

in distress, although, of course, it is much louder.

In a recent lecture on heat, delivered at the Royal Institution, Professor Tyndall described an invention of Mr. Siemens to detect the oxidation of telegraph cables. It indicates the heat that the oxidation occasions, and thus shows to what extent the rust is forming. It is chiefly of service with cables coiled in tanks.



CALIFORNIA SEA LIONS IN THE HAMBURG ZOOLOGICAL GARDENS.

The Destruction of the Young Locusts.

The Commissioners selected by Congress to investigate and report on the best means of destroying and preventing the ravages of the locusts have issued their first "Bulletin," under the auspices of the Interior Department. With gentlemen of such ability as compose this Commission, our agriculturists may have reasonable hopes that a remedy may be found for relieving them of the obnoxious and destructive enemy of their crops. The present number has exclusive reference to the destruction of the young insects which will so largely, the Commissioners state, occupy the attention of our Western farmers for the next two months. It is to be followed by a second number, on the natural history and habits of the species. The report says:

"The only feasible way of now destroying these is to plow them deeply under where that is possible. The plowing will be effectual according as the soil is porous or tenacious, and according as the surface is afterward compressed by harrowing and rolling. All other things being equal, a plowing of 4 to 6 inches will prove more effectual, if the ground be subsequently harrowed and rolled, than deeper plowing with no subsequent comminution and compression. We advise the farmers in the locust region to supply themselves with early ripening seed corn, and to prepare to grow more leguminous and tuberous crops than is the custom. But as the principal struggle during the next two months will be with the young insects, we devote this bulletin more particularly to the best means of overcoming them. Heavy rolling, where the surface of the soil is sufficiently firm and even, destroys a large number of these newly hatched young, but is most advantageously employed when they are most sluggish and inclined to huddle together, as during the first eight or ten days after hatching, and in the mornings and evenings subsequently. They then drive almost as readily as sheep, and may be burned in large quantities by being driven into windrows or piles of burning hay or straw. They may also be killed with kerosene, and by means of flattened beating implements, wooden shovels being extensively used for this purpose in Europe. But to protect the crops and do battle to these young locust armies, especially where, as was the case in much of the ravaged country in 1875, there is little or no hay or straw to burn, the best method is ditching. A ditch 2 feet wide and 2 feet deep, with perpendicular sides, offers an effectual barrier to the young insects. They tumble into it and accumulate, and die at the bottom in large quantities. In a few days the stench becomes great, and necessitates the covering up of the mass. In order to keep the main ditch open, therefore, it is best to dig pits or deeper side ditches at short intervals, into which the 'hoppers' will accumulate and may be buried. Made around a field about hatching time, few 'hoppers' will get into that field till they acquire wings, and by that time the principal danger is over, and the insects are fast disappearing. If any should hatch within the inclosure, they are easily driven into the ditches dug in different parts of the field. The direction of the apprehended approach of the insects being known from their hatching locality, ditching one or two sides next to such locality is generally sufficient, and when farmers join they can construct a long ditch which will protect many farms. We have not a doubt but that with proper and systematic ditching, early in the season, when the insects first hatch, nearly everything can be saved. Where water can be let into the ditches so as to cover the bottom, they may be made shallower, and still be effective. A ditch 3 feet wide, unless correspondingly deep, will be more apt to permit the escape of the insects when once in than a narrower one. In hopping, the more perpendicular the direction the insects must take, the shorter will be the distance reached. Of course, the wider the ditch, if it be correspondingly deep, the more effectual will it prove. In exceptional cases, when the locusts are nearly full grown and the wind is high, so as to assist them, even the two feet ditch loses much of its value.

"Next to ditching, the use of nets or seines, or converging strips of calico, or any other material, made after the plan of a quail net, has proved most satisfactory. By digging a pit, or boring a post auger hole 3 or 4 feet deep, and then staking the two wings so that they converge toward it, large numbers of the locusts may be driven into the pit after the dew is off the ground. By changing the position of this trap, much good can be done when the insects are yet small and huddled in schools. But all modes of bagging, netting, crushing with the spade or other flat implements, and burning, which can be employed to good advantage when the insects first begin to hatch, become comparatively useless when they begin to travel in concert over wide stretches of land. The same may be said of all the mechanical contrivances to facilitate the destruction of the insects; they are useful if used in concert in a given neighborhood soon after the young hatch, but subsequently do not compare to ditching. There are a number of contrivances that have been more or less successfully used, but we cannot treat of all of them in detail. We shall, rather, at this time, content ourselves with descriptions of a few, which will illustrate the principles to be kept in view. Those used in Minnesota, so far as we can learn, are applications of one principle, namely, an open-mouthed bag, dragged by hand or horse power. We have seen a very large one that would take from eight to twelve bushels of pupæ per day; but this was after the insects had been pretty effectually fought by burning and otherwise. It was very effective. Its owner proposes to place his whole dependence on it next year. It had one addition over others that we think valuable. It ran back 10 feet or more to a bag, and near the rear end two or three square feet of cloth had

been cut out and replaced by wire gauze. This gave a chance for the air to draw through, and as the locusts worked toward the rear end they made toward the light shining through the wire. This machine was rigged on cart wheels, and the only expense was in getting three long poles from the woods, and in purchasing about forty yards of cotton muslin.

