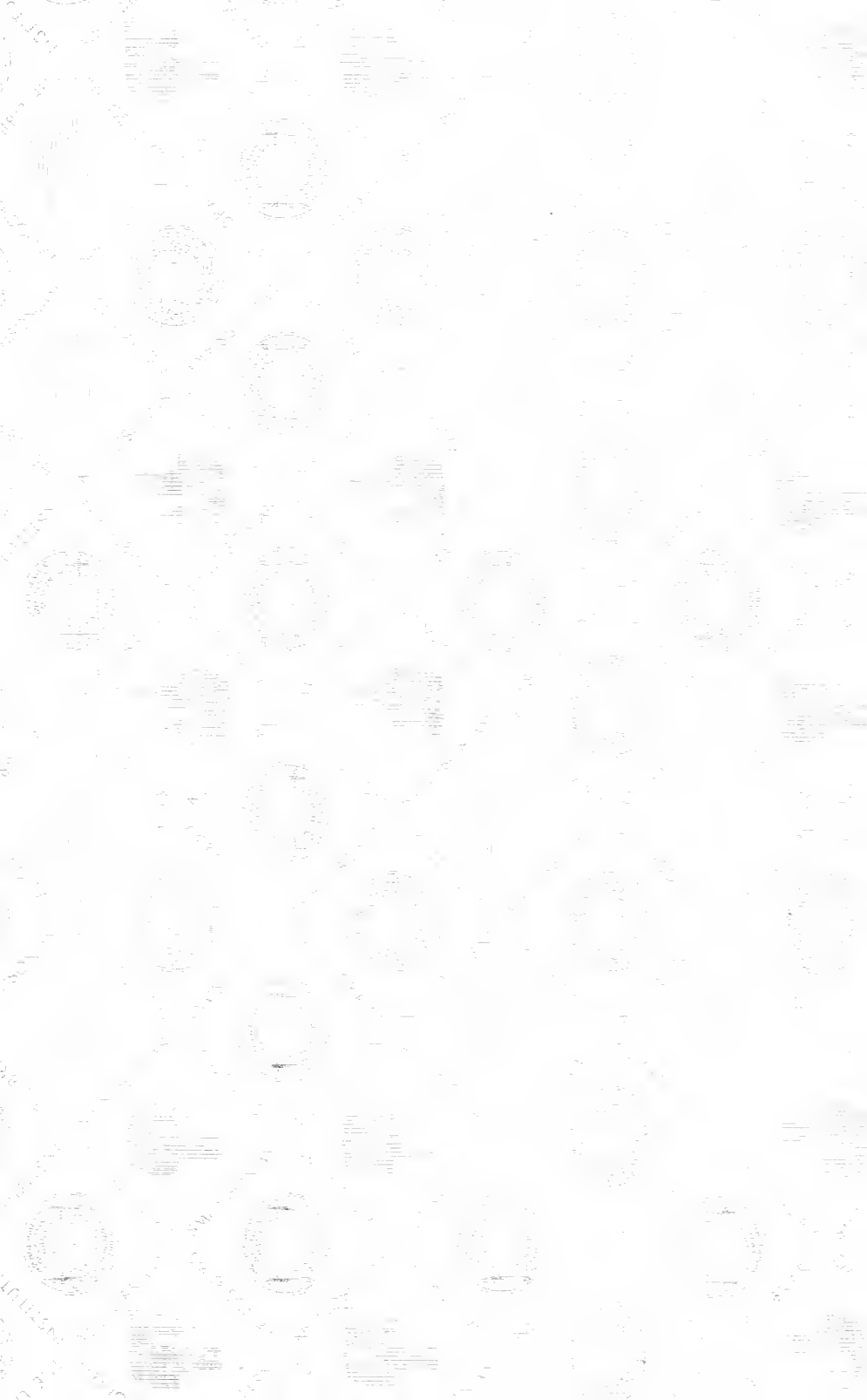


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UNIVERSITY OF KANSAS,
LAWRENCE.

BULLETIN

OF THE

DEPARTMENT OF ENTOMOLOGY.

Scale Insects
Injurious to Orchards.

JANUARY, 1898.

TOPEKA :
J. S. PARKS, State Printer.
1898.

DEPARTMENT OF ENTOMOLOGY,
UNIVERSITY OF KANSAS.

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SCALE INSECTS

INJURIOUS TO ORCHARDS.

AN ACCOUNT

OF

SOME SCALE INSECTS

LIABLE TO BE INTRODUCED WITH SHIPMENTS OF
YOUNG TREES.

BY

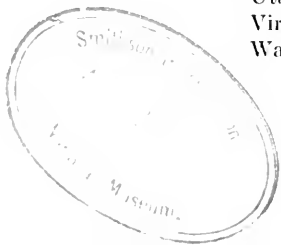
S. J. HUNTER.

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CONTENTS.

	PAGE.
INTRODUCTION.....	3
COCCIDIE, OR SCALE INSECTS.....	5
THE SAN JOSE SCALE.....	7
Its Economic Importance.....	7
Plants Affected.....	9
Appearance of Infested Plants.....	9
Life-history.....	10
Descriptions.....	15
How Disseminated.....	19
Present Distribution.....	20
Remedies.....	21
THE CHERRY SCALE.....	24
Food Plants.....	24
Life-history.....	24
Distribution.....	24
Descriptions.....	24
Remedies.....	25
THE OYSTER-SHELL BARK-LOUSE.....	25
Distribution.....	25
Food Plants.....	25
Life-history.....	25
Descriptions.....	26
Remedies.....	26
RECOMMENDATIONS TO HORTICULTURISTS IN KANSAS.....	27
LEGISLATION.....	28
California.....	28
Colorado.....	31
Kentucky.....	34
Louisiana.....	37
Michigan.....	38
Maryland.....	41
North Carolina.....	44
Ohio.....	48
Oregon.....	52
Pennsylvania.....	53
Utah.....	56
Virginia.....	57
Washington.....	59



575. - 74

INTRODUCTION.

It is the intention in this publication to deal with a group of insects which have been the subject of numerous inquiries and have heretofore received no special attention in Kansas. The reason for this, doubtless, is that they have not been known to exist in alarming numbers in the state. While the present information upon the subject contains no knowledge of their presence within the state, it is not sufficient evidence of their absence. Other states believing them to be absent or present only within small limits have been surprised and alarmed when, upon investigation, they ascertain the large areas infested and amount of damage done. At the request of the owners, I have examined a number of nurseries in this state and found no forms of injurious scale insects present. The statement of Prof. F. M. Webster, state entomologist of Ohio, that no scientist can be positive of the absence of isolated colonies without a microscopic examination of every twig, branch and trunk of the trees inspected, carries with it much weight. While I cannot assume that the state is entirely free from these scale pests, and while I do not desire to give cause for undue alarm, I can, however, say that from the experiences of other states Kansas is very likely to suffer from these, the most pernicious enemies of horticulturists, unless strict precautions are observed. Upon the principles, then, that to be forewarned is to be forearmed, and that a knowledge of prevention is more valuable than application of curatives, are based the reasons for this article.

I am under many obligations to Chancellor F. H. Snow for valuable suggestions offered during preparation of this paper: to Hon. Jno. E. Frost, land commissioner of the Atchison, Topeka & Santa Fe railway, and Hon. E. R. Washburn, president of the Kansas City, Fort Scott & Memphis railway, for material assistance rendered in securing data upon this subject.

JANUARY 18, 1898.

S. J. H.

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COCCIDÆ, or SCALE INSECTS.

Of all the insects there is no group that is of greater interest to the horticulturist than the family which includes the forms popularly known as scale bugs, mealy bugs, and bark lice, a family classed by entomologists under the family name Coccidæ.

Insects are divided into orders, then suborders, families, subfamilies, genera, and species, classifications being based upon structure and life-histories. A species is a single individual or group of individuals with essential characteristics similar; a genus is a group of different species having many fundamental characteristics in common: a family is a collection of allied genera; a suborder embraces closely related families, and an order includes kindred suborders.

The insects of the order Hemiptera, to which these scale pests belong, are distinguished by their mouth-parts or beaks, and manner in which they mature. All Hemiptera take their food in a liquid form through a tube or beak fitted for piercing and sucking, and become adults without passing through the four stages — egg, larva, pupa, adult — known as complete metamorphosis. They have, with few exceptions, an incomplete metamorphosis — grow through a series of molts from the egg state to maturity, maintaining all the while much the same form.

The Hemiptera contains three suborders, the Heteroptera, Parasita, and Homoptera. The Heteroptera are insects that have wings of unequal thickness, the base being heavier than outer extremity of wing. To such belong the chinch-bug, squash-bug, and box-elder bug. The Parasita include certain parasites upon mammals commonly known as lice. The Homoptera have wings of equal thickness throughout. The cicadas, frequently called locusts and well

known by their songs, are good examples. Not all of this suborder are so conspicuous for size or music. In this group there are nine families, the least of which, in numbers, is by no means the Coccidæ, which comprise the scale insects, mealy bugs, bark lice, and many others with no familiar names. T. D. A. Cockerell, in a recent check-list of the family, enumerates almost one thousand described species of scale insects. Though classed together, they are quite irregular in many respects. The female is wingless, and conforms to its order in having incomplete metamorphosis. The male is winged, possesses but one pair of delicate transparent wings, the second pair replaced by hooked balancers or halteres, resembling in this respect the flies, and passes through the four stages of growth before mentioned as complete metamorphosis. The inconspicuous size, remarkable tenacity of life, and high reproductive powers of these insects make them insidious and formidable enemies of trees, both deciduous and evergreen, consequently demanding close observation and a thorough knowledge of their actions from the successful horticulturist.

Those wholly unacquainted with any of the forms of these insects can find some of the less injurious species by looking upon the long-spined pine tree (*Pinus strobus*), a favorite tree among the ornamental trees upon lawns and along driveways, and upon the twigs and outer branches of the elm trees. Search upon the willow close up under the winter buds may reveal the presence of another species. The form upon the pine will be more readily observed upon the green spines as a small whitish oblong scale with a very small light brown spot at one end. The one on willow is much the same, and belongs to the same genus, *Chionaspis*. On elm are to be found the naked scales, so called from freedom from cottony covering. These are larger, more nearly round, and favor the bark of the tree in color.

In this paper the life-history given and species discussed will be confined to the most destructive forms, the subfamily *Diaspinæ*, or armoured scale insects. The females are protected by a waxy secretion which renders them

free from many attacks and impervious to several fluid insecticides. The scale of this class most to be dreaded is the one known as San José, or pernicious scale, *Aspidiotus perniciosus* Comstock, more generally known by the former name, the San José scale. It stands first among these pests in its destructive powers, so it is taken first.

THE SAN JOSÉ SCALE.

Its Economic Importance.

While it is not desirable to create unnecessary alarm, yet facts plainly stated may enable those not fully familiar with this pest to realize the full extent of its ravages. The following is taken from the Kansas City *Star* of December 17, 1897:

“GRAND RAPIDS, MICH., December 17.—Clinton D. Smith, the San José scale inspector, has returned from Ottawa county, where he found a 15-acre orchard badly infested with the disease. The orchard contains 1,200 trees, and all of them will have to be destroyed. The loss will bankrupt the young farmer who owns them. Other orchards in the neighborhood will be examined.”

Prof. M. Webster, of Ohio Agricultural College,¹ says:

“Of all scale insects at present known in America this is the most to be feared, on account of its deadly effect on the trees, the rapidity with which it increases, and the difficulty in killing it, even with applications of mixtures that would prove fatal to any others of our scale insects, though used at one-half or one-third the strength. It is not over-drawing the seriousness of the matter in the least to say, that it is the worst and most to be feared insect pest that this country has ever witnessed. I say this from personal acquaintance with its effects, as shown in Ohio orchards, where this pest has been introduced. I am satisfied that a tree, starting with a half-dozen young females ready to give birth to young, if nothing is done to stay their ravages or prevent unrestricted increase, will be killed within four or five years, no matter what the soil may be, or how vigorous the tree may have been at the commencement of that period. From records kept at the department of agriculture at

¹“SCALE INSECTS,” in Indiana Horticultural Report, 1896.

Washington of isolated females, it has been estimated that the progeny of a single female during a single season may amount to the enormous number of 3,216,080,400 individuals. Of course, it is not supposed that all of the young of various broods will survive, but even were half of them destroyed through natural causes my estimate is a long way within bounds."

And again, from another source: ²

"There is perhaps no insect capable of causing greater damage to fruit interests in the United States, or perhaps the world, than the San José, or pernicious, scale. It is not striking in appearance, and might often remain unrecognized, or at least misunderstood; and yet so steadily and relentlessly does it spread over practically all deciduous fruit-trees — trunk, limbs, foliage, and fruit — that it is only a question of two or three years before the death of the plant attacked is brought about, and the possibility of injury, which, from experience with other scale enemies of deciduous plants, might be easily ignored or thought insignificant, is soon startlingly demonstrated. . . ."

Its importance was early recognized by Professor Comstock, who in first describing it in 1880 gave it the suggestive name of *perniciosus*, saying of it that it is the most pernicious scale insect known in this country. The Los Angeles horticultural commission reported in 1890 that if the pest be not speedily destroyed it will utterly ruin the deciduous fruit interests of the Pacific coast.

Its capacity for evil has been more than demonstrated since its appearance in the East, and it has been, if anything, more disastrous to the peach and pear orchards of Maryland, New Jersey, and other eastern and southern states, than in California and the West. We are therefore justified in the assertion that no more serious menace to the deciduous fruit interests of this country has ever been known. There is no intention here to arouse unnecessary alarm, but merely to emphasize the importance of taking the utmost precautions to prevent its introduction into new localities, and to point out the extreme necessity of earnest effort to stamp it out where it has already gained a foothold.

²Howard and Marlatt, Bulletin No. 3, N. S., U. S. Dept. Agr., Div. Ent.

Prof. J. M. Stedman, state entomologist of Missouri, says:³

“One year ago I thought we could have got rid of it in the state for \$1,000. I think now it will take \$1,000,000. In fact, I think we will have to fight it from now on.”

These extended extracts are given to impress emphatically the destructive possibilities of the subject in hand and to show the value of special attention to the pest at this time in our own state.

Plants Affected.

The San José scale attacks nearly all deciduous fruit-trees and fruit-bearing shrubs. It attacks mainly the rosaceous trees and bushes. The range of its food plants will be better shown, however, by the following list prepared by Mr. Howard,⁴ and published in technical series No. 6: Apple, crab-apple, quince, pear, Bartlett pear, dwarf Duchesse pear, plum, Japan plum, Satsuma plum, *Prunus pissardi*, *Prunus maritimi*, peach, apricot, almond, cherry, Rocky Mountain dwarf cherry, currant, black currant, *Citrus trifoliata* (this should have been *albopanetatus*), Osage orange, grape, elm, cottonwood, European linden, American chestnut, *Pyrus japonica*, *Catalpa bignonioides*, walnut, Japan walnut, loquat, red dogwood, June-berry, rose, sumac, *Photinia glauca*, Carolina poplar.

Reports of trees exempt from attack should be well considered. Varieties of fruits formerly considered free have since proven nourishing hosts for this parasite.

Appearance of Infested Plants.

The scale attacks all portions of the tree — limbs, trunk leaves, and fruit.

LIMBS AND TRUNK. The scale in some cases, such as pear, prefers the younger growth found at the ends of branches and twigs. Upon peach the older growth is equally preferred. Upon the more recent growth, the scale

³In *Western Fruit Grower*, December, 1897.

