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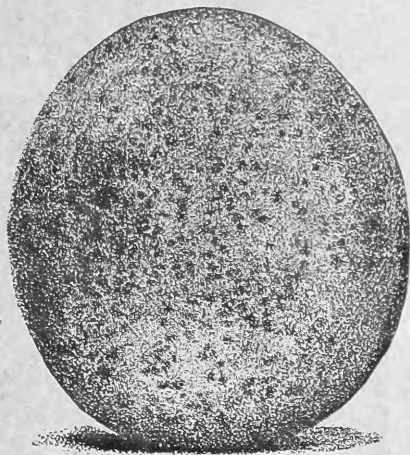
PEACH YELLOWS.

A WARNING TO FRUIT GROWERS—DANGER OF INTRO-
DUCTION INTO CALIFORNIA—WARNING TO INTENDING
PURCHASERS, AND RECOMMENDATIONS.

By B. M. LELONG,
Secretary of the State Board of Horticulture.

P. 1650

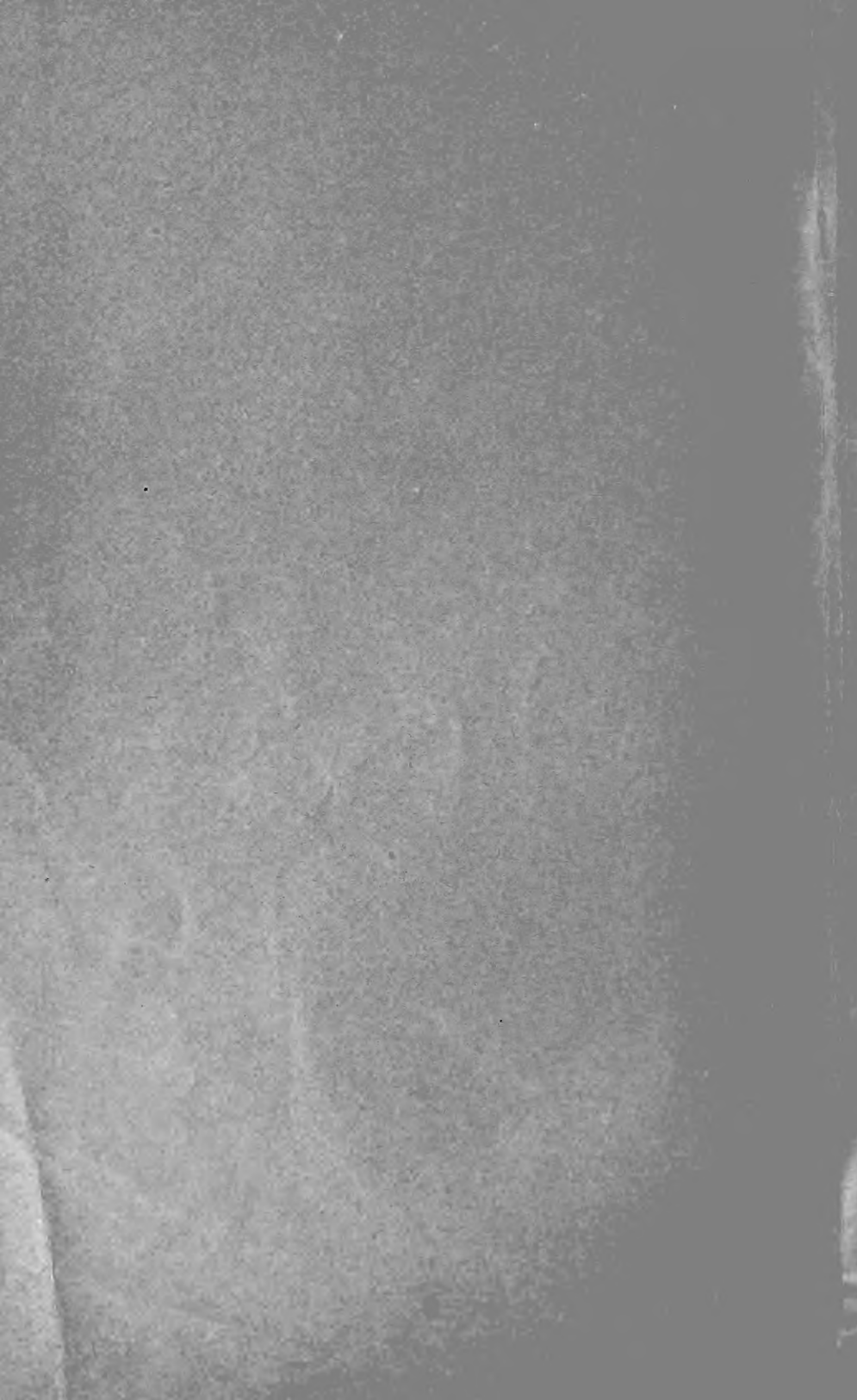
EX OFFICIO CHIEF HORTICULTURAL OFFICER.



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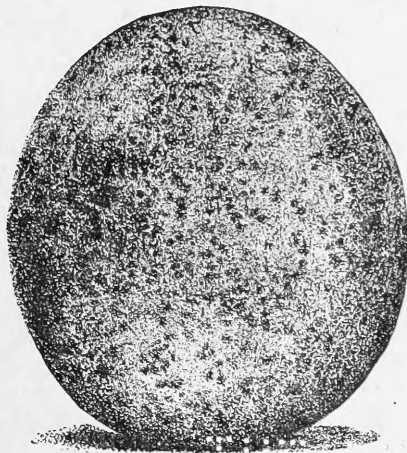