"Major J. G. Thompson, of Garden City, Minn., has used with satisfaction a net made as follows:

"Two pieces of common batten about 16 feet long were used as framework for the mouth of the net, one for the bottom and one for the top. From the end of the bottom piece a wooden shoe of the same material ran back about 6 feet to steady the trap and serve as a runner. To the rear end of this shoe a similar piece was fastened by a hinge, and ran forward and was fastened to the top piece of the frame, so that the mouth of the trap would open and shut like a jaw. To hold the mouth open, two short upright posts were fastened to the top piece by a hinge, and rested upright upon the bed-piece. The net itself was made of cotton cloth for the bottom, and the top was made of mosquito netting. The mouth of the net extended 16 feet from one side of the trap to the other, and the net ran back about 6 feet to a point with a hole at the end to let out the insects collected. A boy ten years old can draw one end of this net, and by the use of it Major Thompson saved one piece of wheat."

"Similar machines have been drawn by horses hitched to each side of the trap, being 12 to 16 feet apart. The horses serve the purpose of driving the locusts inward toward the mouth of the net. There have been many forms of these machines, but all on the same general principle. In Colorado, also, machines have been used to good advantage, most of them having for their object the burning of the young insects. Mr. J. Hetzel, of Longmont, uses a burner drawn by horses. It is 12 feet long, 2 to 2½ feet wide, and made of iron, set on runners 4 inches high. An open grate on the top of the runners is filled with pitch pine wood, and a sheet covers the grate to keep the heat down. The grate is generally made with a network of heavy wire, such as telegraph wire. Two men and a team will burn 10 to 12 acres a day, and kill two thirds of the insects, but it requires a hot fire. Mr. C. C. Horner gives in the *Colorado Farmer* the following more detailed description of a machine which works on the same principle:

"It consists of three runners made of 2x4 scantling 3 feet in length, to be placed 6 feet apart, making the machine 12 feet wide, runners to be bound together by two flat straps or bars of iron (the base being 12 feet long). Across the top, bars of iron hold the runners firmly together and form a frame across which wire can be worked, to make a grate to hold fire. The upper part of the runners should be hollowed out so that the grate may glide along within 2 inches of the ground. A sheet iron arch should be set over this grate to drive the heat downward. This machine is very light, and can be worked with one horse. Pitchwood is best adapted to burning, and can be chopped the right length and size and left in piles where most convenient when needed. This machine is intended to be used when the little 'hoppers' just make their appearance along the edge of the grain, going over the ground once or twice each day, or as often as necessary to keep them killed off. The scorching does not kill the grain, but makes it a few days later. This is certainly the cheapest manner of getting rid of this pest, as well as the most effectual."

"Mr. Rufus Clark, of Denver, according to the same paper, uses a piece of oilcloth 9 to 12 feet long and 6 feet wide. One side and each end are secured to light wooden strips by common carpet tacks, and the corners strengthened by braces. The oilcloth is smeared with coal tar, purchased at the Denver gas works at \$7.50 per barrel, and the trap is dragged over the ground by two men, a cord about 10 feet long being fastened to the front corners for that purpose. The entire expense of the 'trap' is about \$3.50; and as it is light and easily handled, it will be found serviceable on small as well as large farms. Zinc, instead of oilcloth, has also been used for the same purpose. When the insects are famishing, it is useless to try and protect plants by any application whatever, though spraying them with a mixture of kerosene and warm water is the best protection we have tried, and will measurably answer when the insects are not too numerous or ravenous.

"The best means of protecting fruit and shade trees deserve separate consideration. Where the trunks are smooth and perpendicular they may be protected by whitewashing. The lime crumbles under the feet of the insects as they attempt to climb, and prevents their getting up. By their persistent efforts, however, they gradually wear off the lime and reach a higher point each day, so that the whitewashing must be often repeated. Trees with short, rough trunks, or which lean, are not very well protected in this way. A strip of smooth, bright tin answers even better for the same purpose. A strip 3 or 4 inches wide brought around and tacked to a smooth tree will protect it, while on rougher trees a piece of old rope may first be tacked around the tree and the tin tacked to it, so as to leave a portion both above and below. Passages between the tin and rope or the rope and tree can then be blocked by filling the upper area between tin and tree with earth. The tin must be high enough from the ground to prevent the 'hoppers' from jumping from the latter beyond it; and the trunk below the tin, where the insects collect, should be covered with some greasy or poisonous substances to prevent girdling. This is more especially necessary with small trees, and kerosene or whitewash having Paris green mixed with it will answer as such preventives. One of the cheapest and simplest modes is to encircle the tree with cotton batting, in which the insects will entangle their feet, and thus be more or less obstructed. Strips of paper covered with tar, stiff paper tied on so as to slope roof fashion, strips of glazed wall paper, and thick coatings of soft soap, have been used with varying success; but no es-