⁴These are the plants upon which the scale has been actually seen at the division of entomology in Washington.

is surrounded by a narrow, reddish band. This, though not characteristic of this species only, is one of the first outward marks to be observed around the scale of the females. When a tree becomes badly infested the scales frequently overlap each other and present an outward appearance similar to that produced by dusting the tree with ashes. Under a hand lens, the appearance presented to the writer is much like that given by innumerable minute conical sea-shells sticking to the bark. Upon young twigs the layer of tissue between the outer bark and wood proper becomes a dark red or purplish. The rings thus formed, when scales are not closely situated, is the more striking. This feature should not be overlooked in examination for possible cases of the scale.

If the tree survives, the parts attacked become knotty and irregular. Young peach trees will usually survive the scale only two or three years. Pears frequently die at once or maintain a feeble existence for a very limited period.

LEAVES are not so liable to attack. When scale is very numerous, however, one or more rows may be found upon upper side of midrib. The infested leaves turn purplish brown.

FRUIT is frequently attacked, and when badly covered by the scale becomes unshapely, rough, and pitted. If it does not fall prematurely, it is always rendered unsalable. Its effects are especially noticeable upon pears. See fig. 1.

Life-History.

This term, as applied to insects, refers to the manner of growth from the egg stage to maturity. The life circle of this scale has received much attention from Mr. Pergande, of the division of entomology at Washington, and it is from his account that this is in the main taken.

Like all armoured scales, this one spends, save a few hours, its whole existence under the protection of a waxy scale. The short period of active life of the female is passed as a small creeping, immature insect seeking a place to insert its long, slender fibrillæ composing its beak into the tissue of the plant, to remain stationary ever afterwards,

withdrawing sustenance, and using the greater part of this in maturing its progeny. The male passes through a third or pupa stage, a quiescent period, from which he emerges with two small transparent wings. These greatly aid him

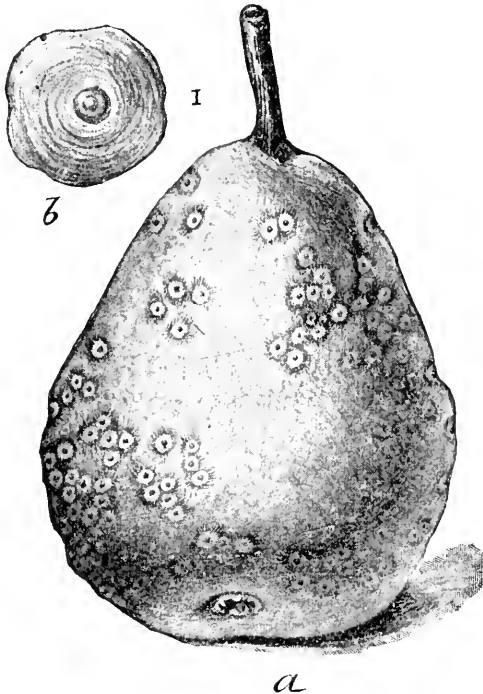


FIG. 1.—San José scale: *a*, pear, moderately infested—natural size; *b*, female scale—enlarged. (After Howard, Cir. No. 3, 2d ser., Div. Ent., Dept. Agr.)

during his brief existence in finding his mates. After his life functions are performed he dies, and his progeny live after him to commit depredations and produce again in kind.

Let us take up the circuit of life late in autumn, after cold weather has caused a temporary cessation of activity. The insect, not yet full grown, passes the winter protected by a waxy scale. In early spring, the exact date varying with the latitude, the males come out from under their winter cover. About May the females mature and

begin to produce young, and continue giving birth to young for about six weeks. Then the over-wintered females die. In the manner of bringing forth young, these differ from most insects. Generally the female insect deposits eggs; these sooner or later hatch, and the young follow their characteristic stages of growth. In this scale insect, instead of laying eggs, the female gives birth to young directly. It can be readily seen that this places these insects

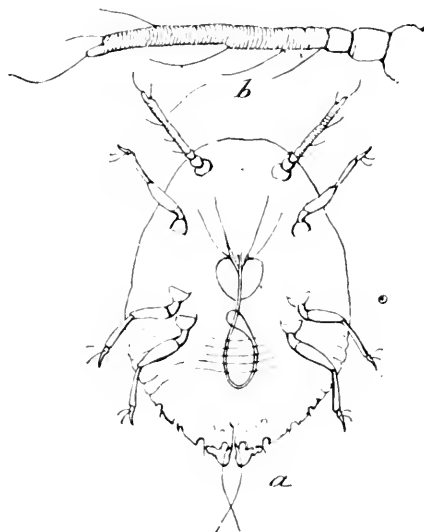


FIG. 2. San José scale: *a*, young larva—greatly enlarged; *b*, antenna of the same—still more enlarged. (After Howard, Cir. No. 3, 2d ser., Div. Ent., Dept. Agr.)

among the most prolific forms of the order. In the development from the egg stage time is consumed, and the unprotected, sometimes conspicuous, eggs of insects are liable to destruction, since they form food for birds and other insects. These two important checks to increase are not met with in the growth of this scale. It is an active force from birth until its body is protected by a well-suited armor; then it begins to withdraw the life fluid of the plant.

Soon after birth the young insect comes from under the

parent scale, creeps around over the plant looking for a suitable place to locate. When this is found, the young scale, in the larval stage, settles down and slowly forces its beak through the bark, and simultaneously, or even before this time, forms a waxy protection upon its back.

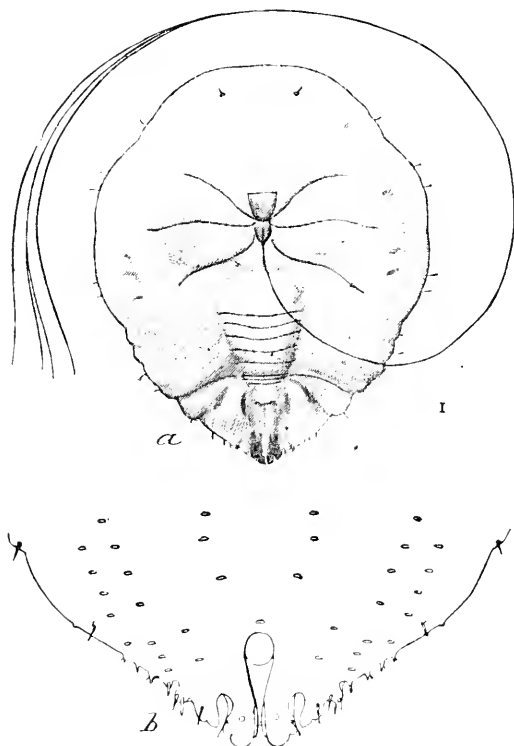


FIG. 3.—Adult female, before development of eggs: *a*, ventral view, showing very long sucking setae; *b*, anal plate, showing characteristic ornamentation of edge—greatly enlarged. (After Howard and Marlatt, Bul. No. 3, N. S., Div. Ent., Dept. Agr.)

Male and female scales are exactly alike until twelve days after birth, when first molt occurs. After this the two sexes are entirely dissimilar. The males are larger and have large purple eyes, but the females have lost their eyes. Both have lost their legs and antennæ. The male

scale is elongate; the female scale is circular. Eighteen days after birth the male scale enters the pupæ stage, and about six days later backs out from under the scale as a delicate two-winged, fly-like insect with long feelers and six legs, another set having replaced the one lost. It is orange in color. Thirty days from birth the females are full-grown, and from three to seven days later begin to produce young, making in all about 40 days as the period required for bringing a generation to maturity.

One of the questions most frequently asked the writer is concerning number of eggs or young brought forth by a single female. A series of experiments was performed by the department at Washington, in which one overwintered female was placed upon each of seven trees, and when their offspring were mature all were removed save one fertilized female on each tree, and the same process repeated until the cold weather closed the breeding season. From accurate observations upon these experiments, it was estimated that if all the young of one overwintered female lived, the increase from this one and her progeny for the one season would be 3,216,080,400. These would be the descendants from a single insect in a single season, if all fulfilled their functions in life. While it is hardly to be expected that all should live, yet, granting that a goodly number should perish prematurely, even then it is readily seen that enough survive to explain the sudden destruction of trees attacked. As before stated, the reproducing period of the adult female is about six weeks. Nine to ten young are brought forth every 24 hours, making a total production of about 400 individuals from one insect. The fact that all are not born at the same time is another point in their favor and against easy means of destruction. Many of the older washes used are effective only upon the active larva; hence it is readily perceived that applications of such washes to be successful should be applied almost daily.

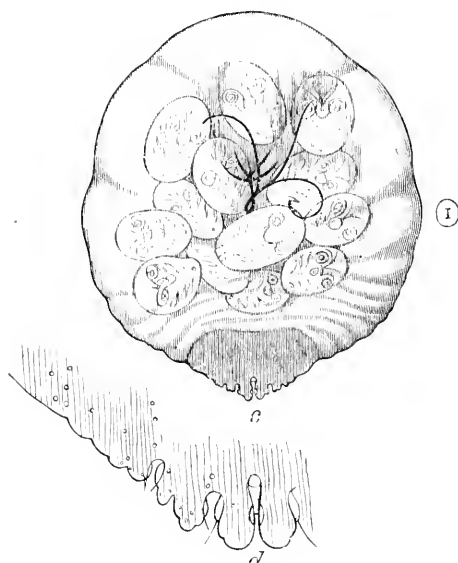


FIG. 4.—San José scale: *c*, adult female, containing young—greatly enlarged; *d*, anal fringe of same—still more enlarged. (After Howard and Marlatt, Bul. No. 3, N. S., Div. Ent., Dept. Agr.)

Descriptions of the San Jose Scale.⁵

(*Aspidiotus perniciosus* Comstock.)

The descriptions given by Howard and Marlatt are here-with reproduced.

SCALE OF FEMALE. The scale of the female is circular, very slightly raised centrally, and varies in diameter from 1 to 2 mm ($\frac{3}{100}$ to $\frac{2}{100}$ inch, averaging about 1.4 mm ($\frac{55}{100}$ inch)). The exuvia is central or nearly so. The large, well-developed scales are gray, excepting the central part covering the exuvia, which varies from pale to reddish yellow, although in some cases dark colored. The scale is usually smooth exteriorly or sometimes slightly annulated, and the limits of the larval scale are always plainly marked. The natural color of the scale is frequently obscured by the presence of the sooty fungus (*Fumago salicina*).

SCALE OF MALE. The mature male scale is oblong oval, nearly twice as long as wide, and averaging in length about half the diameter of the female scale. The position of the larval scale is marked

⁵ Bulletin No. 3, N. S., Div. Ent. Equivalents in inches are inserted by the writer.

by a nipple-like prominence located between the center and the anterior margin of the scale. The scale of the male is usually darker than of the female, sometimes black, but often gray, the larval scale covering the exuviae very frequently light yellow as with the female. Not uncommonly the circular scale, formed prior to the first molt, is black, while the later additions, giving its oblong shape, are gray.

EGG. The egg is never (or rarely) extruded as such by the female, and as it exists within the body of the mother is a mere amniotic membrane, and the forming embryo showing through gives it a yellowish-white color. The embryo with the envelope measures about 0.2 mm long ($\frac{1}{5000}$ inch) by 0.1 mm ($\frac{1}{10000}$ inch) wide.

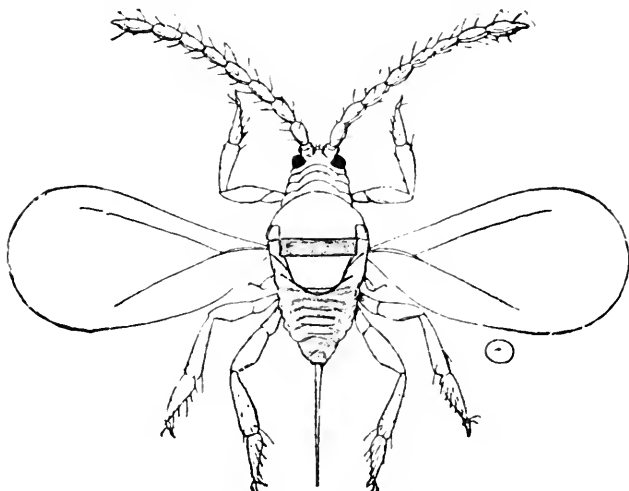


FIG. 5. San José scale: male adult — greatly enlarged. (After Howard, Cir. No. 3, 2d ser., Div. Ent., Dept. Agr.)

NEWLY HATCHED LARVA. The young larvae of both sexes are alike, and are pale orange in color with long oval bodies. They measure in length about 0.24 mm ($\frac{1}{4166}$ in.) by 0.1 mm ($\frac{1}{10000}$ in.) in width. The sucking bristles are normally doubled on themselves, but when unfolded are nearly three times the length of the body. The antennae are apparently five-jointed, the last two joints being much longer than the others, slender, subequal in length, and both finely and distinctly annulated. The last joint bears a small nipple-like projection near the tip. The head is somewhat concave in front, and the eyes are nearly transparent and slightly purplish. The terminal segment of the abdomen foreshadows in structure the plates and spines of the adult female. The large central plates each terminate in a long hair. The tarsus is represented by apparently a single,

strong, slightly curved claw. The tip of the tibia bears exteriorly two rather long capitate hairs, and two similar hairs project also from the inner extremity. Other details of structure are shown in the illustration.

LARVA OF THE SECOND STAGE. After the first molt the difference in the sexes becomes apparent, although the covering scales are still identical. The female insects are somewhat smaller than the males at this stage. The eyes, legs, and antennæ in this sex have entirely disappeared. The form is almost circular, flattened. The color is yellow, with irregular transparent spots appearing in different parts of the body.

The males are somewhat larger than the females, elongate, pyriform. The eyes are prominent, purple in color. The legs and antennæ, as with the females, are wanting. The general color of the body is yellow, with the irregular transparent spots noted in the case of the female. The greatest diameter in both sexes is less than one-half a millimeter, and in the characteristics of the terminal segment both agree, practically, with the adult female.

MALE PRO-PUPA. With the second molt the male assumes a form foreshadowing the true pupa, which may be called the pro-pupa. The form is elongate oval; length, 0.5 mm ($\frac{19}{100}$ in.) The color is very pale yellow, with the antennæ, limbs, and wing-pads, and two or three terminal segments of the abdomen, colorless. The legs and antennæ, as noted, have reappeared, and also prominent pads foreshadowing the wings of adult. The eyes are dark purple and placed close together. The antennæ are very stout, and curved closely around the edge of the body as far as the anterior legs, where they bend inward. The wing-pads are stout and almost entirely cover the abdomen. The terminal segment is still broad and flattened and bears two short spines, but the other characters have disappeared.

TRUE PUPA OF MALE. The true pupa resembles the previous stage, except that the members are longer and slenderer, and the prominent anal style has appeared. The pupa is pale yellow and purplish in color, darkest about the base of the abdomen, the head, antennæ, legs, wing-sheaths, and style being almost colorless and transparent. The eye spots are dark purple. The antennæ extend nearly to the middle femora, and are not curved under the body as formerly, but are applied close to the sides with the apex free. The anterior legs are held forward, reaching slightly beyond the eyes. The middle femora rest transversely to the body, projecting somewhat beyond the margin of the abdomen, while their tibiæ form with them a right angle and reach nearly to the apex of the hind femora. The latter incline posteriorly, while the hind tibiæ are applied close to the sides of the body, except toward the tip, and reach nearly to the base of the style. The style is rather stout, conical, obtusely pointed at tip, and about as long as posterior tibiæ. Length 0.8 mm, ($\frac{31}{100}$ in.) including style, which measures about 0.15 mm ($\frac{5}{100}$ in.)