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California State board
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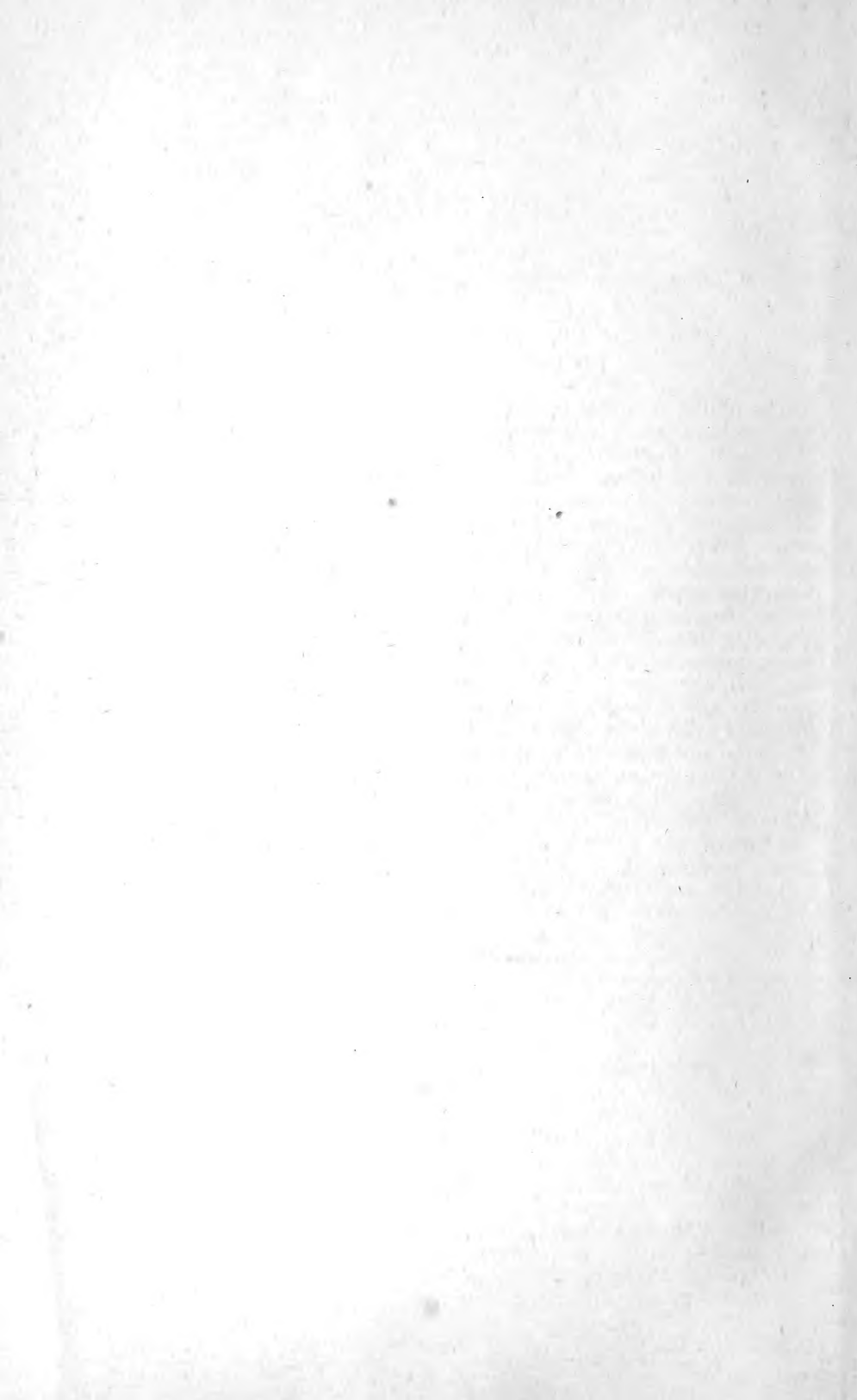
A WARNING TO FRUIT GROWERS.

Whereas, We are informed that some nurserymen, through the scarcity of peach stocks for budding prunes, have contracted for large lots of eastern peach stock for budding purposes for next season's delivery; and whereas, there is great danger of introducing into this State the Yellows, a deadly disease of the peach, on said roots, and on peach trees imported from the Eastern States; and while they may not have the disease in the localities where they get this stock, but we having no guarantee that the eastern growers may not get trees grown in infested sections to supply the California demand; therefore, be it

Resolved, That we warn intending purchasers of the danger of getting trees infected with the Yellows and other tree diseases and pests now in this State; and be it further

Resolved, That we call the attention of all the Boards of County Horticultural Commissioners and Quarantine Guardians throughout the State to this danger, and urge the rigid enforcement of the law in all such cases.

Adopted at a meeting of the Board, July 9, 1891.



PEACH YELLOWS.

By B. M. LELONG, Secretary of the State Board of Horticulture, and Ex Officio Chief Horticultural Officer.

EASTERN PEACH TREES.

The future of successful fruit growing in California depends in preventing the various fruit tree diseases so prevalent throughout many of the Eastern States from being introduced into this State. Importing trees from the East, especially from States where the Yellows has appeared, is very dangerous, and every person interested in the future of fruit growing in this State ought to discourage the practice in every way. There is no certainty that nurserymen in the East do not run short of nursery stock and are supplied from other States to fill orders from this coast. Also, there is no guarantee that dealers do not buy cheap trees from suspected districts and forward them as coming from perfectly clean localities. To be safe no person should buy imported trees, unless known to have come from localities absolutely free from the Yellows. The Yellows is spreading throughout the East with great rapidity and is most alarming, threatening the destruction of the peach industry everywhere. The disease now prevails from Massachusetts to Virginia, and westward to the Great Lakes and the Mississippi River. The peach-growing sections of Massachusetts, Connecticut, New York, New Jersey, Ohio, Delaware, Maryland, Virginia, Kentucky, Indiana, Illinois, Michigan, Arkansas, Pennsylvania, and North Texas are suffering from its ravages, and so far nothing can stop its destructive course; it is a most singular and obscure disease everywhere.

I could point out the damage done by this destructive agent in all the districts where it has appeared, but believe it would only be time wasted. As illustrating, one will apply, to a certain extent, to all the rest; I therefore will only mention New Castle County, Delaware. This county had always been considered the largest peach-growing region of the East, and in 1879 the acreage devoted to the culture of the peach in that county was estimated at eleven thousand six hundred acres, but since that time has been steadily on the decline, caused by the Yellows. In 1888 no orchards of any consequence were found between Middletown and McDonough, which formerly was so thickly planted. Large districts, once almost entirely devoted to peach orchards, are now bare and do not contain a single tree. It was estimated that there were one million seven hundred and fifty thousand trees in New Castle County in 1875, and six hundred and thirty-two thousand four hundred and twenty-seven baskets of peaches were shipped that same year. New Castle and Middletown are no longer the center of the peach region, and the peaches now shipped from there are hardly taken into account. Speaking of Delaware City and Middletown, Dr. Smith says: "The 'glory and profit' of peach growing have departed, and under the same

blighting influence." The damage caused by Yellows extends to all the other counties in Delaware, and also in the States above mentioned in no less destructive form.