toppel equals the bright tin. The others require constant watching and renewal, and in all cases coming under our observation some insects would get into the trees, so as to require the daily shaking of these morning and evening. This will sometimes have to be done, when the bulk of the insects have become fledged, even where tin is used, for a certain proportion of the insects will then fly into the trees. They do most damage during the night, and care should be had that the trees be unloaded of their voracious freight just before dark. Most cultivated plants may be measurably protected from the ravages of these young by good cultivation and a constant stirring of the soil. The young have an antipathy to a loose and friable surface, which incommodes them and hinders their progress, and they will often leave such a surface for one more hard and firm. Finally, though insisting on ditching and the digging of pits, as, all things considered, the best and most reliable insurance against the ravages of the young locusts, we would urge our farmers to rely not on these means alone, but to employ all the other means recommended, according as convenience and opportunity suggest. Another method of destroying the young has been proposed and to a certain extent adopted. It promises, if carried out effectually, to be of much advantage. It is to protect the prairie grass from fires until spring, and, after the bulk of the eggs are hatched, to simultaneously burn over the entire neighborhood, township, or county, or as far as the combination may extend. This requires concerted action and considerable watchfulness, but if carried out rigidly will destroy a very large number of insects, and has the advantage of being inexpensive. It is inapplicable on the cultivated grounds, but applies to the areas where the other measures are least effective.

"One of the most effectual means of destroying the young locusts, and one which is too often overlooked because its effects are not so directly apparent, is the preservation and multiplication of the native birds. Without undertaking at this time to specify the species which should be especially protected, and about which there is yet some difference of opinion, we feel warranted in stating that until the useless species in this respect are distinguished from those that are beneficial, it is best to protect all insect-eating birds; and if the laws of the State are insufficient for this purpose, let communities, townships, and counties use all their lawful powers therefor. Chickens, turkeys, and hogs devour locusts in immense quantities, and thrive during years of locust invasion or whenever these insects abound. Prairie chickens and quails devour them with avidity, and even hunt for their eggs; swallows and blackbirds pursue them unrelentingly; the little snow birds devour great quantities of eggs when these are brought to the surface by the freezing and thawing of the ground, and the same may be said of almost all birds inhabiting the western country in winter. The good offices of birds were everywhere noticed in 1875. Professor F. H. Snow, of Lawrence, Kan., found the young locusts in the gizzards of the red-headed woodpecker (*melanerpes erythrocephalus*), yellow-billed cuckoo (*coccyzus americanus*), cat bird (*mimus carolinensis*), red-eyed vireo (*vireo olivaceus*), great-crested fly-catcher (*myiarchus cinericeps*), and crow blackbird (*quiscalus versicolor*), species that had not been noticed to feed on them before. The shrike or butcher bird impales them on to thorns and other pointed substances; and a number of other birds, as well as reptiles, such as toads, frogs, and snakes, feed upon them. We therefore strongly recommend the raising of as large a number as possible of hogs and poultry, both as a means of utilizing and of destroying the young locusts."

The States of Missouri, Kansas, and Minnesota have passed laws granting bounties for capturing and destroying, or otherwise preventing the increase and ravages of the grasshopper.

The Effect of Tobacco on the Human System.

In the fourth annual report of the Michigan State Board of Health, Dr. Scott relates something new in the influence of tobacco on the human system, as follows:

"There has come under my notice for several years, but more particularly during the last two years, a kind of rheumatic condition of the walls of the chest. The patient complains of a dull heavy pain in the chest walls. The disease in a large majority of cases is confined to the left side. The pain is circumscribed and limited to a space of not more than two inches in diameter, just below and a little to the left of the left nipple. At times the pain is very severe, and always constant day and night, when the patient is awake. I have investigated the disease to some extent, and find it to be more common among tobacco users, especially those who use the weed to excess. Patients suffering from this complaint invariably come to their physician with the belief that they have heart trouble. I have not found signs of organic lesion in any of the cases that I have examined, but there does exist in some of them what might be called 'irritable heart.' I am convinced that the greater number of these cases are the result of intemperance either in the use of tobacco or other stimulants, for the reason that, when the patient abstains from the use of them for a short time, his pain ceases and his condition improves. In one case, where the patient abstained from the use of tobacco for thirteen months, the pain entirely ceased; but at the end of this period the gentleman recommenced the use of tobacco, and after three weeks' use the old pain returned with all its severity. I am certain that quite a number in this vicinity are receiving treatment for heart disease, when, if they would reform in tobacco using, they would speedily recover."