MATURE MALE. The general color is orange with a faint duski-ness on the prothorax. The head is somewhat darker than the rest of the body. The eyes are dark purple — almost black. The anten-nae are yellow, somewhat obscure or smoky. The legs and style are dusky, the latter paler than the former. The thoracic shield is regularly ovoid, compressed anteriorly, dusky in color, with margin brown, more distinctly so anteriorly: transverse band narrow, brown. Antennae 10-jointed, two basal joints shortest, second nearly globu-lar, inserted in the first: joints 4 and 5 subequal, longer than the others: joint 6 next in length, and joints 3, 7, and 9 shorter and sub-equal: joint 10 still shorter, conical. Antennae somewhat hairy and nearly as long as the body of the insect. Wings faintly dusky, iri-descent with yellow and green. Length of body about 0.6 mm ($\frac{23}{1000}$ in.); style, 0.25 mm ($\frac{1}{4000}$ in.)

FEMALE, THIRD STAGE. After the second molt the females still appear pale yellow as before, with various larger and smaller trans-parent spots around the border of the body. The form is nearly circular, with greatest diameter averaging 0.56 mm ($\frac{22}{1000}$ in.) The sucking bristles are very prominent and long — three times the length of the insect. The last segment in this stage has practically the characters of the mature female, as follows: There are two pairs of lobes, the terminal one largest and nearly three times as broad as the other lobes. The terminal lobes are rounded at the apex and are distinctly notched near the middle of the external edge. The second pair of lobes is smaller and narrower and is also notched externally. Between the first and second lobes on either side is a small spine and two or three such spines are just back of the second lobe, while back of these are three stout teeth, curving anteriorly. A still smaller blunt tooth sometimes occurs near the middle of the lateral margin. The segmentation of the body at this stage is quite distinct.

MATURE FEMALE. After reaching maturity the embryonic young are at first not visible, but later the body becomes filled with them. The mature female measures 0.8 mm ($\frac{31}{1000}$ in.) wide by about 1 mm ($\frac{33}{1000}$ in.) long.

In report of United States department of agriculture, Comstock first describes the female as follows: ⁶

“The body of the female is yellowish and almost circular in out-line; the segmentation is distinct, though not conspicuous. The last segment presents the following characters:

“There are only two pairs of lobes visible; the first pair converge at tip, are notched about midway their length on the lateral margin, and often bear a slight notch on the mesal margin near the tip. The second pair are notched once on the lateral margin.

“The margin of the ventral surface of the segment is deeply in-cised twice on each side of the meson; once between the bases of the first and second lobes and again laterad of the second lobe. On

⁶ Rept. U. S. Dept. Agr., 1880, p. 304.

each side of each of these incisions is a club-shaped thickening of the body wall.

“There are two inconspicuous simple plates between the median lobes, and on each side similar plates extending caudad of the first incision, three small plates serrate on their lateral margin caudad of the second incision, and the club-shaped thickenings of the body wall bounding it, and three wide prolongations of the margin between the third and fourth spines. These prolongations are usually fringed on their distal margins. There are also, in some, irregular prolongations of the margin between the fourth spine and the penultimate segment.

“The first and second spines are situated laterad of the first and second lobes, respectively; the third spine laterad of second incision: and the fourth spine about one-half the distance from the first lobe to the penultimate segment.”

How Disseminated.

The female scale, as previously stated, is wingless: hence is dependent solely upon more active agencies for the distribution of its species. These agencies might come under two classes: First, transportation from one locality to another, one state to another — in a word, places remote from each other; second, points close at hand, such as different trees in the same orchard or orchards in the same neighborhood. Under the first, transportation of nursery stock is the most effectual means. Here the insects may have lived before shipment and can exist in transit. No other single agency has been so potent in distributing this pest. In almost every instance the cause for first appearance in a state has been traced back to importation of young trees or cuttings from an infested region.

Fruit, such as pears, from infested localities carries with it this scale. By throwing the parings of such near the trees the young can readily creep up the trunks and locate at a suitable place to start a colony. Such fruit is by no means rare upon the markets.

Since the young insects or larvæ crawl only short distances, the second means of spread, that is, from tree to tree, must be brought about by outside forces. The wind may aid a little by blowing forms across from one tree to another. Birds and insects are the means here used successfully. The young larvæ will crawl upon the feet of birds or the bodies of other insects. Instances of the use of these means of conveyance have been observed.

Present Distribution.

The presence of this pest in the United States was discovered in 1870 in the San José valley, California. In 1873 it had become a serious menace to fruit raising in this part of California.

In 1886 or 1887 two New Jersey nurseries, desirous of securing a curculio-proof plum, introduced from San José, Cal., the Kelsey plum. These trees were infested, failed to thrive, and died from the attacks, but left the living scales to commit depredations then unthought of. Directly or indirectly from these shipments can be traced the present status of this pest in the East. It now exists in 25 states and 2 territories in the union. The geographical distribution can be more readily understood from the following:

List of localities in which the occurrence of the San Jose scale has been reported to date, November 3, 1897.

ALABAMA. Towns: Tuskegee. Counties: Marengo and Mobile.

ARIZONA. Tneson, and many localities in Salt river valley.

CALIFORNIA. Quite general over state.

CONNECTICUT. Counties: New Haven, Fairfield, Hartford, and New London.

DELAWARE. Many localities.

FLORIDA. Towns: De Funiak Springs and Orlando. Counties: Columbia and Baker.

GEORGIA. Counties: Mitchell, Worth, and Randolph. Towns: McIntyre and Tifton (Fort Valley and Marshallville districts, probably).

IDAHO. Towns: Lewiston and Middleton. Counties: Ada and Nez Perces.

ILLINOIS. Counties: Adams, Sangamon, Ogle, Shelby, Clarke, Wabash, St. Clair, Washington, Edwards, Randolph, and Pulaski.

INDIANA. Towns: Bartle and North Madison.

LOUISIANA. Audubon Park.

MASSACHUSETTS. Towns: Amherst, Cambridge, Bedford, and Rosindale. County: Plymouth.

MARYLAND. Towns: Neavitt, Chestertown, Riverside.

West River, Sharpsburg, Frederick, Still Pond, Mullikin, Linkwood, Charlton Heights. Counties: Prince George, Washington, Anne Arundel, and Montgomery. (List not complete.)

MICHIGAN. Counties: Allegan, Berrien, Ingham, Jackson, Kent, Oceana, Ottawa, Monroe, St. Joseph, Van Buren, and Wayne.

MISSISSIPPI. Counties: Oktibbeha and Jackson.

MISSOURI. Counties: Cole, St. Louis, Randolph, and Jackson.

NORTH CAROLINA. Counties: Moore and Buncombe.

NEW JERSEY. Nearly every county in the state.

NEW MEXICO. Towns: Las Cruces, Socorro, and Bernalillo. County: Doña Ana. Quite general in Mesilla valley.

NEW YORK. Counties: Orange, Queens, Suffolk, Tompkins, Seneca, and Dutchess.

OHIO. Towns: New Richmond, Silverton, London, Irville, Duncan Falls, and Neffs. Counties: Franklin, Hamilton, Madison, Muskingum, Belmont, Ottawa, and Licking.

PENNSYLVANIA. Towns: Atglen, Lewisburg, Waynesboro, Bristol, and Marietta. Counties: Montgomery, Lehigh, Franklin, and York.

TENNESSEE. Roane county.

TEXAS. Counties: Brazos, Kaufmon, DeWitt, Galveston, and Smith.

VIRGINIA. Towns: Charlottesville and City Point. Counties: Albemarle, Frederick, Westmoreland, Roanoke, Prince William, Fairfax, Franklin, Rockingham, and Pittsylvania.

WEST VIRGINIA. Towns: Wellsburg and Georgetown. County: Berkley.

WASHINGTON. Probably quite general over settled districts, especially in vicinities of Walla Walla and Tacoma.

Remedies.

NATURAL ENEMIES. Five insect forms have been found that spend part of their lives as parasites upon this scale. Several of the smaller beetles, popularly known as lady-birds, in the grub or larva stage as well as the adult form, prey upon these scales. Observations thus far show that

neither the parasitic nor predacious insect enemies will remove the responsibility of keeping this pest in check from the horticulturist.

ARTIFICIAL REMEDIES. Climatic conditions are an important factor under this head. Successful methods of treatment in California have failed in states farther east. As before stated, a knowledge of life-history shows that treatment in this section of country will vary with season of year. If applied when young are emerging, those exposed will be destroyed, while later broods will safely come forth.

WASHES OR SPRAYS. Applications, then, which are effective during winter months when all scales are in same stage, and when death to the individual means death to its progeny, are certainly the most to be desired. Such washes then shall be discussed. Many washes have been used. The effects of all have been noted upon the plant as well as upon the pest. It will suffice here to give the one which has proven the most satisfactory, and which happily is not the most expensive, nor the most difficult to apply. The most effective is the whale-oil-soap wash. Mr. Robert Emery, of Chestertown, Md., first called attention to its special merits against this scale, though previously recommended as a general wash against scales by Comstock.

COMPOSITION OF THE SOAP WASH. Two pounds whale-oil soap; one gallon water. Apply warm, thoroughly drenching the tree. (The best grade of whale-oil soap costs 4 cents per pound.)

TIME OF APPLICATION. Twice a year. (1) In fall, after foliage has fallen. (2) Just before blooming, in spring.

CAUSES FOR VARYING RESULTS. The destruction of insects may not be noticeable for several weeks after application. Time is required to allow solution to soak through waxy covering of scale. Should rainy weather follow the time of treatment, the results will not be so great. This, coupled with the fact that one application may not wet all parts of the tree, makes it necessary to give the tree two thorough drenchings, at times stated above. The strength

and quality of soap used has much to do with results attained. Whale-oil soap is far superior to any other kind. In this soap, however, there are different qualities. The soap, to be most suitable, must not at the given amount used become a glutinous, stringy mass upon cooling. Common soap and many of the fish-oil soaps will do this. It is not very difficult to secure the death of 75 to 90 per cent. of the scale. It is the remaining 10 to 25 per cent., which if allowed to survive will soon replace the fallen, that demands strong solutions and thorough application.

EFFECTS OF WASH.—*Upon Scale.* The young scale larvæ during growth are killed almost immediately; death to mature scale results slowly, due to time required for penetration of insecticide and the action of weather upon scales loosened by the wash. Two months are sometimes required to determine fully the exact results obtained.

Upon Tree.—The fall application increases vigor and growth of tree. The following year a heavier, brighter foliage appears, but the bloom and fruitage are noticeably less. In spring, at blooming time, no perceptible effects could be noticed from the wash.

GAS TREATMENT. Where large orchards must be treated or a number of orchards are quite generally infested, the work had better, as in California, be given by contract to parties owning complete apparatus and being familiar with best methods of application. This plan is highly advisable, since the deadly effects of the gas make its use by inexperienced persons extremely dangerous. In short, the treatment is as follows: The tree is covered by a tent made of blue or brown drilling, or eight-ounce duck painted or oiled to make air-tight. The gas generated beneath this tent is made from one ounce fused cyanide of potassium (58 per cent. pure), one ounce of sulphuric acid, and three fluid ounces of water to every 150 cubic feet of space to be fumigated. This treatment is rarely used against the San José scale except in case of nursery stock, where cyanide of potassium of much greater strength (98 per cent.) is used. On dormant nursery stock, the space of 150 feet may be re-

duced to 100 feet. It will be readily seen that nursery stock can be easily treated by removal from nursery, large quantities heeled in in small space, and, since leaves are removed and nature has clothed the tree for winter, a stronger gas will make the work even more effectual.

THE CHERRY SCALE.

(*Aspidiotus forbesii* Johnson.)

This species is closely allied to the San José scale, and might be mistaken for it. The outward characteristics that will probably enable the average observer to distinguish it from the San José scale is that the cherry scale inhabits the trunk of the tree, frequently seeking refuge under the loose bark of the tree, making it possible for it to exist for a long time unnoticed. The San José scale, on the other hand, prefers the twigs and outer branches. Figures showing the various stages would convey no information to the general reader additional to that obtained from observations upon the plates illustrating the San José scale. These specific differences are largely microscopic.

FOOD PLANTS. While it has not been found on as many plants as the San José scale, it is supposed that its food range is much the same. Mr. Johnson finds its favorite food to be the cherry; hence gives it the popular name of "Cherry scale."

LIFE-HISTORY. The life circle of this scale is much the same as the San José scale, except that the number of broods may be less.

DISTRIBUTION. Illinois, New Mexico and Kansas are the only points known to me. The fact that it has existed in Kansas in one locality (though the infested trees were all burned) is of great significance, since it is second in destructive power to the pernicious or San José scale.

DESCRIPTION.—*Scale of Female.* The general shape of the scale of the female is nearly circular, but it varies according to the position of attachment, as scales under a fold in the bark or on some uneven surface are very irregular in outline. The color is dirty grayish in fresh speci-

mens, but darker when dried. The exuviae are usually slightly to one side of the center and covered with excretion; the nipple-like prominence in rubbed specimens is reddish or yellowish brown, surrounded by a band a little darker than the margin. Scale rather convex, delicate, and easily torn when removed from fresh material. It varies considerably in size, the average diameter being about 2^{mm} ($\frac{8}{100}$ in.)

Scale of Male. The scale of the male is elongate oval, and is darker and not so delicate as the scale of the female. Nipple-like prominence situated between the center and the anterior margin, usually covered with excretion, and, when rubbed or broken, of about the same color as that of the female scale. Margins thin and delicate, and lighter than the rest of the scale. Length about 1 mm. (.04 inch); width about 3^{mm} ($\frac{12}{1000}$ inch).⁷

Remedies. Same as those used against San José scale.

THE OYSTER-SHELL BARK-LOUSE.

(*Mytilaspis pomorum* Bouche.)

This insect is cosmopolitan. It is found in all parts of the United States and probably came originally from Europe. It has been reported in Kansas from Douglas, Crawford and Lyon counties, and doubtless exists elsewhere in the state.

FOOD PLANTS. Apple, pear, quince, hawthorn, buckthorn, raspberry, currant, linden, hop-tree, bladder nut, horse chestnut, maple, water locust, honeysuckle, ash, elm, hackberry, cottonwood, willow, poplar.

LIFE-HISTORY.⁸ The female dies during the early part of winter, leaving a number of eggs, ranging from 42 to 86. If the shell is broken open in winter months these eggs are easily seen with the naked eye. These hatch the latter part of May and seek permanent positions upon tips of twigs. The species is single brooded in the North. After inserting beak in plant, the female molts twice, then produces that long scale covering resembling somewhat a minute oyster shell, from which the name arises.

⁷ Bul. Ill. State Lab., Vol. IV, Art. XIII.

⁸ From Year-book U. S. Dept. Agr., 1894.

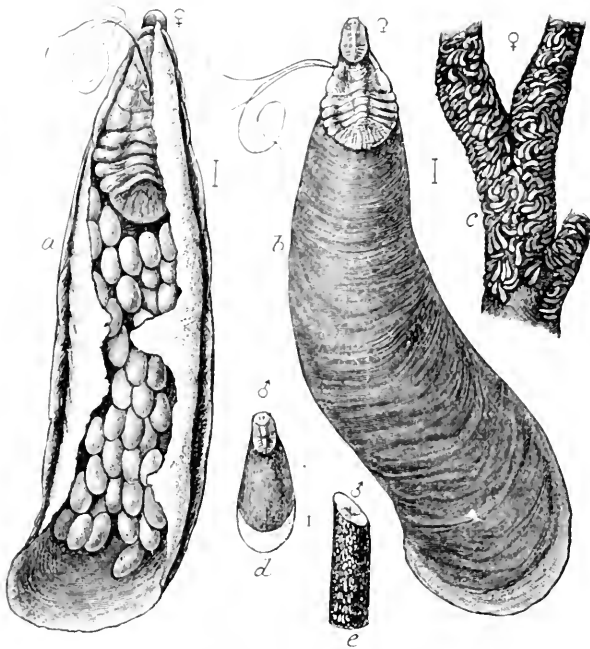


FIG. 6.—*a*, female scale, from below, showing eggs; *b*, same, from above—greatly enlarged; *c*, female scales—enlarged; *d*, ————; *e*, male scales on twig—natural size. (From U. S. Year-book, Dept. Agr.)