In June, 1890, I visited the principal peach-growing regions of the East, and especially those of Delaware, Maryland, and New Jersey. The great number of orchards that had been rooted out, on account of being infected by the Yellows, was really appalling. Vacant fields could be seen everywhere (now principally devoted to cereals) that once were peach orchards.

The illustrations hereto appended, reproduced from the report (1888) of Dr. Erwin F. Smith, of the Division of Vegetable Pathology, show its destructive power in devastation and ruin of the peach-growing sections of Maryland and Delaware. Large orchards that once were very productive have been swept out of existence by the scourge. Thousands of acres have been taken out and many more will be uprooted and burned. The scourge is also doing havoc in many sections where, previous to 1888, it was not known to exist. Such remnants of orchards are seen everywhere, and the stumps remain only as evidence of its destructive work.

The newspapers of the East have recently announced that an English syndicate has secured an option for the purchasing of a number of the larger nurseries in western New York, and also that the project contemplates the absorption of some of the best known nurseries of Rochester, Geneva, and Lockport, besides others, and to place on sale their trees wherever they can. It is a scheme to buy and sell, no matter from where or to whom.

That there is danger of introducing the disease on nursery trees cannot be doubted, from the fact that in the East it has been taken from one locality to another in this way, the trees developing the disease the same season after planting.

The first cases of Yellows that have been found in new districts are generally, if not always, in young trees imported from infected localities.

"Yellows is a disease of haste and waste; the fruit ripens too soon, the buds push too soon, assimilation is disturbed, the stored starch and other food materials are wasted by excessive and unnatural growth, and the entire vitality of the tree is exhausted in the course of two or three seasons."

This State is thus far free from the disease, and the introduction of all trees from the Eastern States should be prohibited by stringent legislative enactments and county ordinances.

From time to time we have warned fruit growers of the danger of introducing dangerous insect pests and diseases not known in this State, yet strange as it may appear, and in the face of all these warnings, many persons are eager to buy trees grown outside of the State, principally on account of their cheapness. There are many large land owners and real estate speculators in the State interested only in the speculative value of their land. They do not care for the fruit industry, and will plant those trees which are cheapest, so as to have a large acreage of planted trees. These lands are sold at great profit, and dangerous pests and diseases are liable to be thus introduced on inferior and infected imported trees.

Recently a cargo of three hundred and twenty-five thousand orange trees arrived from Tahiti, and no less than nine different kinds of injuri-

ous insects were found upon them, and among that number two that were very dangerous and entirely unknown to this coast. One of these proved very hard to exterminate, surviving five different treatments with hydrocyanic acid gas—three times with a double dose—and at one time a triple amount of the chemicals was used.

EASTERN PEACH YELLOWS.

This is a constitutional disease of the peach and nectarine prevalent throughout many of the Eastern States where the peach is grown, and peculiar to America as far as known. It has also been observed on the almond and apricot.

“Within a few years after it was described, ‘Yellows’ appeared in all the Atlantic Coast States north of Virginia, and caused great loss, destroying in a few decades hundreds of orchards and thousands of trees in Delaware, New Jersey, Pennsylvania, New York, and Connecticut, and putting an entire stop to peach growing in many sections.”*

Dr. Erwin F. Smith, the Special Agent of the Department of Agriculture, to whom the investigation of the Yellows has been especially assigned for several years, in 1888 reported that the disease had extended from Maine to Georgia, and westward to Lake Michigan and the Mississippi River, and that in recent years it appeared in Michigan, Illinois, and Georgia, and has not disappeared from any of its former strongholds. “In recent years the disease has been no less destructive than formerly. Thousands of young and thrifty trees have been destroyed by it, and peach growing has been abandoned in several parts of the country, where formerly there were many large and profitable orchards; *e. g.*, at Saint Joseph, in Berrien County, Michigan; at Middletown, in New Castle County, Delaware; near Niagara River, in New York and Ontario, and along the bay shore in Harford County, Maryland. The disease now prevails disastrously on the Chesapeake and Delaware peninsula, in the most productive peach region of the continent. On this peninsula it is confined principally to the counties of Cecil and Kent, in Maryland, and of New Castle and Kent, in Delaware, but is extending into other regions formerly free. The disease is also now prevalent in Cumberland, Morris, and Hunterdon Counties, in New Jersey, and in other parts of the United States. It is everywhere the same obscure, destructive malady.”†

Thus far mycologists have failed to ascribe the cause of the Yellows. It has, however, been attributed to various causes, such as severe freezing in winter, excessive rainfall, precipitation, parasites, etc.; but these causes have been carefully looked into and the Yellows found thriving under all such conditions. All the combined efforts of the experts employed have not yet detected the cause of the malady, nor effected a cure in a single instance.

“It has been attributed to impoverishment of the soil, especially to a deficiency of lime, potash, and phosphoric acid; but it now occurs on fertile soil, both virgin and highly improved, in as destructive a form as was ever observed in the most impoverished district, and is now

* Report of Erwin F. Smith on the Yellows, Bulletin No. 9, Division of Vegetable Pathology, Washington, 1888.

† Since the above report was made the Yellows has spread, and also has appeared in many new districts, as is shown in the accompanying map.

absent from certain poor sandy regions deficient in the elements necessary to the growth of vegetation.”*

The progress of the Yellows is somewhat slow in infected trees. It does not cause the immediate falling or blasting of the flowers or fruit, but is a serious menace to peach culture wherever it abounds. The trees may appear healthy in the spring of the year, and yet be affected.

SYMPTOMS.

Dr. Smith, on page 93 of his report† (1888) upon Yellows, gives the following digest of symptoms of the disease:

1. Prematurely ripe, red-spotted fruit.
2. Development, upon the trunk and branches which bear, or have borne, the diseased peaches, of secondary or summer shoots, often in great numbers, and always dwarfed and feeble in appearance.
3. A very marked tendency of the buds on these secondary shoots to develop the same season, forming sometimes in this way within a few months secondary, tertiary, quartan, and quintan branches.
4. The appearance of the disease the next spring in the entire growth of the tree, or at least of the diseased parts, the shoot-axes being shortened and the foliage dwarfed and sickly, of a yellowish or reddish-brown color, and with a greater or less tendency to curl from end to end, and to roll sidewise, so that the lower surface becomes the convex outer surface. Sometimes, however, the disease affects the terminal shoots the same autumn, causing the winter buds to develop either before or after the leaves have fallen.
5. A slow progress of the disease from limb to limb, so that in one or two years, or at most three years, the whole tree is involved.
6. Coördinate with the progress of the disease from part to part, a marked diminution of the vitality of the tree, ending in death.

These are symptoms characteristic of Peach Yellows, and they seem to me quite as definite as those of any specific disease. If Peach Yellows, as I have seen it and defined it, is not a specific disease, due to some constant cause or causes, then neither is glanders nor anthrax nor measles nor smallpox.

PEACH ROSETTE.

This is also an eastern disease affecting the peach, and is very similar to the Yellows and equally as deadly, but is not so general in its attacks. Thus far it has only appeared in two districts, as indicated on the accompanying map.

CORRESPONDENCE WITH REGARD TO THE PEACH YELLOWS IN THE EASTERN STATES.

Letter of Inquiry.

On August 7, 1891, I addressed a letter to the Division of Vegetable Pathology at Washington, and also to the various Agricultural Experiment Stations in the States where the peach is grown, asking for information upon the following points, viz.:

First—The extent of the Yellows; the district affected; the damage.

Second—Whether or not it would be safe to import trees from districts in States where the Yellows is known to exist, even if away from infected localities.

Third—The danger, if any, of introducing the Yellows on pits grown in infected districts, or on cions taken from one place to another.

* Report of Erwin F. Smith on the Yellows, Bulletin No. 9, Division of Vegetable Pathology, Washington, 1888.

† Bulletin No. 9, Division of Vegetable Pathology, Washington.

Answers.

The following replies have been received:

UNITED STATES DEPARTMENT OF AGRICULTURE,
DIVISION OF VEGETABLE PATHOLOGY,
WASHINGTON, August 24, 1891.

Mr. B. M. LELONG, *State Board of Horticulture, San Francisco, Cal.:*

DEAR SIR: In response to your letter of August 6, 1891:

1. Peach Yellows now prevails from Massachusetts to Virginia, and westward over most of this area to the Great Lakes and the Mississippi River. It is most prevalent and destructive in the Atlantic Coast States. It occurs in nearly all parts of the following States: Massachusetts, Connecticut, New York, New Jersey, and Ohio. It is also prevalent in parts of the following States: Delaware, Maryland, Virginia, Kentucky, Indiana, Illinois, Michigan, Arkansas, and North Texas. Yellows is now very destructive in the middle and northern part of Delaware and Maryland, and in nearly all of Pennsylvania and New Jersey.

2. If Yellows exists in some parts of a State, but not at all in others, I should consider it safe to import from the non-infected regions; (a) provided they are not very close to the infected regions, and (b) provided it can be shown that buds as well as stocks came from healthy localities.

3. While not being able to speak positively in the matter of pits, I should regard it as unsafe to get pits from infected districts.

4. In reference to cions, or buds, it is *very unsafe* to import them from infected districts. Another very destructive contagious disease, recently described by Dr. Smith, of this Division, as Peach Rosette, occurs in middle North Georgia, and in Kansas at Manhattan.

By this mail I send you Bulletin No. 9, containing a map of United States showing the present distribution of Yellows. The blue marks* indicate areas now known to be infected, but portions of which were supposed to be free at the time the map was made. It is quite possible that additions will be made to this area in the course of another year.

Very respectfully,

B. F. GALLOWAY,
Chief of Division.

THE PENNSYLVANIA STATE COLLEGE AGRICULTURAL EXPERIMENT STATION,
STATE COLLEGE, CENTRE CO., PA., August 25, 1891.

Mr. B. M. LELONG, *Secretary State Board of Horticulture, San Francisco, Cal.:*

DEAR SIR: In reply to your communication of the seventh instant. The Peach Yellows exists over the entire State of Pennsylvania, there being no locality that enjoys entire freedom from the disease. Peach culture is being gradually abandoned here, but occasionally an inexperienced or young orchardist will plant extensively and fight the "Yellows" until he loses patience. The knowledge of this disease is so very vague that your question concerning its propagation can be answered only with a caution, to wit: *Do not import trees or pits from infected regions.* The spread of the disease in the East is frequently charged to the disregard of such advice. I hope you will urge as strong measures against its introduction into your State as some Eastern States have inaugurated against its existence here.

It is true that the "Yellows" does not appear until the trees begin to blossom, and therefore that the cause is in the region and not the tree, but until this is proved the best advice seems to me to doubly guard against its advent.

Very truly,

GEO. C. BUTZ,
Horticulturist.

MICHIGAN AGRICULTURAL COLLEGE,
DEPARTMENT OF HORTICULTURE AND LANDSCAPE GARDENING,
AGRICULTURAL COLLEGE POST OFFICE,
INGHAM COUNTY, MICHIGAN, August 18, 1891.

Mr. B. M. LELONG, *San Francisco, Cal.:*

DEAR SIR: Your letter to Director Clute has been referred to me. Some twenty-five years ago the "Yellows" appeared in the peach orchards of Berrien County, and thousands of acres of bearing trees were destroyed. Nothing was done to prevent it. The disease gradually spread to Van Buren and Allegan Counties, but the orchardists found that its ravages could be checked by the prompt removal of diseased trees. This has been practiced for fifteen years with comparatively little loss.

It has done but little injury in other sections. Pits from premature fruit (a sign of

* Indicated by dots and strokes. See legend in map.