SCALE OF FEMALE. The scale of the female is long, narrow, and grows wider as it extends backward. It is an ash-gray color. The larvæ skin is yellow. The length of scale is about .08 of an inch.

THE MALE SCALE. The scale of the male is much smaller and does not contain the curve shown in female scales; is nearly straight, widening posteriorly. The figures, fully illustrating all stages, require no further discussion.

Descriptions and discussions of other scale pests might be given. Enough has been said to impress those interested in tree culture with the great economic importance of scale insects. Enumeration of various species is, then, of secondary merit in an article of this class.

REMEDIES. Application of the soap wash in the fall before death of female, and about the middle of June, when young are all hatched.

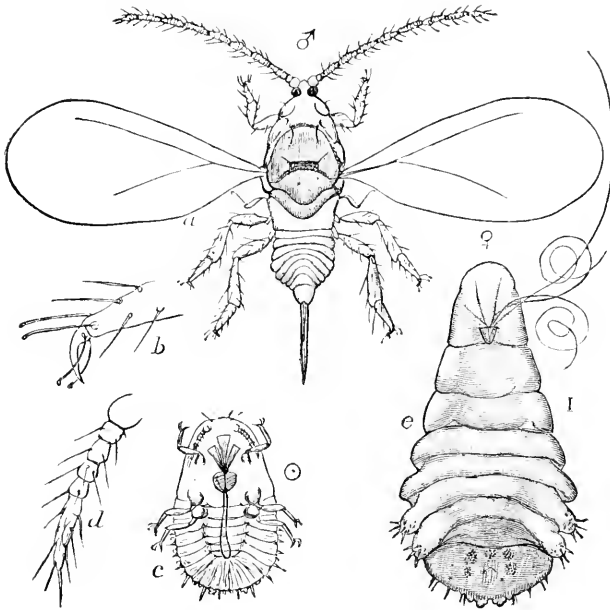


FIG. 7.—*a*, adult male; *b*, foot of same; *c*, young larva; *d*, antenna of same; *e*, adult female, taken from scale — all greatly enlarged. (From U. S. Year-book, Dept. Agr.)

RECOMMENDATIONS

To Horticulturists in Kansas.

1. Examine all trees upon your premises.
2. Send any peculiar scale formations found upon bark to a competent person for determination.
3. Examine carefully all new trees or cuttings before planting, assuring yourself that no scale insect exists thereon.
4. Require a guaranty of freedom from scale insects from the firm that sells the trees.
5. If San José scale or closely allied species are found upon your trees, *root up and burn* infested trees if few in number. Should the scale be distributed over a large number of trees, cut back the trees and apply wash according to directions given. If these precautions are taken, there is no reason why Kansas should not be free from the expensive losses sustained by several states and the annoyances still experienced.

LEGISLATION.

Many nurserymen have made inquiries concerning regulations of other states relating to entrance of nursery stock. Some have met with inconveniences in sending stock into other states. That such might be fully posted upon the laws of the several states, the following letter was sent out:

THE UNIVERSITY OF KANSAS.
Department of Entomology.

LAWRENCE, December 22, 1897.

Hon. Secretary of State: DEAR SIR—I desire to ascertain if there is a law in your state concerning scale insects, the object of which is to aid in stamping out such pests by guarding the importations of fruit-trees and such other material as is likely to aid in the dissemination of these insects, and also to aid in their destruction wherever present. If you have such an act, I shall be glad to receive a copy at your earliest convenience. If not, may I ask for a reply stating the fact. I inclose stamped envelope, and thank you in advance for the valued favor. Very truly,
S. J. HUNTER.

Prompt replies were received, and acknowledgment is hereby made and thanks extended to the honorable secretaries of state for this important assistance. Many horticultural boards have regulations founded upon these laws. The most complete form of regulations that has come under our notice is that of North Carolina, which we give in full on pages 45-47. State laws relating to this subject are herewith given.

CALIFORNIA.

CHAPTER 183.—LAWS OF 1897.

AN ACT to promote the horticultural interests of the state by providing county boards of horticulture, and repealing the act entitled "An act to protect and promote the horticultural interests of the state," approved March 14, 1881, and certain acts amendatory thereof, approved March 19, 1889, and March 31, 1891.

SECTION 1. Whenever a petition is presented to the board of supervisors of any county, and signed by 25 or more persons, each of whom is a resident freeholder and possessor of an orchard, stating that certain or all orchards, or nurseries, or trees of any variety are

infested with scale insects of any kind, injurious to fruit, fruit-trees, and vines, codling-moth, or other insects that are destructive to trees, and praying that a commission be appointed by them, whose duty it shall be to supervise the destruction of said scale insects, as herein provided, the board of supervisors shall, within 20 days thereafter, appoint a board of horticultural commissioners, consisting of three members, who shall be qualified for the duties of horticultural commissioner. Upon the petition of 25 resident freeholders and possessors of an orchard, the board of supervisors may remove any of said commissioners for cause, after a hearing of the petition.

SEC. 2. It shall be the duty of the county board of horticultural commissioners in each county, whenever it shall deem it necessary, to cause an inspection to be made of any orchards, or nursery, or trees, plants, vegetables, vines, or fruits, or any fruit packing-house, storeroom, salesroom, or any other place or articles in their jurisdiction, and if found infested with scale insects, or codling-moth, or other pests injurious to fruit, plants, vegetables, trees, or vines, or with their eggs, or larvæ, they shall notify the owner or owners, or person or persons in charge, or in possession of the said places, or orchards, or nurseries, or trees, or plants, vegetables, vines, or fruit, or articles as aforesaid, that the same are infested with said insects, or other pests, or any of them, or their eggs or larvæ, and they shall require such person or persons to eradicate or destroy the said insects, or other pests, or their eggs or larvæ within a certain time to be specified. Said notices may be served upon the person or persons, or either of them, owning or having charge, or having possession of such infested place, or orchard, or nursery, or trees, plants, vegetables, vines, or fruit, or articles, as aforesaid, by any commissioner, or by any person deputed by the said commissioners for that purpose, or they may be served in the same manner as a summons in a civil action. Any and all such places, or orchards, or nurseries, or trees, plants, shrubs, vegetables, vines, fruits, or articles thus infested, are hereby adjudged and declared to be a public nuisance: and whenever such nuisance shall exist at any place within their jurisdiction, or on the property of any non-resident, or on any property the owner or owners of which cannot be found by the county board of horticultural commissioners, after diligent search, within the county, or on the property of any owner or owners upon which notice aforesaid has been served, and who shall refuse or neglect to abate the same within the time specified, it shall be the duty of the county board of horticultural commissioners to cause said nuisance to be at once abated, by eradicating or destroying said insects, or other pests, or their eggs, or larvæ. The expense thereof shall be a county charge, and the board of supervisors shall allow and pay the same out of the general fund of the county. Any and all sum or sums so paid shall be and become a lien on the property and premises from which said nuisance has been removed or abated, in pursuance of this act, and may be recovered by an action against such property and premises. A notice of such

lien shall be filed and recorded in the office of the county recorder of the county in which the said property and premises are situated, within 30 days after the right to the said lien has accrued. An action to foreclose such lien shall be commenced within 90 days after the filing and recording of said notice of lien, which action shall be brought in the proper court by the district attorney of the county, in the name and for the benefit of the county making such payment or payments, and when the property is sold, enough of the proceeds shall be paid into the county treasury of such county to satisfy the lien and costs; and the overplus, if any there be, shall be paid to the owner of the property, if he be known, and, if not, into the court for his use when ascertained. The county board of horticultural commissioners is hereby vested with power to cause any and all such nuisances to be at once abated in a summary manner.

SEC. 3. Said county boards of horticultural commissioners shall have power to divide the county into districts, and to appoint a local inspector, to hold office at the pleasure of the commissioners, for each of said districts. The state board of horticulture may issue commissions as quarantine guardians to the members of said county board of horticultural commissioners and to the local inspectors thereof. The said quarantine guardians, local inspectors, or members of said county boards of horticultural commissioners, shall have full authority to enter any orchard, nursery, place or places where trees or plants are kept and offered for sale or otherwise, or any house, store-room, salesroom, depot, or any other such place in their jurisdiction, to inspect the same, or any part thereof.

SEC. 4. It shall be the duty of said county board of horticultural commissioners to keep a record of their official doings, and to make a report to the state board of horticulture, on or before the 1st day of October of each year, of the condition of the fruit interests in their several districts, what is being done to eradicate insect pests, also as to disinfecting, and as to quarantine against insect pests and diseases, and as to carrying out all laws relative to the greatest good of the fruit interest. Said board may publish said reports in bulletin form, or may incorporate so much of the same in their annual reports as may be of general interest.

SEC. 5. The salary of all inspectors working under the county board of horticultural commissioners shall be \$2.50 per day. In the case of the commissioners themselves, their compensation shall be \$4 per day, when actually engaged in the performance of their duties, and itemized necessary traveling expenses incurred in the discharge of their regular duties as prescribed in this act.

SEC. 6. It shall be the duty of the county board of horticultural commissioners to keep a record of their official doings and make a monthly report to the board of supervisors; and the board of supervisors may withhold warrants for salaries of said members and inspectors thereof until such time as said report is made.

SEC. 7. An act entitled "An act to protect and promote the horticultural interests of the state," approved March 14, 1881, and certain acts amendatory thereof, approved March 19, 1889, and March 31, 1891, are hereby repealed.

SEC. 8. This act shall take effect and be in force from and after its passage.

Approved March 31, 1897.

COLORADO.

CHAPTER 55.—LAWS OF 1897.

AN ACT concerning horticulture, and to repeal sections 5, 6, 7, 8 and 9 of an act entitled "An act to create state and county boards of horticulture, define their duties and compensation, to protect and promote the horticultural interests of the state, and to repeal an act to establish a bureau of horticulture, approved March 8, 1883," approved April 5, 1893.

SECTION 1. Whenever a petition is presented to the board of county commissioners of any county, signed by thirty-five (35) freeholders each one of whom shall be the owner of an orchard of at least two acres situate and growing in said county, stating that in their opinion a necessity exists for protecting the horticultural interests of said county, diminishing and destroying fruit pests, and diseases and insects injurious to fruit-trees, plants, vines and shrubs, the said county commissioners shall appoint a competent, experienced horticulturist, a person who shall be known as the county horticultural inspector, who shall hold his office for the period of one year, unless otherwise terminated by said board of county commissioners. It shall be the duty of the professor of entomology of the state agricultural college at Fort Collins, in this state, to examine all persons applying for a license as a horticultural inspector, and if found competent and fully qualified to perform the duties of the office, he shall issue to such applicant a license as a county horticultural inspector, which license shall certify to the competence of such applicant, and shall authorize him to act as an inspector in any county in the state for a period of two years from its date. Said professor shall receive for such services, a fee of five dollars from such applicant. No person shall enter upon the duties of the office of such inspector nor continue in the performance thereof, unless holding such a license. Such inspector shall also give a good and sufficient bond before entering upon the duties of his office, in the sum of one thousand dollars, conditioned for the faithful performance of the duties of the office, the surety on which bond may be a good and responsible guarantee company, and shall be approved by the board of county commissioners. Said inspector shall have the power to appoint as many deputies as may be necessary subject to the ap-

proval of the county commissioners who shall act under the direction and with the authority of said inspector. Said inspector shall be paid for his services the sum of four (4) dollars per day, and said deputies two dollars and fifty cents per day, out of the county treasury, for as many days' services rendered as the board of county commissioners shall, by resolution, authorize. It shall be the duty of such inspector and his deputies to keep a complete record of their official doings, and to make a quarterly report thereof to the board of county commissioners of said county, who shall withhold the warrant for the salary of any delinquent inspector or deputy, until such report is made. The inspector shall furnish each owner or manager of an orchard or vineyard within his jurisdiction such blanks as may be provided by the state board of horticulture, containing questions and inquiries as to the condition of his orchard or vineyard and the extent to which the requirements of the inspector have been complied with. Such owner or manager shall fill out said blanks and return them to the inspector, who shall transmit them to the state board of horticulture. The board of county commissioners shall have the power to remove any inspector or deputy who shall, in their judgment fail to perform the duties of the office.

SEC. 2. No person or persons, either as an owner, agent, servant, employee or common carrier shall bring or cause to be brought into any county in the state of Colorado having a county horticultural inspector, from any district, county, state or foreign country, any trees, vines, shrubs, scions, cuttings, grafts, fruits or fruit pits, without giving notice of their arrival at their destination within 24 hours thereafter, to the horticultural inspector of said county; nor keep, sell, plant, expose for sale, deliver, give away or otherwise distribute any of the articles mentioned in this section, or cause or permit the same to be done, except upon order of the county inspector and until they shall first have been inspected as hereinafter provided, and disinfected to the satisfaction of the said inspector.

SEC. 3. Whenever the county horticultural inspector shall be notified of the arrival of any of the articles enumerated in section 2 of this act, he shall within 48 hours make a careful inspection of the same, and if any such articles shall be found by him to be infested with any disease, live scale, or insect pests, detrimental or injurious to fruit-trees or the product thereof, or to plant life, such infested articles shall be removed from the limits of the county within 48 hours thereafter, at the expense of the owner, agent or shipper, or shall be destroyed. The owner, agent or shipper shall have the right to elect as to the removal of such infested articles from the county, or to have the same destroyed by order and under the direction of said inspector.

SEC. 4. The county horticultural inspector shall have the power to establish and maintain quarantine and inspecting stations within his county, whenever and wherever the same may be authorized by

the board of county commissioners, and of such character as they shall direct.

SEC. 5. If the result of the inspection of the county horticultural inspector shall be to put any of the articles mentioned in section 2 of this act in quarantine, such articles shall be exempt from removal from the county during the pendency of such quarantine regulations. Whenever said inspector shall deem it necessary to the safety of the horticultural interests of his county, he may hold in quarantine for information, subsequent inspection or disinfection and final order relative thereto, any of the articles enumerated in said section 2 of this act for such reasonable time as in his judgment is necessary, without unreasonable delay.

SEC. 6. Any person or persons who shall ship or bring or cause to be brought or shipped into any county of the state having a county horticultural inspector any of the articles mentioned in section 2 of this act, shall have placed upon or securely attached to each box, package, or separate parcel of such articles, a distinct mark or label, showing the name of the owner, agent or shipper, the name of the grower, and any further evidence necessary to determine the locality where grown.