Yellows) will not germinate, and buds from trees in which the Yellows has manifested itself will not develop into trees of salable size.

The real cause of Yellows has not been ascertained, but probably it is some micro-organism. There are undoubtedly various inducing causes, such as droughts, cold, over-bearing, lack of food, borers and other insects; and if pits or cions are taken from trees weakened by any of these, they will of course be more liable to the disease than if from healthy trees, while if they come from trees in the early stages of the disease, they will be subject to attack unless the conditions are radically changed.

I should of course prefer trees from States where Yellows is unknown, but should consider the risk comparatively slight if obtained from reliable nurserymen in localities away from infected districts, or where Yellows laws are rigidly enforced.

Yours very truly,

L. R. TAFT.

NORTH CAROLINA COLLEGE OF AGRICULTURE AND MECHANIC ARTS, }
RALEIGH, N. C., August 24, 1891. }

B. M. LELONG, *Esq.*:

DEAR SIR: Yours of August seventh at hand. The disease known as Yellows has never been seen in North Carolina. I have never seen it farther south than the northern part of Kent and Queen Ann Counties in Maryland, and do not believe it exists in either Virginia or North Carolina.

The origin of the Yellows is still obscure. That there is a diseased condition, and that this condition is always accompanied by certain micro-organisms, is true, but we have never been able to produce the disease by inoculation with these microbes. Professor Burrill, of Illinois University, last year showed me a tree in their grounds, brought from New Jersey, half dead with the disease. This tree on the black prairie soil of Illinois was rapidly taking on a renewed growth. In Kent County, Maryland, this summer, I noticed orchards on stony and fertile land that were well cared for and no signs of Yellows, and others on exhausted soil nearly gone with it. If not entirely due to the exhaustion of the soil of necessary elements, there is no doubt that trees in such soil are more liable to it. There will be no danger in getting stock and seed from North Carolina.

Yours truly,

W. F. MASSEY.

UNIVERSITY OF WISCONSIN, AGRICULTURAL EXPERIMENT STATION, }
MADISON, Wis., August 22, 1891. }

Mr. B. M. LELONG, *Secretary California State Board of Horticulture, San Francisco*:

DEAR SIR: I am requested by Professor Henry to reply to your letter of the sixth.

Very few peach trees are grown in this State, our winters being too severe. I have never heard of a case of Yellows in Wisconsin.

In reply to your other questions, I must be wholly guided by the opinion of Dr. Erwin F. Smith, as expressed in his "Preliminary Report," which you have doubtless read. He says (p. 148): "In the present state of our knowledge, it is certainly wisdom to procure pits from uninfested districts." As to the possibility of the disease being communicated by buds, the evidence cited by him on pp. 149-155 is certainly strong enough to deter one who fears the Yellows from procuring buds from any source not fully believed to be free from infection.

Dr. Smith has been energetically studying the Yellows for three years since the publication of the report cited. His opinion in regard to the questions you ask would be worth much more than mine. You can address him, if you desire, at Washington, D. C., care Department of Agriculture.

Very truly yours,

E. S. GOFF,
Horticulturist.

KENTUCKY AGRICULTURAL EXPERIMENT STATION, }
DIVISION OF ENTOMOLOGY AND BOTANY, }
LEXINGTON, KY., August 20, 1891. }

Mr. B. M. LELONG:

DEAR SIR: Yours of August sixth to Professor Scovell has been referred to me for answer. I have delayed replying for a few days in order to make a few inquiries of local fruit growers concerning the occurrence of Peach Yellows here. I have not myself seen a single instance of the disease in Kentucky, and thus far have found no one else who has observed it. The disease is said to occur in the State, but must be very rare. I will inquire further, and write you again.

The exact nature of Peach Yellows has not been satisfactorily determined, but from the most exhaustive studies thus far made it is a communicable bacterial disease, and in this case the danger of introducing it by means of pits or cions from infected districts would certainly be very great. Pits or cions from localities which are free from the

disease would be less likely to convey the infection, and the more remote such localities are from infected trees the less will be the danger.

Yours truly,

H. GARMAN,
Entomologist and Botanist.

KENTUCKY AGRICULTURAL EXPERIMENT STATION, }
DIVISION OF ENTOMOLOGY AND BOTANY, }
LEXINGTON, KY., September 7, 1891. }

Mr. B. M. LELONG:

DEAR SIR: Since my letter of August twentieth, on Peach Yellows, was sent to you, I have written to several of our foremost fruit growers asking about their experience with Yellows in the State; and while some of them have seen trees affected with the disease, none report it as occurring in their neighborhood now, and all regard it as not a common affection of peach trees in Kentucky.

Yours truly,

H. GARMAN,
Entomologist and Botanist.

MAINE STATE COLLEGE AND AGRICULTURAL EXPERIMENT STATION, }
ORONO, ME., August 20, 1891. }

Mr. B. M. LELONG, *San Francisco, Cal.:*

DEAR SIR: Yours of the sixth instant to Professor Jordan is handed me for reply. So far as I am aware the true Peach Yellows, as known in Michigan, New York, and Delaware, has not made its appearance in Maine. Very few peaches are grown in this State.

In my opinion it would be safe to import trees from uninfected localities in any State. There would doubtless be as much danger in taking cions from any given locality as in taking trees from the same place. There seems to be little doubt that the disease may be communicated by inoculation.

Truly yours,

W. M. MUNSON.

WEST VIRGINIA UNIVERSITY AGRICULTURAL EXPERIMENT STATION, }
MORGANTOWN, W. VA., August 17, 1891. }

Mr. B. M. LELONG, *State Board of Horticulture, San Francisco, Cal.:*

DEAR SIR: From authentic information and personal observation, I can only report the Yellows from one location in this State, that being in the far northeastern section, and very limited at that. My opinion is that it would be safer to have nothing whatsoever to do with the pits, cions, or trees from a district known to be infested with this disease.

Regretting that I can give you no further West Virginia experience upon this subject, I remain,

Yours sincerely,

C. F. MILLSPAUGH,
Botanist and Horticulturist.

AGRICULTURAL EXPERIMENT STATION OF THE }
A. & M. COLLEGE OF ALABAMA, }
AUBURN, ALA., August 15, 1891. }

Mr. B. M. LELONG, *Secretary, etc., San Francisco, Cal.:*

DEAR SIR: Referring to yours of the sixth, which awaited my return last night, I have found Yellows in only one locality in this State, viz., three miles north of Opelika, in this (Lee) county. It made its appearance there upon trees purchased from northern nurseries. If sufficiently removed from infested localities, I think there will be no danger from trees. I heard of a case of Yellows in the nursery row this summer, which points to introduction through the pits. Its transmission by cions and buds has been very plainly demonstrated.

Very respectfully yours,

J. S. NEWMAN,
Director.

MISSISSIPPI AGRICULTURAL EXPERIMENT STATION, }
AGRICULTURAL COLLEGE, MISSISSIPPI, August 24, 1891. }

Mr. B. M. LELONG, *Secretary:*

DEAR SIR: Yours of August seventh, making inquiries about Peach Yellows, is at hand. I am confident that the disease does not exist in Mississippi, as I am quite familiar with its work, and have had opportunities for examining orchards in nearly all parts of the State during the present year. As to importing trees from States where the disease is found, I have no personal experience, but many of the Michigan orchardists claim that the presence of the disease in certain orchards there is undoubtedly due to the importation of trees from New Jersey; and in my own purchases I am always careful to procure trees from uninfested localities.

The disease is readily carried by means of cions, but whether it can be spread by the pits is still an open question. About four years ago the United States Department of Agriculture attempted to test the matter, and so far no disease has appeared on the trees grown from seed from infested trees.

Yours very truly,

S. M. TRACY,
Director.

UNIVERSITY OF MINNESOTA EXPERIMENT STATION, }
ST. ANTHONY PARK, MINNESOTA, August 15, 1891. }

Mr. B. M. LELONG, *Secretary, San Francisco, Cal.:*

DEAR SIR: The climate of Minnesota is not of such a character that peaches can be grown at all. Of course there are a number of nurserymen in our State that sell peach trees, but such trees are not grown in their nurseries, but are imported from regions more favorable to the peach.

In regard to your other question, I think that it is not wise to import your peaches from any region in which the Yellows is known to occur. Peach trees grown from pits from fruit grown in a region where the Yellows is prevailing are also very apt to carry the disease to other places. Of course the same would hold good in regard to the cions.

Respectfully yours,

OTTO LUGGER,
Botanist and Entomologist.

THE CONNECTICUT AGRICULTURAL EXPERIMENT STATION, }
NEW HAVEN, CONN., August 18, 1891. }

B. M. LELONG, *Esq.:*

DEAR SIR: I regret that I am not well posted in regard to the peach interests of this State. I know, from "common hearsay" only, that Connecticut was, many years ago, within memory of elderly people, an abundant producer of fine peaches; that the "Yellows" is reputed to have completely destroyed all the peach orchards, and that for some twenty or thirty years peaches, as a crop, were unknown here. Latterly, within ten years or so, a few peach orchards have been planted and have produced well. The "Yellows" is, I understand, still to be encountered in some localities, but the extent of the damage it occasions I have no means of estimating, nor do I know whether it is general or confined to the Connecticut River Valley, where, I believe, it is not uncommon.

I send by this mail copies of your letter to several parties having extensive experience in peach growing, with a request to answer your questions, and you will doubtless hear from them in due time.

Very truly yours,

S. W. JOHNSON,
Director.

THE CONNECTICUT AGRICULTURAL EXPERIMENT STATION, }
NEW HAVEN, CONN., September 16, 1891. }

B. M. LELONG, *Secretary State Board of Horticulture, San Francisco, Cal.:*

DEAR SIR: I inclose answers to the questions in yours of August seventh. They are from two of our most experienced and trustworthy fruit growers.

Very truly yours,

S. W. JOHNSON,
Director.

CONNECTICUT VALLEY ORCHARD COMPANY, }
NEW BRITAIN, CONN., August 24, 1891. }

Prof. S. W. JOHNSON:

DEAR FRIEND: I was very glad to get your letter of August nineteenth. I have just returned from a week's absence, visiting the orchards of New York and Delaware, hence the delay in my reply.

I know no part of Connecticut that is exempt from the Yellows on peach trees, nor any considerable orchard of six years old that cannot show clear specimens. Hale published a few days ago that he had no Yellows in two of his orchards, but I have just visited them and there are specimens well scattered through them. I judge any Connecticut orchard left to itself, as to Yellows, would be likely to "go out" within five to ten years. It spreads very rapidly, often when neglected.

As to safety in importing, that is a hard question. My own personal experience is that sound stock could be got from Connecticut if carefully watched and the first appearance of Yellows exterminated. But I would by no means make the experiment unless there was a large inducement to do so, because of the alertness required and the risk involved if once the watcher slept.

Southern Maryland is much safer, I judge, and as good or better variety could be obtained. I think the Washington folks, having made some (but not very large) experiments, do not find that the Yellows is hereditary; but diseased clions would, of course, carry the disease with them, and it would be impossible in an infected orchard to always and certainly discriminate against diseased trees. Often Yellows seems to lie dormant in the tree for a considerable time before it shows itself. I believe I have answered all your questions, and think my answers to be essentially correct.

Very respectfully yours,

JOHN B. SMITH.

NEW CANAAN, CONN., September 14, 1891.

Prof. S. W. JOHNSON:

MY DEAR SIR: Yours in relation to Peach Yellows in Connecticut is at hand.

1. I doubt if there is any part of Connecticut where the peach trees are not affected more or less with what is called the "Yellows." It is a question, however, in my mind, whether the trouble is not more a result of the winter weather, or lack of proper food, than anything else. Our open winters, with their freezing and thawing, and no snow on the ground, are especially hard on peach trees.

2. The extent of damage I do not know, but would say that from some cause peach trees do not last over five or six years, and they will begin to show disease sometimes at two or three years of age. So destructive is the "Yellows" that people are greatly discouraged in setting peach trees. Trees are set, however, more or less every year, and many times good crops secured.