SEC. 7. It shall be the duty of the county horticultural inspector in each county, whenever he shall deem it necessary, to make an inspection of any orchard, nursery or trees, or any fruit-packing house, storeroom, salesroom, or other place or article within his jurisdiction, and if found infested with insects, or pests or diseases injurious to fruit, fruit-trees, vines, bushes or other horticultural interests he shall notify the owner or owners, or person or persons in charge or in possession of such trees, place or other thing as aforesaid, that the same or any of them are infested with insects, or their eggs or larvæ, or with fruit or fruit-tree diseases, and shall give a formula for the treatment thereof, and such person or persons so notified shall eradicate or destroy the said insects or pests, or their eggs or larvæ, within a certain time to be specified in said notice. Said notices may be served upon the person or persons, or either of them, owning or having charge, or having possession of such infested place, trees or other thing as aforesaid, by the inspector or any deputy inspector. Any and all such places, trees or other thing thus infested, are hereby declared and adjudged to be a public nuisance. Whenever any such nuisance shall exist at any place within his jurisdiction on the property of any non-resident, or on any property the owner or owners of which cannot be found by the inspector, after diligent search within the county, or on the property of any owner or owners upon which notice has been served, and who refuses or neglects to abate the same within the time specified, or to follow the directions given by said inspector for disinfecting the same, it shall be the duty of such inspector to cause the same to be at once abated, by eradicating or destroying said insects or other pests, their eggs or larvæ,

so far as practicable, and he may if necessary, cut back, disinfect, fumigate or burn said infested trees, vines and shrubs, as well as other articles in the vicinity which are also infested, but the inspector shall not proceed to abate any such nuisance where his directions have been followed.

The expense thereof shall be first paid by the county upon filing of proper vouchers therefor. Any and all sums so paid, together with the inspectors [inspector's] salary while engaged upon said property, shall be and become a lien on the property and premises from which said nuisance has been removed or abated, in pursuance of this act, upon the filing with the county clerk and recorder of the said county, a sworn statement showing the itemized amount of such sum or sums, and a description of such property or premises. Such lien may be foreclosed by an action against such property and premises, which action shall be brought by the district attorney in the name and for the benefit of the county making such payment. When the property is sold the proceeds thereof shall be paid into the county treasury of such county to satisfy the lien and costs, and the surplus, if any, shall be paid to the owner by order of the board of county commissioners, upon his applying therefor.

SEC. 8. It shall be unlawful for any person or persons to spray fruit-trees while in bloom with any substance injurious to bees.

SEC. 9. Any person violating any of the provisions of this act shall be guilty of a misdemeanor, and upon conviction thereof shall be punished by imprisonment in the county jail for a period of not less than 10 nor more than 100 days, or by a fine of not less than \$10 nor more than \$100. Any justice of the peace or district or county courts of the respective counties shall have jurisdiction to try any case arising under the provisions of this act.

SEC. 10. Sections 5, 6, 7, 8 and 9 of an act entitled "An act to create state and county boards of horticulture: define their duties and compensation: to protect and promote the horticultural interests of the state, and to repeal an act to establish a bureau of horticulture, approved March 8, 1883," approved April 5, 1893, are hereby repealed.

SEC. 11. In the opinion of the general assembly an emergency exists, therefore this act shall take effect and be in force from and after its passage.

Approved April 16, 1897.

KENTUCKY.—LAWS OF 1897.

AN ACT to provide for the inspection of nursery stock and to prevent the dissemination of noxious insects and fungi.

SECTION 1. That all nurseries in Kentucky, where trees, vines, plants or other nursery stock are grown and offered for sale, shall be inspected by the entomologist and botanist of the state agricultural station once each year at such time as he may elect, and he shall

notify, in writing, the owners of such nurseries, the commissioner of agriculture and statistics, the director of the state agricultural experiment station, and the president of the state horticultural society of the presence of any San Jose scale or other destructively injurious insects or fungi on the trees, vines, plants or other stock of such nurseries, and shall also notify, in writing, the owner of any affected stock that he is required, on or before a certain day, to take such measures for the destruction of such insects or fungus enemies of nursery stock as have been shown to be effectual for this purpose. Said entomologist and botanist shall, for the purpose of this act be, and he is hereby, declared to be, the state entomologist, and shall serve without pay other than that he may receive as an officer of the state agricultural experimental station, but his expenses shall be paid as hereinafter provided.

SEC. 2. The owner of this affected nursery stock shall, within the time specified, take such steps for the destruction of San Jose scale or other destructively injurious insects or fungus enemies present as will exterminate the same, and it shall be a misdemeanor to ship or deliver any of such stock, punishable by a fine of \$50 for every such offense, the fine recoverable before a justice of the peace or by indictment of the grand jury of the county in which the nursery is situated, or of that to which such stock may have been shipped.

SEC. 3. Whenever a nurseryman or seller of trees, vines, plants or other nursery stock, who is a resident of this commonwealth, shall ship or deliver any such goods, he shall send on each package so shipped or delivered a written certificate, signed by him, stating that the whole and every part of such stock has been examined by a state or government entomologist and found free from San Jose scale or other destructively injurious insects or fungus enemies. Failure to furnish such certificate, or furnishing a false certificate, shall render him liable to the penalty of a fine of \$50 for each and every such shipment or delivery without such certificate.

SEC. 4. When the state entomologist examines any trees, vines, plants, or other nursery stock in this state under the provisions of this act, and finds such nursery stock free from San Jose scale and other destructively injurious insect and fungus enemies, he is hereby authorized and directed to make out and deliver, in writing, to the owner of such stock a certificate stating that he has inspected such stock and found the same free from San Jose scale and other destructively injurious insect and fungus enemies, and he shall file similar certificates with the commissioner of agriculture and statistics and with the president of the state agricultural and mechanical college, which certificate shall at all times be subject to public inspection.

SEC. 5. Whenever a nurseryman, fruit-grower or agriculturist in this commonwealth shall know or have good reason to believe that his trees, vines or plants are affected with the San Jose scale, yel-

lows, rosette or other destructive insect or fungus enemies, he shall have the privilege and it shall be his duty to notify the state entomologist, who shall proceed to the premises designated and examine the same and suggest and recommend the proper remedies for the destruction of such insect or fungus enemies that may be present.

SEC. 6. Every package of trees, vines, plants or other nursery stock shipped into this state from another state shall be plainly labeled on the outside with the name of the consignor, the name of the consignee, the contents, and the certificate, signed by a state or government inspector, showing that the contents have been examined by him, and that such stock is free from San Jose scale, or other destructive insect or fungus enemies. Whenever any trees, vines, plants or other nursery stock are shipped into this state without such a certificate plainly fixed on the outside of each package, the fact may be reported to any justice of the peace of this commonwealth, and said justice shall issue a summons for the consignee of such package, and the agent of the consignor, if he be known, to appear before him on a certain day, to be therein named, to show cause why such trees, vines, plants or other nursery stock should not be seized, as being in violation of this act, and on trial thereof, if said justice be satisfied that the provisions of this act have been violated, he shall order said agent or consignee to return such package of trees, vines, plants or other stock immediately to the shipper or consignor, unless such said consignee or agent shall forthwith, and at his own expense, have such trees, vines, plants or other nursery stock examined by the state entomologist, or such person as he may appoint to make the examination, and he certifies to the justice of the peace that such nursery stock is free from San Jose scale or other destructive insects or fungus enemies. If such consignee or agent fail to have such inspection made, or fail to return such package to the shipper or consignor thereof, then the justice of the peace shall order and direct the constable or sheriff to burn and destroy, at the expense of the agent or consignee, all such trees, vines, plants or other stock as have been shipped into this commonwealth in violation of law.

SEC. 7. The sum of \$500 annually, or so much thereof as may be necessary, is hereby appropriated for the purpose of paying the expenses of the state entomologist in the performance of his duties under the provisions of this act, and the auditor of public accounts is hereby directed to honor requisitions made by said state entomologist for expenses incurred in the performance of his duties, and the state entomologist shall make annual report to the treasurer of the amount expended.

SEC. 8. Inasmuch as the insect known as the San Jose scale has appeared in some sections of the commonwealth, a great destruction of fruit and fruit-trees is imminent therefrom, an emergency is de-

clared to exist, and this act shall take effect from and after its passage and approval by the governor.

Approved May 20, 1897.

Upon receipt of a copy of the above law, I wrote to the Kentucky commissioner asking for exact localities, and received the following reply:

FRANKFORT, January 22, 1898. — Replying to your favor of 19th inst., I am happy to inform you that the supposed presence of the San Jose scale in Kentucky has proven to be a mistake. With our present law on the subject strictly enforced, we confidently hope to escape this pest.

LUCAS MOORE, *Commissioner*.

LOUISIANA.—LAWS OF 1894.

AN ACT to prevent the introduction, propagation or distribution in this state of any fruit-trees or fruit growth affected with any infectious disease, or infectious insects injurious to fruit-growth, and to provide penalties for violation of same.

SECTION 1. That it shall be unlawful for any person to bring into this state any fruit-trees or vines, shrubs, scions, cuttings, buds, grafts, fruit pits, or any kind of fruit growth affected with any infectious disease or insects, injurious to the growth of fruit, or propagate the same, or offer the same for sale or in any way distribute or attempt to distribute the same in this state.

SEC. 2. That all fruit-trees, vines or shrubs, scions, cuttings, buds, grafts, or fruit pits or any tree growth of any kind brought into this state, or offered for sale, or distributed in this state, shall be properly labeled with the name of the owner, agent, shipper or grower, and the locality where grown, and shall be subject to the inspection of the entomologist of the state agricultural experiment station.

SEC. 3. That it shall be the duty of the entomologist of the state agricultural experiment station, at the request of the director of such station, to visit any section of the state, when such visit can be made without expense to the state, where there are diseased fruit-trees or any tree growth infected with disease or insects injurious to tree growth, to examine and report on such diseased fruit, growth or infected tree growth, and if such examinations prove the infected trees perniciously infected, it shall be the duty of the owner, agent or possessor of such diseased fruit-trees or infected tree growth to at once disinfect or destroy the same.

SEC. 4. That any willful neglect or violation of this act shall subject the offender to a fine of not less than \$5, nor more than \$100, or imprisonment in the parish or city jail of not less than one day nor more than three months, or both at the discretion of the court, and

the provisions of this act shall be enforced by the district attorney in any court of competent jurisdiction on the complaint of any party in interest, and all moneys derived from the enforcement of the provisions of this act shall, after the payment of all fees allowed by law, be paid over to the state agricultural experiment station to carry out the inspection provided for by this act.

Approved July 11, 1894.

MICHIGAN.—LAWS OF 1897.

AN ACT to prevent the introduction or spread of San Jose scale or other injurious insects or infectious diseases of trees, vines, shrubs or plants grown in this state or imported from other states, provinces or countries.

SECTION 1. That it shall be the duty of the state board of agriculture, immediately upon the taking effect of this act, to appoint some competent person who shall be known as state inspector of nurseries and orchards, who shall hold office during the pleasure of said board, whose duty shall be to inspect any and all nurseries in the state of Michigan, as to whether they are infected by San Jose scale or other injurious or destructive insects or infected with infectious or contagious diseases, and if upon such inspection he find no such dangerous insects or diseases, he shall upon payment of per diem fee hereinafter provided, give to the owner of such nurseries a certificate to that effect, and shall file a duplicate certificate with the state board of agriculture; and in case he shall find present in any such nursery any of said dangerous insects or diseases, he shall notify the owner thereof in writing, and shall direct him within five days to use such means as will exterminate such dangerous diseases or insects, and the owner of such nursery shall not ship nor deliver any such trees, vines, shrubs or plants affected by such dangerous insects or diseases until he shall have secured from said inspector a certificate as aforesaid.

SEC. 2. The owner of such nursery, trees, vines, shrubs or plants shall, within the time specified in such notice, take such steps for the destruction of such insects or diseases as will exterminate the same, and he shall not ship nor deliver any such trees, vines, shrubs nor plants affected with such dangerous diseases or insects, under the penalty of a fine of \$1 for every tree, vine, plant or shrub so affected, when shipped or delivered from such nursery, which fine shall be collected by suit by the prosecuting attorney of the county in which said nursery is located.

SEC. 3. Whenever it shall happen that the state inspector of nurseries and orchards shall give the notice heretofore required to the owner of a nursery, for the destruction of the insects or diseases mentioned, and said owner shall fail or neglect to take the measures

necessary for the destruction thereof, within the time mentioned in the notice given him, it shall be the duty of the state inspector of nurseries and orchards to have the proper remedies applied to such nursery for the destruction of such diseases or insects, and shall employ all necessary assistance and may enter the premises of said owner of such nursery for the purpose of treating and exterminating such insects or diseases, and the said owner of such nursery shall be liable for the costs of such proceeding, for the services of the inspector at a rate per diem to be fixed by the state board of agriculture, not to exceed \$3 per day, and for such number of days as said board shall determine, which said charge must be paid before delivery of the certificate in section 1 of this act.

SEC. 4. Whenever any trees, shrubs, plants or vines are shipped into this state from another state, country or province, every package thereof shall be plainly labeled on the outside with the name of the consignor, the name of the consignee, the contents, and a certificate showing that the contents have been inspected by a state or government officer, and that the trees, vines, shrubs or plants therein contained appear free from all injurious insects or diseases. Whenever any trees, shrubs, vines or plants are shipped into this state without such certificate plainly fixed on the outside of the package, box or car containing the same, the fact must be reported within 24 hours to the state board of agriculture by the railway, express or steamboat company, or other person or persons carrying the same: and any agent of any railway, steamboat or express company, or any other person or persons, who shall violate the provisions of this section shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined in any sum not less than \$25 nor more than \$100, or imprisonment in the county jail not less than 5 nor more than 30 days, or may be so fined and imprisoned in the discretion of the court, and any such fine shall be paid to the state board of agriculture.

SEC. 5. Any person or persons growing or offering for sale in this state any trees, vines, shrubs or plants, commonly known as nursery stock, shall, on or before the first day of August in each year, apply to the state board of agriculture, for inspection of said stock under the provisions of this act and a license for its sale, and shall deposit with said board a fee of \$5 as a license fee for himself as principal. Such license shall be good for one year and shall not be transferable, and each of such persons, principals, shall execute to the state board of agriculture, a bond, in the sum of \$1,000, with good and sufficient sureties satisfactory to said board, conditioned that he will comply with all the provisions of this act, and that upon demand he will file with the state board of agriculture a list of the persons to whom he has sold or delivered any such nursery stock, giving the species, together with the post-office address of each purchaser, which list shall be held in strict confidence by the said state board of agriculture,

and not be subject to inspection by the public. Failure on the part of any nurseryman, grower, agent or dealer to comply with the provisions of this section shall render him or them liable to the penalties of a fine of not more than \$100 nor less than \$25, or imprisonment in the county jail for not more than 90 nor less than 30 days, or both such fine and imprisonment in the discretion of the court, for each and every such sale. Such information shall be preserved and be for the sole use of the nursery and orchard inspector and his deputies: provided, that the provisions of the preceding sections shall not apply to persons engaged in fruit-growing who are not nurserymen, who desire to sell or exchange surplus trees or plants of their own growing.

SEC. 6. No person, firm or corporation resident of another state, province or country shall engage or continue in the business of importing any trees, plants, shrubs or vines, commonly known as nursery stock, into this state, or of selling such importations within the state, or of selling such articles within the state, for subsequent importation into it, without first having obtained from the state board of agriculture a license to do business in this state as provided in section 5 of this act, and shall have filed with the state board of agriculture the bond therein required, together with a certificate of inspection by a state or government inspector or that of some person designated by the Michigan state board of agriculture for such purpose.

SEC. 7. The state board of agriculture shall, upon receipt of the fee referred to in this act, together with the required bond and a satisfactory certificate of inspection, issue licenses to the applicant according to the provisions of this act.

SEC. 8. Whenever the commissioners under acts number 108 and 109, Session Laws of 1895, known as yellows commissioners, shall be uncertain as to the existence or nature of any infectious or contagious disease or dangerous insect pest in an orchard or elsewhere, or in case any dispute shall arise between owners and commissioners, it shall be the duty of said commissioners to notify the state inspector of orchards and nurseries, who shall at once investigate or inquire into the matter and suggest or recommend the proper remedies, and give all the information he can to aid in exterminating such insects or diseases, and his decision of the case and recommendation shall be final.

SEC. 9. It shall be the duty of the state inspector, whenever it shall come to his knowledge that any destructive insects or infectious or contagious diseases exist in any orchard in this state, or are supposed to exist, to investigate the case, and if such dangerous insects or diseases are found, he shall have authority to enter upon the premises and proceed according to the provisions of sections 1, 2 and 3 of this act, in exterminating the same. In case the owner or occupant of the premises shall refuse or neglect to comply with the

orders of said inspector within five days, the inspector shall employ such aid as may be necessary to carry out his orders and recommendations, the expense of which procedure shall be certified to the township board and by them allowed, who shall cause the same to be assessed as a special tax upon the premises concerned.

SEC. 10. The state inspector of orchards and nurseries shall have power to appoint such number of deputy inspectors as may be required, subject to approval by the state board of agriculture.

SEC. 11. All expenses incurred under the provisions of this act, not otherwise provided for, shall be audited by the state board of agriculture, and paid out of the general fund of the state, and the auditor-general shall draw his warrant for the same; provided, that all moneys collected by the state board of agriculture, under this act, shall be paid into the general fund of the state treasury.

MARYLAND.

CHAPTER 290.—LAWS OF 1896.

AN ACT to add to article 48 of the code of public general laws, title "inspections," a new sub-title, to be known as "trees and nursery stock," and seven new sections thereunder, to be designated "sections 51, 52, 53, 54, 55, 56 and 57," providing for the examination of trees, plants, vines and nursery stock, and to exterminate the San Jose scale, rosette, yellows and other diseases and insects.

SECTION 1. That there shall be added to article 48 of the code of public general laws, title "inspections," a new sub-title, to be known as "trees and nursery stock," and seven new sections thereunder, to be designated "sections 51, 52, 53, 54, 55, 56, 57."

(51.) The governor of Maryland shall, once in every two years, designate and appoint one of the professors at the Maryland Agricultural College, state entomologist, who shall serve without pay, other than that he may receive as professor at said college, but whose expenses shall be paid, as hereinafter provided, whose duty it shall be to inspect any and all nurseries in the state of Maryland, where any trees, plants, vines or other nursery stock is grown, between the first day of each March and the first day of September next succeeding, and he shall notify, in writing, the owner of such nursery, the governor of this state and the principal of the agricultural college of the existence of any San Jose scale, yellows, rosette or any other insect or disease which may affect the trees, vines, plants or other stock in such nursery, and also notify the owner thereof, in writing, that he is required on or before a certain day, to be named therein, to take such measures as have been shown or proven to be effectual for the destruction of such San Jose scale, yellows, rosette, or other disease, to destroy and exterminate the same.

(52.) The owner of such nursery, trees, vines or nursery stock shall, within the time specified in such notice, take such steps for the destruction of such San Jose scale, or other insect or disease as will exterminate the same, and he shall not ship or deliver any trees, plants, vines or other nursery stock affected with such disease or insect, under a penalty of a fine of \$1 for every tree, plant or vine so affected when shipped from such nursery, which fine may be collected by suit by the state's attorney of the county in which such nursery is located, one-half to go to the informer, the balance to be paid to the trustees of said agricultural college.

(53.) Whenever it shall happen that the state entomologist shall give the notice heretofore required to the owner of a nursery for the destruction of the insects or diseases mentioned, and the said owner shall fail or neglect to take the measures necessary for the destruction thereof within the time mentioned in the notice given him, it shall be the duty of the state entomologist to have the proper remedies applied to such nurseries for the destruction of such insects or diseases, and shall employ all necessary assistance, and may enter the premises of the said owner of such nursery for the purpose of treating and exterminating such insects or diseases, and the said owner of such nursery shall be liable for the costs of such proceeding.

(54.) Whenever a nurseryman or seller of trees, plants, vines or other nursery stock shall ship or deliver any such goods to any purchaser in this state, he shall send on each and every package so shipped or delivered, as well as transmit to the purchaser by mail, a written or printed certificate signed by him, that the whole and every part of such stock or goods have been examined by the state or government entomologist, and that the same is entirely free from all San Jose scale, yellows, rosette, and every other insect or disease whatever, and failure to furnish such certificate shall render him liable to the penalty of a fine of \$100 for each and every such shipment or delivery without such certificate.

(55.) Whenever any nurseryman, fruit-grower or agriculturist in this state shall know or have good reason to believe that his trees, plants or vines are affected with San Jose scale, yellows, rosette, or any other insect or disease, he shall have the privilege and it shall be his duty to notify the state entomologist thereof, who shall at once proceed to the premises designated and examine the same, and suggest and recommend the proper remedies for the destruction of the same, and give all information he can to aid in exterminating such insect or disease, and instruct the owner thereof how to use the remedies he recommends.

(56.) The said state entomologist, when he examines any trees, plants, vines or nursery stock in this state under the provisions of this act, and he finds such trees, plants, vines or nursery stock is free from all San Jose scale, yellows, rosette, or other disease or in-

sect, he is hereby authorized and directed to make out and deliver in writing to the owner of such trees, plants, vines or nursery stock, a certificate that he has examined such trees, plants, vines or nursery stock, and that he finds the same free from all San Jose scale, yellows, rosette, or other disease or insect, and said state entomologist shall also file a similar certificate with the governor of the state and with the president of the said agricultural college, which certificates shall at all times be subject to public inspection.

(57.) The sum of \$500, annually, or so much thereof as may be necessary, is hereby appropriated for the purpose of paying the expenses of the state entomologist in the performance of his duties under the provisions of this act, and the comptroller is hereby directed to issue his warrant upon the treasurer for the said sum, and the state entomologist shall make report to the comptroller of the amount expended.

(58.) Whenever any trees, plants or vines are shipped into this state from another state, every package thereof shall be plainly labeled on the outside with the name of the consignor, the name of the consignee, the contents, and a certificate showing that the contents have been inspected by a state or government officer, and that the trees, vines or plants therein contained are free from all San Jose scale, yellows, rosette and other injurious insect or disease; whenever any trees, plants or vines are shipped into this state without such certificate plainly fixed on the outside of such package, the fact may be reported to any justice of the peace of this state, and such justice shall issue a summons for the consignee of such package, and the agent of the consignor, if he be known, to appear before him on a certain day to be therein named, to show cause why such trees, plants or vines should not be seized as being in violation of the provisions of this act, and on trial thereof, if said justice is satisfied that the provisions of this act have been violated, said justice shall order said agent or consignee to return said packages of trees, plants or vines immediately to the shipper or consignor, unless said consignee or agent shall forthwith have said trees, plants or vines examined by the state entomologist of this state, and he certify to such justice of the peace that the said trees, plants or vines are free from all insect and disease; and if said agent or consignee shall fail to have such nursery stock examined by the state entomologist, or fail to return such packages to the shipper or consignor thereof, then said justice of the peace shall order and direct the constable or sheriff to burn and destroy all such trees, plants and vines as have been shipped into this state in violation of law.

SEC. 2. That this act shall take effect from the date of its passage.

Approved April 2, 1896.

NORTH CAROLINA.

CHAPTER 261.—LAWS OF 1897.

AN ACT to prevent the introduction and dissemination of dangerous insect, fungous, and weed pests of crops.

SECTION 1. That for the purpose of this act the state commissioner of agriculture, the director of the North Carolina Agricultural Experiment Station, and the president of the North Carolina State Horticultural Society, are hereby constituted a commission for the extermination of noxious insects, fungous diseases and weeds which are affecting or may affect crops. They are empowered to elect one of their number chairman, and to adopt rules and regulations for their own government, such as may be requisite for carrying out the provisions of this act. The members of the said commission shall receive no salary, and shall be allowed only such expenses as have been specifically incurred and necessary in attending the meetings of the commission.

SEC. 2. The members of the commission aforesaid shall hold a meeting within 30 days after the ratification of this act, and shall prepare and publish a list of dangerous crop pests, known to be present within the state or liable to be introduced, and may at any subsequent meeting extend or amend such list. The commission shall also publish methods for exterminating such pests as they may deem capable of being economically exterminated within the boundaries of the state, and for repressing such as cannot be economically exterminated, and for preventing the spread of such pests within the state. They may also adopt regulations, not inconsistent with the laws and constitution of this state and the United States, for preventing the introduction of dangerous crop pests from without the state, and for governing common carriers in transporting plants liable to harbor such pests to and from the state, and such regulations shall have the force of laws.

SEC. 3. No person, firm or corporation shall knowingly and wilfully keep upon his or their premises any plant infested by any dangerous crop pest listed and published as such by the said commission, or permit dangerous weed pests to mature seed or otherwise multiply upon their land except under such regulations as the commission may prescribe. Every such infested plant and premises are hereby declared a public nuisance. The owner of such plants or premises shall, when notified to do so by the commission, take such measure as may be prescribed to eradicate such pests, and if such action is not taken, or is improperly executed within 10 days after being so notified, the commission shall cause said premises to be

freed from such pests by the best available method, and the cost of such work shall be a lien against such premises, and may be recovered, together with cost of action, before any court in the state having competent jurisdiction. Said notice shall be written, and mailed to the usual or known address, or left at the ordinary place of business of said owner or his agent. No damage shall be awarded the owner of such premises for entering thereon and destroying or otherwise treating any infested plant or crop, when done by the order of the commission.

SEC. 4. When said commission has reason to suspect that any pest listed by them as dangerous exists in any county in the state, they shall cause such suspicion to be verified by a person competent to determine the specific identity of such pests of crops, and if such suspicion prove founded upon fact, shall further appoint, for a designated time and duty, a competent person their agent to inspect such infested premises, and to take such measures for treating the same as the commission may direct. Any duly authorized agent of the commission shall have authority to enter upon and inspect any premises between the hours of sunrise and sunset during every working day of the year. Any one who shall seek to prevent such inspection, or who shall otherwise interfere with any agent of the commission while in performance of his duties, shall, upon conviction, be fined not less than \$5 nor more than \$50 for each offense, or may be imprisoned for not less than 10 nor more than 30 days.

SEC. 5. For the purposes of carrying out the provisions of this act, the sum of \$500 per annum, or so much thereof as is necessary, is hereby appropriated out of any funds in the treasury not otherwise appropriated, and shall be paid by the state treasurer upon properly authenticated vouchers signed by the chairman of the commission.

SEC. 6. The said commission shall report to the governor, for transmission to the next general assembly, its acts and disbursements under the provisions of this act. Such a report, together with all such circulars as may be issued by the said commission for the purposes of this act, shall be printed in editions of 1,000 copies by the public printer, and be paid for as other public printing.

SEC. 7. All laws and clauses of laws inconsistent with this act are hereby repealed.

SEC. 8. This act shall take effect from and after its ratification.

Ratified March 5, 1897.

Copy of a circular (No. 7) issued by the North Carolina commission August 31, 1897, to common carriers in that state.

To all Railroad, Express, and Steamship Companies and Common Carriers doing business in North Carolina: You are hereby notified, by virtue of chapter 264 of the acts of the general assembly of 1897, entitled "An act to prevent the introduction and

dissemination of dangerous insects, fungous and weed pests of crops," which act empowers this commission to prescribe rules for governing the transportation within the state of trees, shrubs and vines, liable to harbor and disseminate dangerous insect pests, that the annexed rules have been adopted and will be enforced on and after the 1st day of July, 1897. Inasmuch as the interests of all transportation companies doing business in North Carolina are bound up with the interests and general prosperity of the commonwealth, and that prosperity is seriously menaced by the introduction from other states and countries of destructive scale insects and other similar pests, it is hoped and believed that all companies will themselves cheerfully observe these rules, and endeavor by all the means in their power to uphold the commission in the work devolving upon it. They will thus serve to protect fruit-growing along their lines, and the future business involved. It is not the intention or desire of the commission to interfere unnecessarily with traffic in nursery stock, nor to prevent the bringing of such freight into the state. It only desires to insure the freedom of such stock from destructive parasites. The rules adopted by the commission are reasonable and not onerous. If faithfully observed, the rules will for the future prevent the dissemination of these dangerous pests in our state. The rules below will be strictly enforced as far as it lies in the power of the commission:

RULE 1. No transportation company or common carrier shall deliver to any consignee at any station point located in North Carolina any package, bale, box or single specimen of any tree, shrub or woody vine, nor accept such for transportation from any point in the state, unless each separate package, bale, box, or single specimen, has attached a label stating the name and address of the grower, preceded by the words, "Grown by." Said plants or packages of plants shall also have affixed a certificate from this commission that the nursery wherein the plants were grown had been examined and found free from San Jose scale and all other dangerous insects. The date of the certificate must not be more than six months from date of shipment of such stock. Certificates from others will not be recognized. The necessity for certifying does not extend to seeds, roots or herbaceous plants, nor to strawberry plants.

RULE 2. If by any oversight, accident, negligence, or otherwise, any invoice of uncertified trees, shrubs or woody vines, is received at any station, depot, wharf or warehouse within this state, such stock must not be delivered or removed from the place where the same was first stored, but shall within 48 hours after receipt be sent out of the state, if brought from without the state, or if shipment originated within the state, the plants, with their containing cases and packing, shall be destroyed by fire: such shipment being held unlawful by this commission. No person other than a duly authorized agent of this commission shall be permitted to open or inspect such plants,

further than may be necessary to determine the absence of a label and certificate as required by law. Transportation companies will immediately report to the commission any violation of this regulation, together with the action of the company. Said report is to include the name and address of the shipper and of the consignee.

RULE 3. Any transportation company or common carrier or other person wilfully disregarding the said law and the above rules prescribed in pursuance thereof, will be guilty of a nuisance and liable to action for damages, punishable with fine or imprisonment.

(Signed) _____, *Chairman.*

Copy of a circular (No. 8) issued by the North Carolina commission August 31, 1897, to nurserymen and others.

To Nurserymen and Dealers who Ship Nursery Stock into North Carolina: Your attention is called to the inclosed copy of circular No. 7 of this commission, relating to the shipment of nursery stock into North Carolina. You will notice that there is a modification in the regulations previously adopted, in that each package, etc., shipped into the state must have the certificate of this commission attached thereto, instead of the certificate of the official entomologist of the state in which your nursery is located. The certificate of this commission, together with 100 *facsimile* copies, will be issued without charge to each nurseryman, upon filing with this commission a certificate from the official entomologist of the state in which the nursery is located that said nursery was, within six months, personally examined by him, and the growing stock found free from San Jose scale, West Indian scale, black-knot, and other infectious pests, and apparently healthy in every respect. The certificates of this commission will bear date of April 1 or October 1, and will be good for only six months. It is not the purpose of this commission to interfere in any way with the sale of good nursery stock in the state. It is not believed that the rules and regulations of this commission will be found onerous to those who fully appreciate the necessity of protecting our horticultural interests.

(Signed) _____, *Chairman.*

OHIO.—LAWS OF 1896.

AN ACT to prevent the spread of yellows, a contagious disease among peach, almond, apricot and nectarine trees, and to prevent the spread of black-knot, a contagious disease among cherry, prune and plum trees, or any other contagious disease of fruit-trees, also the infection known as the San Jose scale, and to provide measures for the eradication of the same.