3. We would advise to get trees that have not been propagated from seed infected with the disease, nor from buds taken from trees apparently exhausted or diseased.

4. The universal opinion is that the disease may be transmitted to young trees by planting first from unhealthy trees, and using buds taken from trees with disease in the sap, even if they appear to be quite healthy and making good growth.

Yours respectfully,

EDWIN HOYT.

SOUTH GLASTONBURY, CONN., September 5, 1891.

Mr. B. M. LELONG, *Secretary State Board of Horticulture, San Francisco, Cal.:*

DEAR SIR: Your favor of August sixth, addressed to Professor Woods of our State (Storrs) Experiment Station, has been referred to me for reply, and would have had more prompt attention except for my absence from home.

As to the extent of the "Yellows" among peach trees in Connecticut, I have to say that some thirty or forty years ago this disease almost entirely killed out the trees in our State, and until we began planting here some fifteen years ago, there was not an acre of commercial orchard in the whole State. Our planting of some hundred acres or more in orchard, and by thorough culture and close attention to the trees growing healthy orchards and producing fine crops of fruit, has stimulated the planting of a large number of commercial orchards, especially in Hartford, Tolland, Middlesex, New Haven, and Fairfield Counties, so that to-day there is a large acreage of orchard throughout the State.

These plantings have also stimulated the planting of a few trees in the home grounds on almost every farm. Many of these local trees have been produced from pits taken from peaches brought in here from infected districts of Maryland, Delaware, and New Jersey, and as a result "Yellows" has once more made its appearance here, and to a greater extent this year than ever before, more particularly upon the grounds of amateurs, and in partially neglected commercial orchards.

In reply to your question, whether it would be safe to import trees from infected localities, I should say, most emphatically, "No!" If California is now free from the

"Yellows," you should use every precaution against its introduction, either by trees, buds, or pits from infected districts, for I am satisfied that it is a disease that can be easily distributed in either of these ways. My judgment, gained by observation in nearly all peach-growing sections of the United States in the past few years, is that nearly every peach district east of the Mississippi River and north of Mason & Dixon's line, is more or less affected by this disease, while the South and West are particularly free from it at this time, and I most certainly hope that you will be able to keep it out of the superb orchards of your State.

The Michigan law, which compels the immediate destruction of infected trees—not only with the "Yellows," but also with the "Black-knot" on the plum—has worked most excellent results; and while the "Yellows" has not yet reached your State, it seems to me that you should not only guard against it by a strict quarantine against all infected trees, but also by the passage of a law which will enable you to stamp it out promptly on its first appearance. In this way, and this way alone, can you hope to keep free from it, and retain your magnificent orchards.

Very respectfully,

J. H. HALE.

PURDUE UNIVERSITY AGRICULTURAL EXPERIMENT STATION, }
LAFAYETTE, IND., August 15, 1891. }

Mr. B. M. LELONG, *Secretary State Board of Horticulture, San Francisco, Cal.:*

DEAR SIR: I do not know of any well authenticated cases of Peach Yellows in this State; at any rate it is not a prominent disease here. It would be safer to secure trees from regions not infected with the Yellows; but with caution, I see no reason why they might not be taken from districts thought to be free from the disease, although it might be within a comparatively short distance from the Yellows' district.

There is undoubtedly a very considerable danger in using pits from trees infected with the disease, and also by taking cions from such trees.

Very truly yours,

J. C. AUTHUR,
Botanist Experiment Station.

ARKANSAS AGRICULTURAL EXPERIMENT STATION, }
FAYETTEVILLE, ARK., August 27, 1891. }

Mr. B. M. LELONG, *Secretary State Board of Horticulture, San Francisco:*

DEAR SIR: Yours of the sixth to Prof. E. H. Murfee, in regard to Peach Yellows, handed to me to answer. In reply I would say, so far as my knowledge goes, and I can ascertain from reliable sources, the disease has never been in this State, unless in isolated cases where it was not recognized.

Believe it to be dangerous to import from infected districts, but in localities where trees are perfectly free from the disease do not think there is necessarily any danger. Trees have been brought here indiscriminately from the East, and it certainly has been given an opportunity to get here through that channel, but I don't know of any damage resulting therefrom in three States I have traveled over—Mississippi, Texas, and Arkansas.

As to the pits, I know of nurserymen that have in years past brought their seed for stock from eastern markets apparently without damage.

Yours truly,

J. F. MCKAY,
Horticulturist.

UNIVERSITY OF ILLINOIS, CHAMPAIGN, ILL., August 28, 1891.

Mr. B. M. LELONG, *Secretary State Board of Horticulture, San Francisco, Cal.:*

DEAR SIR: In reply to yours of August sixth, addressed to S. H. Peabody, I will say that the "Yellows" of peach trees is not known in Illinois.

It is not safe to import trees from infected districts. This has been abundantly demonstrated.

There appears to be little danger of introducing Yellows from pits, but care here should also be taken. The use of diseased buds or cions is preëminently dangerous.

Yours truly,

T. J. BURRILL.

THE CORNELL UNIVERSITY, COLLEGE OF AGRICULTURE, }
ITHACA, N. Y., August 29, 1891. }

Mr. B. M. LELONG:

DEAR SIR: Yours of the seventh, concerning Peach Yellows, is referred to me. Yellow has appeared in many parts of western New York in the peach belt along the lakes. I have seen a good deal of it in Niagara and Orleans Counties. All the large nurseries take particular pains to avoid the Yellows, and most of them are outside the infected districts. The disease is so easily recognized by those familiar with it, even in the nursery, that there would seem to be little danger of getting it from the reliable nurseries; yet I should exercise great caution in getting trees from the East. So far as we know, Yellows pits never grow.

Yours truly,

T. H. BAILEY,
Professor of Horticulture.

IOWA AGRICULTURAL EXPERIMENT STATION, }
AMES, IOWA, August 27, 1891. }

Mr. B. M. LELONG, *Secretary State Board of Horticulture:*

DEAR SIR: In my opinion the Yellows can be introduced by pits or cions. Here, at Ames, peaches grown from pits received from Central Asia and Northwest China have never shown disease.