SECTION 1. That it shall be unlawful for any person to keep, or permit to be kept upon his premises or upon premises under his charge or control, as owner or lessee or otherwise, any peach, almond, apricot or nectarine tree infected with the contagious disease known as yellows, or to keep any affected part of any cherry, plum or prune tree infected with the contagious disease known as black-knot, which affects one or more branches or any tree infested with San Jose scale or any of the fruit from any tree infected with peach yellows, or to sell or offer for sale, or to ship or permit to be shipped to any person in any manner, any of said yellows fruit; that both trees and fruits so infected, except as aforesaid, shall be subject to destruction as public nuisances as hereinafter provided, and it shall be the duty of every person owning any fruit or having in their charge or under their control any fruit from any of the said trees so infected or any of such fruit so infected, except as aforesaid, and of every person having any of said fruit-trees so infected in their charge or under their control as owner, agent, lessee or otherwise, to immediately destroy all trees so infected and all of said fruit so infected by burning the same; and whoever owning any of said fruit-trees so infected, or whoever having any of the same in charge as agent, servant, employee or lessee or otherwise, shall fail or neglect to destroy all of the same within 10 days after notice given to him by the township board of fruit commissioners, hereinafter mentioned, of such infected condition, shall be guilty of a misdemeanor, and upon conviction shall be fined in any sum not exceeding \$100; provided, however, that in case of the black-knot in any fruit-tree, it shall be sufficient to cut away and destroy only the limb or part of the tree affected with black-knot, and destruction or the term destroy in this act shall be construed to mean destruction by fire. It shall be sufficient to extinguish the San Jose scale with effective insecticides.

SEC. 2. It is further provided that any nurseryman, agent, dealer or other person who shall sell or offer for sale, any fruit-trees for planting that are affected with any contagious disease, or infested with the pest known as the San Jose scale, or other obnoxious insect pest, shall be guilty of a misdemeanor, and upon conviction shall be fined not less than \$10 nor more than \$100. Whenever the disease

known as peach yellows, also black-knot of the plum, cherry and prune are found to exist, not less than five freeholders in any township in Ohio may petition the township trustees to appoint a township board of fruit commissioners, recommending in said petition three or more of the most competent and best qualified persons known in said township for the position. It shall be the duty of the trustees to speedily appoint for the township fruit commission, two of whom they consider the most capable freeholders in the township, who are growers of fruits liable to be diseased, one of whom must be familiar with the symptoms and nature of the diseases aforesaid mentioned, and shall be the foreman of said commission. If the other member of the commission be unlearned, he shall diligently strive to become acquainted with the diseases they are to investigate. Where any serious difference arises between the two commissioners, regarding the infected fruit or trees, the foreman of the nearest outside commission shall be called by the trustees as referee, and his decision shall be conclusive. In case an expert cannot be found in the township, the trustees shall employ the nearest one outside the township, that they can find, whose term or service shall continue during the year. The commissioners shall hold office till the first of April following their appointment. The township fruit commission shall be kept up as long as destructive diseases prevail and there is need of its existence, and the township trustees shall annually appoint the commissioners comprising it at their regular April meeting, and the said commissioners shall take their oath of office and file their acceptance with the township clerk. To aid the trustees in their selection, five or more freeholders, who are interested in fruit-growing, may petition them to appoint certain persons whom they shall name and recommend in said petition for the consideration of said trustees in making their appointment. The compensation for each commissioner shall be \$2 and necessary expenses for each day's time engaged in the business of said office, and \$1 for each half day, all of which shall be allowed by the township trustees, and paid out of the funds of said township. It is further provided that in case a member of the township fruit commission proves seriously inefficient and is unfaithful in the discharge of his official duties, on petition of five freeholders the trustees of said township shall investigate the complaints and charges made against said commissioner, and if they find good and sufficient cause, shall remove him and appoint another person to fill his place.

SEC. 3. The township clerk shall be clerk *ex officio* of the township board of fruit commissioners, and he shall keep a correct and complete record of all their proceedings in a book to be provided him by the township trustees for that purpose, and he shall file and preserve all papers belonging to said board of commissioners, or either of them, and pertaining to their duties, all of which shall be a part of the public records of said township, and he shall receive such rea-

sonable compensation for such services as the township trustees may allow. It shall be the duty of the Ohio Experiment Station to publish a bulletin, that shall plainly give full and complete information regarding the causes, symptoms, devastating effects and cure or treatment of peach yellow, black-knot, San Jose scale, or other serious contagious disease of fruits in sufficient quantity to supply every grower of fruit liable to these diseases, in the state. It shall be the duty of the annual township assessor to record the name and address of every person who owns or has charge of any peach, plum, cherry, prune, apricot or almond tree or trees, giving the name and number of each kind, and after the canvass of the township to file said report with the township clerk, who, with the aid of the foreman of the township fruit commission, shall inform the state experiment station of the number of bulletins needed in that township, and on receipt of the same the clerk shall mail or deliver one copy to each person who owns or has charge of any and all trees that are liable to serious damage from the contagious threatening diseases treated upon in said bulletin.

SEC. 4. It shall be the duty of said board of fruit commissioners upon or without complaint to carefully seek out, keep down and stamp out the contagious fruit diseases aforesaid mentioned, also the San Jose scale, or other noxious insect pest in every part of the township, during all seasons when the symptoms are plainly to be seen by either of them, to proceed together much as possible, without delay and examine the trees and fruit supposed to be infected, and if any of said diseases are found to exist by said fruit commission, they shall place upon the diseased tree a distinguishing mark, and shall place upon the fruit a placard, and indorse thereon the diseased condition of such fruit, and they shall forthwith cause notice in writing to be served upon the owner of the same, if he be a resident within the county, and if the owner be not a resident of such county, then the written notice may be served upon the person having the same in charge for the owner or agent, employee, lessee or otherwise: such notice may be served personally or by copy left at the usual residence of any such person, and if no such person resides within such county upon whom service can be made, then such notice may be served by mail by being deposited in a post-office, postage prepaid, and addressed to the post-office address of such person wherever he may reside. Such notice shall contain a simple statement of the facts as found to exist, with an order of said board of fruit commissioners to remove and destroy by burning the trees so marked and designated, the whole tree, roots and branches, where infected with yellows, and the branches infected with black-knot, and the fruit so marked by placard, within 10 days from date of service of said notice, Sundays excepted, and if any person whose duty it is hereby made to destroy the same, fails, neglects or refuses to destroy the same as mentioned in such order of said commissioners, for a period

of 10 days after the service thereof, then the said commissioners be and are hereby authorized to enter upon the premises of any person and destroy all such fruit and trees so mentioned and found to be so diseased which they have marked or placarded, and said commissioners are hereby authorized to employ all help and secure all necessary means to so destroy the same, all of which shall be allowed by the township trustees and paid out of the township treasury. And in cases where said commissioners shall execute their own orders upon default of the person whose duty it is to execute the same, the costs shall be paid by the owner of the condemned fruit or trees, and in case of his failure to pay the same and all dues, after demand made by the trustees of such township, the said trustees shall certify the same together with a penalty of 20 per cent. to the auditor of the county to be placed upon the tax duplicate, and the same shall become a lien upon the premises of such person from the time of filing the same with the auditor, and collected by the county treasurer as other taxes. Any person who may be dissatisfied with the action of the township fruit commission in condemning his or her fruit trees, or diseased fruit, on the ground that said trees or fruit are not diseased, but sound and healthy, may appeal in writing, stating their grievance in full to the township trustees, who shall immediately refer the case through the township clerk, to the professor at the Ohio Experiment Station, who is an expert in the line of the complaint, whose duty it shall be to forthwith proceed to view the fruit or trees in controversy, and whose decision shall be final. All costs and expenses in the case shall be paid by the complainant, if defeated, and if not, by the trustees of the township in which the complaint is made.

SEC. 5. An act entitled "An act to prevent the spread of yellows, a contagious disease among peach, almond, apricot and nectarine trees, and to prevent the spread of black-knot, a contagious disease among cherry, prune and plum trees, and to provide means for the eradication of the same, and to repeal an act entitled 'An act to amend section 1 of an act to eradicate the disease known as black-knot on plum and cherry trees,'" passed April 4, 1894, is hereby repealed.

Passed April 18, 1896.

OREGON.—LAWS OF 1895.

AN ACT to amend an act entitled "An act to create a state board of horticulture and appropriate money therefor," approved February 25, 1889, and an act amendatory thereof, entitled "An act to amend an act entitled 'An act to create a state board of horticulture and appropriate money therefor,' approved February 25, 1889," approved February 21, 1891, and to protect the horticultural industry in Oregon.

Sec. 10. It shall be the duty of the several members of the board, and of the secretary, under their direction, whenever they shall deem it necessary, to cause an inspection to be made of any orchards, nurseries, trees, plants, vegetables, vines, or any fruit packing-house, storeroom, salesroom, or any other place within their districts, and if found infested with any pests, diseases, or fungous growths injurious to fruits, plants, vegetables, trees, or vines, or with their eggs or larvæ, liable to spread to other places or localities, or such nature as to be a public danger, they shall notify the owner or owners, or persons in charge of or in possession of such articles, things, or places, that the same are so infested, and shall require said persons to eradicate or destroy said insects or pests, or their eggs or larvæ, or to treat such contagious diseases within a certain time, to be specified in said notice. Said notices may be served upon the person or persons, or any of them, owning, having charge, or having possession of such infested place, article, or thing, by any member of the board, or by the secretary thereof, or by any person deputed by the said board, or any member or the secretary thereof, or by any person deputed by said board for that purpose, or they may be served in the same manner as a summons in an action at law. Such notice shall contain directions for the application of some treatment approved by the commissioners for the eradication or destruction of said pests, or the eggs or larvæ thereof, or the treatment of contagious diseases or fungous growths. Any and all such places, orchards, nurseries, trees, plants, shrubs, vegetables, vines, fruit, or articles thus infested are hereby declared to be a public nuisance: and whenever any such nuisance shall exist at any place in the state on the property of any owner or owners upon whom or upon the person in charge or possession of whose property notice has been served as aforesaid, and who shall have failed or refused to abate the same within the time specified in such notice, or on the property of any non-resident, or any property not in the possession of any person and the owner or owners of which cannot be found by the resident member of the board or the secretary, after diligent search within the district, it shall be the duty of the board, or the members thereof in

whose district said nuisance shall exist, or the secretary under his or their direction, to cause such nuisance to be at once abated, by eradicating or destroying said insects or pests, or their eggs or larvæ, or by treating or disinfecting the infested or diseased articles. The expense thereof shall be a county charge, and the county court shall allow and pay the same out of the general fund of the county. Any and all sums so paid shall be and become a lien on the property and premises from which said nuisance shall have been removed or abated, in pursuance of this act, and may be recovered by a suit in equity against such property or premises; which suit to foreclose such liens shall be brought in the circuit court of the county where the premises are situated, by the district attorney, in the name and for the benefit of the county making such payments. The proceedings in such cases shall be governed by the same rules, as far as may be applicable, as suits to foreclose mechanics' liens, and the property shall be sold under the order of the court, and the proceeds applied in like manner. The board is hereby invested with the power to cause such nuisances to be abated in a summary manner.

Approved February 23, 1895.

PENNSYLVANIA.—LAWS OF 1897.

AN ACT to prevent the spread of the contagious diseases known as yellows, black-knot, peach rosette and pear-blight among peach, plum, cherry, prune, almond, apricot, nectarine and pear trees, or the fruit thereof, and providing measures for the eradication of the same, and applying the provisions of this act to "San Jose scale," when found on any vine, plant, shrub or fruit-tree.

SECTION 1. That it shall be unlawful for any person to keep any peach, almond, apricot, plum, cherry, nectarine or pear tree infected with the contagious diseases known as yellows, black-knot, peach rosette, or pear-blight, or to offer for sale or shipment, or to sell or to ship any of the fruit thereof, except the fruit of the plum, cherry and pear tree; that both tree and fruit so infected shall be subject to destruction as public nuisances as hereinafter provided. No damages shall be awarded in any court in the state for entering upon the premises and destroying such diseased trees, or parts of trees, or fruit, if done in accordance with the provisions of this act. It shall be the duty of every person, as soon as he becomes aware of the existence of such disease in any tree, parts of trees, or fruit owned by him, to forthwith destroy or cause said trees or fruit to be destroyed.

SEC. 2. In any township, borough or city of this state in which such contagious diseases exist, or in which there is good reason to believe they exist, or danger may be justly apprehended of their introduction, it shall be the duty of the township supervisors or board of road control, or borough or city council, as soon as such

information becomes known to either such board or councils, or any member thereof, to appoint, forthwith, three competent freeholders of said township, borough or city as commissioners, who shall hold office during the pleasure of said board, borough or city council, and such order of appointment and of revocation shall be entered at large upon the township, borough or city records; provided, that the commissioners now appointed and in office shall continue in said office until their successors are appointed and qualified; provided, that in case commissioners have already been appointed to prevent the spreading of bush, vine and fruit-tree pests, such commissioners shall be, *ex officio*, commissioners under this act.

SEC. 3. It shall be the duty of said commissioners within 10 days after the appointment as aforesaid, to file their acceptances of the same with the clerk of said township, borough or city, and said clerk shall be *ex officio* clerk of said board of commissioners and he shall keep a correct record of the proceedings of said board in a book to be provided for the purpose, and shall file and preserve all papers pertaining to the duties and actions of said commissioners, or either of them, which shall be a part of the records of said borough, township or city, providing that if there is no township clerk, then it shall be the duty of the township auditors to select one of their number as such clerk.

SEC. 4. It shall be the duty of the commissioners, or any one of them, upon or without complaint, whenever it comes to their notice that either of the diseases known as yellows, black-knot, peach rosette or pear-blight exist or are supposed to exist within the limits of their township, borough or city, to proceed without delay to examine the tree or fruit supposed to be infected, and if the disease is found to exist a distinguishing mark shall be placed upon the diseased trees, and the owner notified personally or by a written notice left at his usual place of residence; or if the owner be a non-resident by leaving the notice with the person in charge of the trees or fruit, or the person in whose possession said trees or fruit may be. The notice shall contain a simple statement of the facts as found to exist with an order to effectually uproot and destroy by fire, or as the commissioner shall order, the trees so marked or designated, or such parts thereof, within five days. Sundays excepted, from the date of the service of the notice; and in case of fruit infected such notice shall require the person in whose possession or control it is found to immediately destroy the same, or cause it to be done, or the commissioner may destroy the same. Said notice and order to be signed by one or more of the commissioners.

SEC. 5. In case any person who is interested in any tree or trees so ordered to be destroyed shall feel aggrieved by such order, and shall believe that such trees are not so diseased, he may serve a written notice upon all of the commissioners in the township in which such trees are situated, which notice shall specify the part of such order

to which objection is made, and the particular tree or trees included in such order which it is claimed are not so diseased, and shall request an examination of such tree or trees by all of said commissioners, which notice shall be served personally upon each of said commissioners within the five days given for the destruction of said trees, and it shall thereupon be the duty of all said commissioners who have not already done so to personally examine such tree or trees as soon as practicable, and within said five days, and if a majority of all commissioners shall agree that such tree or trees are so diseased they shall order the same to be destroyed forthwith by the owner or custodian thereof; but if a majority shall decide that such tree or trees, or any of them, are not so diseased, they shall revoke the order of the commissioner to destroy the same as far as it relates to the trees so found to be free from disease, but this section shall not apply to fruit ordered to be destroyed.

SEC. 6. Whenever any person shall refuse or neglect to comply with the order to remove and destroy the trees or parts of trees so designated and marked by the commissioner, as aforesaid, it shall become the duty of the commissioner to cause said trees, or parts of trees, to be removed and destroyed forthwith, employing all necessary aid for that purpose. The expenses for such removal and destruction of trees, or parts of trees, to be a charge against the township, borough or city; and for the purpose of such removal or destruction the said commissioners, their agents and workmen, shall have the right and power to enter upon any and all premises within their township, borough or city.

SEC. 7. If any owner neglects to uproot and destroy or cause to be removed and destroyed, as aforesaid, such diseased trees or parts of trees or fruit after such examination and notification, and within the time hereinbefore specified, or any other person who shall sell or offer for sale such diseased fruit, such person shall be deemed guilty of a misdemeanor, and punished by a fine not exceeding \$100, in the discretion of the court; and any justice of the peace of the township or borough, or any alderman of any city, where such trees may be or where such nursery stock or fruit is sold, shipped, disposed of or delivered as aforesaid, shall have jurisdiction thereof. The words "part of trees" wherever used in this act shall refer to black-knot and pear-blight only, and not to trees affected with yellows.

SEC. 8. The commissioners shall be allowed for services under this act, \$2 for each full day, and \$1 for each half day, and their other charges and disbursements under this act by the township board, borough or city council, all of which costs, charges, expenses and disbursements may be recovered by the township, borough or city from the owner of such diseased fruit or nursery stock, or from the owner of the premises on which said diseased trees stood, in action of assumpsit; provided, said owner has refused or neglected to remove said diseased fruit or nursery stock in compliance with the

order of said commissioner or commissioners: and provided, that the provisions of this act shall apply to the San Jose scale when found on any vine, plant, shrub or fruit-tree.

SEC. 9. All acts inconsistent with this act are hereby repealed. This act is ordered to take immediate effect.

Approved June 18, 1897.

UTAH.

CHAPTER 33.—LAWS OF 1894.

AN ACT authorizing county courts to appoint fruit-tree inspectors and to provide for the destruction of fruit-destroying insects.

SECTION 1. It shall be the duty of the county court of any county in the territory of Utah where fruit is grown to appoint one or more fruit-tree inspectors for such county.

SEC. 2. The duties of the fruit-tree inspectors of each county shall be to inspect every orchard, vineyard or nursery in such county at such time and under such regulations as the county court shall prescribe. He shall annually report to the county court every item of interest and the result of his labors pertaining to the duties of his office.

SEC. 3. It shall be the duty of the probate judge of any county wherein fruit-trees are growing, to annually issue his proclamation, stating the time or times when it is prudent and proper to spray fruit-trees and to otherwise disinfect orchards that are infested with any kind of fruit-destroying insects, in which he shall name two or more formulas that have been used and approved for such purposes.

SEC. 4. The inspector shall leave a printed notice with or mail to every owner, occupant, or person in charge of any orchard, vineyard or nursery, produce dealer, storage or commission merchant, or any person handling fruit, on whose premises he shall find any kind of fruit-destroying insects, their larvæ or their pupæ, commanding them to disinfect their trees, vines, storerooms and premises in conformity with the proclamation of the probate judge. Such notice must be signed by the inspector, who shall note in the stub of said notice the name of the person so notified and the date on which such notice was served or duly mailed to him.

SEC. 5. The county court is hereby authorized and required to provide for the publication of the proclamation required by section 3, and to formulate such rules and regulations as it may deem proper, to govern the actions of the fruit-tree inspector in his duties, and to give such public notice as it may deem proper in relation to the disinfecting of storerooms, warehouses and salesrooms where fruits in either a green or dried state may be stored, handled or offered for sale.

SEC. 6. Any owner, occupant or person in charge of land on which fruit-trees are growing who has been notified as provided for in section 4 of this act to disinfect his trees or vines, who shall fail or neglect without sufficient cause to comply with said notice, shall, after conviction in a court having jurisdiction, be deemed guilty of a misdemeanor.

SEC. 7. When the owner, occupant or person in charge of any premises shall have been convicted on account of neglect or failure to carry out the provisions of section 6 of this act, and he still refuses to comply therewith, all infested trees or vines on his premises may be disinfected at the expense of the owner or occupant of said premises.

SEC. 8. Any person who fails to disinfect his storeroom, warehouse or salesroom as directed by the fruit-tree inspector shall be deemed guilty of a misdemeanor.

SEC. 9. All persons importing or exporting trees in any county must get the inspector's certificate that such trees are free from fruit-destroying insects, their larvæ or their pupæ, and a failure or neglect so to do shall subject them to the penalties provided for in section 8 of this act.

SEC. 10. The compensation of the fruit-tree inspector shall be fixed by the county court and paid out of the county treasury; and all fines collected under the provisions of this act shall be paid into the county treasury.

SEC. 11. This act shall take effect from and after its approval.

Approved March 7, 1894.

VIRGINIA.—LAWS OF 1896.

AN ACT to eradicate the San Jose or pernicious scale, a disease affecting fruit-trees, and to prevent its spread.

SECTION 1. The board of control of the state agricultural experiment station be, and is hereby, empowered and directed to take immediate action to suppress and eradicate this insect.

SEC. 2. The said board is hereby authorized and required to designate a member of the scientific staff of the agricultural experiment station to act as an inspector under the provisions of this act, and it shall be the duty of the said board to promulgate at once rules and regulations in accordance with this act for the government of the said inspector in the duties devolving upon him in the execution of the provisions of this act; and the said Board may further employ temporarily an assistant by the day for the purpose of executing the orders of the inspector in regard to the treatment of the infected plants.

SEC. 3. The inspector shall have power under the regulations of the said board to determine whether any infested plants are worthy

of remedial treatment, or shall be destroyed: and he shall immediately report his findings in writing, giving reasons therefor, to the owner of the infested plants, his agents or tenants, and a copy of each such report shall also be submitted to the said board. In case of objection to the findings of the inspector, an appeal shall be to the said board, whose decision shall be final: an appeal must be taken within three days, and shall act as a stay of proceedings until it is heard and decided.

SEC. 4. Upon the findings of the inspector in any case of infested plants, the treatment prescribed by him shall be executed at once (unless an appeal is taken), under his supervision; cost of material and labor shall be borne by the owner: provided, however, that in case the plants shall be condemned they shall be destroyed by the inspector, and the expense of such action shall be borne by the owner.

SEC. 5. In case any person or persons refuse to execute the direction of the inspector or of the said board after an appeal, the county judge shall, upon complaint filed by the inspector or any freeholder, cite the person or persons to appear before him at the first regular session of the county court, and upon satisfactory evidence shall cause the prescribed treatment to be executed, and the expense thereof and costs of court shall be collected by warrant from the owner or owners of the infested plants.

SEC. 6. It shall be unlawful to offer for sale, sell or transport plants, scions, trees, shrubs or vines known to be infested with the San Jose scale. Any person or persons violating this section shall, upon conviction thereof, be fined not less than \$50 nor more than \$100.

SEC. 7. The said board of control of the agricultural experiment station, its agents or employees, are hereby empowered with authority to enter upon any premises and examine all plants whatsoever in discharge of the duties herein prescribed. Any person or persons who shall obstruct or hinder them or their agents in the discharge of these duties shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined not less than \$20 nor more than \$50.

SEC. 8. The said board shall make an annual report to the governor of the state, giving in detail its operations and expenditures under this act.

SEC. 9. This act shall be in force from its passage.

Approved March 5, 1896.

WASHINGTON.

CHAPTER 51.—LAWS OF 1895.

AN ACT relating to the state board of horticulture, amending sections six, seven, eight and ten of the act approved February 16, 1891, entitled "An act to create a state board of horticulture and appropriate money therefor, and declaring an emergency, and providing a penalty for a violation of the provisions of this act."

SECTION 1. Section 6 of said act is hereby amended to read as follows: Sec. 6. For the purpose of preventing the spread of contagious diseases among fruit, fruit-trees and orchards, and for the prevention, treatment, cure and extirpation of fruit pests, fungus growths and the disease of fruits, fruit-trees and orchards, and for the disinfection of grafts, scions or orchard debris, empty fruit boxes or packages, and other suspected material or transportable articles dangerous to orchards, fruits and fruit-trees, said board shall make regulations for the inspection and disinfection and quarantining thereof, which regulations shall be circulated in printed form by the board among the fruit-growers and fruit dealers of the state, and shall be published three times in each of three papers of general circulation, located in three different parts of the state, and shall be posted in three conspicuous places in each county, one of which shall be at the county court-house thereof. Any violation of said regulations shall be deemed a misdemeanor, and shall be punished by a fine of not less than \$25 nor more than \$100, to be a charge upon the real property of the person convicted and on the property, on account of the infection of which, or the failure to disinfect which, said conviction is had.

SEC. 2. Section 7 of said act is hereby amended to read as follows: Sec. 7. Each member of the board shall be an inspector of fruit pests for his respective district. He shall inspect or cause to be inspected, at least once a year each county of his district and inspect and investigate the needs and requirements of the horticultural and kindred industries of his district. And for the purpose of carrying out this provision each of said inspectors in his own district shall have power to appoint in each county of said district a deputy inspector with full powers to act in the place of said inspector for said district, such appointment of deputies may be made and revoked at the pleasure of the said inspector, and for such length of time only as he shall deem absolutely necessary. The deputy inspector shall receive for his services the sum of \$2.50 per day for each day actually and necessarily employed. It shall be the duty of each member to see that the laws of the state pertaining to horticulture and also the rules and regulations of the board, be made known and are strictly

enforced, to prevent the spread of fruit pests and diseases of trees and plants injurious to the horticultural interests of the state, and for the disinfection of fruits, trees, plants, vines, grafts, scions, orchard debris, empty fruit boxes and other material. Each member of the board, upon his own motion, or upon complaint made to him by any person, shall inspect orchards, gardens, hop fields, nurseries, storerooms, fruit stands or other places suspected or believed to be infested by fruit pests, or infested with contagious diseases injurious to trees, plants, or fruits. He shall make a full report to the board at each meeting in April and October of each year, as to the condition of his respective district, in regard to the horticultural interests therein: but no member shall devote more than 60 days' time each year upon his own motion, unless exceedingly urgent necessity demands it, which must be determined by the board. Each member shall receive the same compensation when attending to the duties of inspector in his district, and mileage actually paid out shall be allowed, as received when attending the meetings of the board. The secretary, under the direction of the board, may exercise throughout the state any power in this act conferred on each member of the board, as inspector of pests.

SEC. 3. Section 8 of said act is hereby amended to read as follows: Sec. 8. When a member of the board, upon his own motion, shall make complaint, or when complaint is made by any person to a member of the board, or a member of the board suspects that any person or persons, company or corporation has an orchard, trees or nursery of trees, vineyard or garden, fruit-packing house, storeroom, or that any other place in the state is infested with any noxious insects, the eggs or larvæ of any such insects, or that any package of trees, plants or fruits are in transit to this state, or about to be disseminated, which are known or suspected to be from localities that are infested with any disease or pest, injurious, or that may become injurious, to the fruit interests of the state, such member, if he has not already inspected the premises or property, shall inspect the premises or property so complained of, or suspected as aforesaid, and if the same is found to be infested as aforesaid, such member shall notify in writing the owner or his agent, or the person in charge of the same, to treat and disinfect said premises or property within a time and in a manner to be prescribed in said notice. If any person so notified shall neglect or refuse to disinfect said premises or property in the manner and in the time prescribed in said notice, the person so notified shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined not less than \$25 nor more than \$100, in addition to the cost of the action, which fine and cost shall be a lien and charge upon said premises or property, and if the party convicted shall thereafter neglect or refuse to disinfect said premises or property, said failure, neglect or refusal for the period of five days shall be deemed a new offense, and shall subject the party

committing it to conviction in like manner and with like penalty and costs as in the first offense. The penalty and cost of such action or actions, upon being docketed in the superior court, shall be a judgment lien upon all real property of the party convicted, and shall bear legal interest until paid: provided, however, that the court may, in its discretion, upon conviction, declare the premises and property infected a nuisance and order the same abated, the costs of the same to become a judgment against the real property as before mentioned.

SEC. 4. Section 10 of said act is hereby amended to read as follows: Sec. 10. Any person or persons who shall bring into the state, sell, offer for sale, distribute or give away fruit-trees, plants, shrubs, fruit or other material infested with the injurious insect popularly known as the San José scale (*Aspidiotus perniciosus*), or any other live or injurious insect of this species, shall be guilty of a misdemeanor, and upon conviction thereof shall be punished by a fine not less than \$25 nor more than \$200, or by imprisonment in the county jail not less than 60 days nor more than one year: provided, that for each repeated offense the person or persons convicted, as aforesaid, may be punished by a fine of \$100, or by imprisonment not to exceed two years. Any person or persons who shall sell, offer for sale, distribute or give away any tree or trees, root or roots, grafts, cuttings or scions, infested with the injurious insect popularly known as the woolly aphis (*Lanigera*) shall be deemed guilty of a misdemeanor, and on conviction thereof shall be punished by a fine not less than \$25 nor more than \$200, or by imprisonment in the county jail not less than 30 days nor more than one year. Any nursery trees, shrubs or plants which have been shipped to any place within the state for distribution, or for planting, and which are infested with any injurious insects, shall be disinfected under the direction of a member of the board, or some person designated by such member, and the cost of said disinfection shall be charged to the owner of said articles, and shall become a lien on said trees, shrubs or plants until paid: provided, that if the cost of said disinfection is more than \$5 the expenses shall not exceed the rate of 5 cents per tree: and said lien to be foreclosed upon like notice as in the case of the sales of personal property on execution.

SEC. 5. No person, firm or corporation shall engage or continue in the business of selling within the state, or importing fruit-trees, plants or nursery stock into this state, without first having obtained a license to do business in this state, as in this act provided.

SEC. 6. Any person, firm or corporation, may obtain a license to engage in the business of selling fruit-trees, plants or nursery stock into this state, by filing with the secretary of the state board of horticulture, bond, with sureties to be approved by the state board of horticulture in the sum of \$3,000, conditioned that the principals will faithfully obey the provisions of this act and the laws of the state of

Washington, and that the said principals will pay the cost of inspection and destruction of all infested nursery stock or other material or goods imported into, or sold within this state by the said principal or his or their agent. Licenses granted under this act shall be for two years or less at the discretion of the commissioner.

SEC. 7. It shall be the duty of every person, firm or corporation licensed to do business under this act to notify the secretary of the state board of horticulture of his intention to ship an invoice of fruit-trees, plants or nursery stock from one point to another in this state, or from any point without this state into this state. The said notice shall contain the name and address of both the consignor and consignee and the invoice of the goods to be shipped, the freight or express office at which the goods are to be delivered and the name or title of the transportation company from whom the consignee is to receive such goods. Such notice shall be mailed at least 24 hours before the day of such shipment.

SEC. 8. Any person, firm or corporation who shall sell within this state, or import into this state, any fruit-trees, plants or nursery stock in violation of the provisions of this act, shall be deemed guilty of a misdemeanor, and on conviction thereof shall be fined for each offense in any sum not less than \$25 nor more than \$100.

SEC. 9. Any person who shall offer for sale, or solicit persons to purchase from him, any fruit-tree, plants or nursery stock belonging to any firm not licensed under the provisions of this act, shall be deemed guilty of a misdemeanor and fined in any sum not exceeding \$100. All fines imposed for violation of the provisions of this act shall be paid to the treasurer of the county wherein the violation was committed, and be placed to the credit of the school fund of such county.

SEC. 10. Inasmuch as there is great danger to the fruit and horticultural interests of the state from the importation of fruit pests and other causes, for which the law does not fully provide: therefore, an emergency exists, and this act shall take effect immediately.

Approved March 11, 1895.

No replies were received from Alabama, Arizona, Arkansas, Delaware, Georgia, Idaho, Minnesota, New Mexico, and Washington.

Through the courtesy and assistance of Hon. J. L. King, state librarian, at Topeka, the laws of the following states were examined; the dates refer to the year of publication: Alabama, 1897; Arizona, 1893 and 1895; Arkansas, 1893; Delaware, 1893; Georgia, 1896; New Mexico, 1895; Washington, 1895; Minnesota, 1895. An act upon the subject was found in Washington session laws and is printed above.





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