Yours,

J. L. BUDD,
Horticulturist.

MARYLAND AGRICULTURAL EXPERIMENT STATION, }
COLLEGE PARK, MD., September 3, 1891. }

B. M. LELONG, *Esq., Secretary California State Board of Horticulture, San Francisco, Cal.:*

DEAR SIR: Your favor of August seventh has been referred to me for answering by the Director of our station.

Yellows has been reported in this State from nearly all of the northeastern counties, as far south as the southern part of Kent County. It is also prevalent in the western part of the State, in Washington and Frederick Counties, and no doubt is found in other parts of the State.

I regard it unsafe to introduce pits from infected districts, as the Yellows is a disease or condition which affects the vitality of the seed. I do not regard the Yellows as a septic disease, but a condition of growth resulting from foreign causes. These causes we are at present at work upon, and have hopes that in the near future we may be able to throw light upon this mysterious disease. I believe we will be able, in the course of a few years, to cope with this disease.

I would urge upon your people to give good culture, and, above all, give the trees an annual top pruning, cutting off a third to a half of the past season's growth. Also, keep a lookout at the collar of the tree for a small white worm, which I have found thus far to follow the disease. I washed the sores thoroughly when dug out, with kerosene emulsion, and believe it to be effectual in killing the worm.

This is new information, and further investigation may add to our knowledge and suggest other treatment.

Very truly yours,

THOS. L. BRUNK,
Horticulturist Maryland Agricultural Experiment Station.

GEORGIA EXPERIMENT STATION, }
EXPERIMENT, Ga., August 17, 1891. }

Mr. B. M. LELONG, *Secretary Board of Horticulture, San Francisco, Cal.:*

DEAR SIR: In reply to yours of the sixth instant, I beg to say that Dr. Erwin F. Smith, of the United States Department of Agriculture, has been engaged for some years in the investigation of the disease supposed to be Yellows, in this and other States, and is more familiar with its extent and character than I or any other citizen of the State. I beg to refer you to him for the opinion desired, as he is an expert, and as such has devoted considerable time to the investigation of the subject. He says that the disease now affecting some orchards in Georgia is *not* identical with Yellows, though very similar and equally deadly, but not so general in its attacks. He calls or names it "Georgia Rosette." Buds or grafts from an affected tree readily communicate this disease to trees in which they may be inserted.

Very truly,

R. J. REDDING,
Director.

HATCH EXPERIMENT STATION, HORTICULTURAL DEPARTMENT, }
AMHERST, MASS., September 7, 1891. }

B. M. LELONG, *Esg.*:

MY DEAR SIR: After an experience of nearly thirty years I am free to confess that I don't know *much* about the "Yellows," though trees are dying about us on every hand, and new trees are being planted in places where trees are said to die of the "Yellows."

I find wherever a tree has been injured or weakened from any cause, by borers, by overbearing, by want of plant food, by too much plant, causing a late growth that is injured in the winter, by splitting of the trunk by frosts, etc., there sets in a kind of fermentation that results in the sickly, wiry shoots, the premature ripening and high colored fruit, indicating the "Yellows," but I have never seen a case where some such injury has not preceded the so called Yellows. There may be a specific microbe in this work, and there probably is, but no one has thus far discovered it. We have no fear of the Yellows here. With our extremes of temperature we do not expect our trees to escape the above mentioned causes of dying, and we do not have trees averaging more than ten years of age before they die, but under favorable conditions and with the best possible care, I am sure we can make them average fifteen or even twenty years.

I would obtain a moderately vigorous growth before the trees come into bearing, and then when the crop is assured—that is, fully set—would feed the trees sufficiently to carry out that crop, and make a moderate and healthy tree besides, and *no more*.

I feel sure that wherever the peach grows, if there are such causes of dying present, there will be that peculiar condition of growth and decay as are found everywhere in the East, and do not fear more weakness of the progeny from the seeds from one section than from another, though the law will hold good that: "Like will produce like."

Very truly yours,

S. T. MAYNARD.

AGRICULTURAL EXPERIMENT STATION OF THE UNIVERSITY OF TENNESSEE, }
KNOXVILLE, September 9, 1891. }

Mr. B. M. LELONG, *San Francisco, Cal.*:

DEAR SIR: Absence from office since the middle of July has prevented an earlier reply to your favor of August seventh, relative to Peach Yellows.

I have seen no evidence of the "Yellows" in this State. I would say that if the stock you receive is healthy, although coming from States in which the disease is known to exist, you need have no fears respecting it; but buds or cions from diseased trees will infect those upon which they are inserted. The disease may be introduced into your State through such a source, and you cannot be too particular in your selection of stock.

Regretting this delay, I remain,
Yours very truly,

F. LAMSON SCRIBNER.
Director.

RECOMMENDATIONS.

The fruit growers are urged to coöperate with the various County Boards of Horticultural Commissioners throughout the State in the enforcement of the laws to prevent the spread of injurious insect pests and diseases, and prevent the sale of infected nursery stock. Notwithstanding the fact that most of the fruit-growing counties have a Board of Horticultural Commissioners, and while they are always on the alert, it is to the interest of every fruit grower to assist them in the discharge of their duties, and not hamper them by throwing "stumbling blocks" in their way, as has been done on various occasions, and mainly on account of some personal difficulty. In cases of this nature, it is to the interest of every one to leave such grievances at home, and join hands and assist in the good work for the benefit of all. In counties where no County Boards of Horticultural Commissioners have been appointed, the fruit growers should at once petition for their establishment. The law makes it mandatory upon the Board of Supervisors to appoint upon presentation of the proper petition.* All County Boards of Horticultural Commissioners are urged to follow the example of the San Ber-

* "The law is mandatory, and the Supervisors must appoint upon proper petition."—
[Decision of Hon. John G. Pressley, Superior Court, Sonoma County, in the case of E. A. Rogers vs. Board of Supervisors, June 19, 1889.]

nardino County Board, by having posters printed and posted throughout their respective districts. The following are two of the posters circulated by the San Bernardino County Board, viz.:

WARNING!

PEACH AND PRUNE TREES!

It is of the utmost importance to the future of fruit growing in California, that every purchaser of *peach trees, or prune or other trees grown on peach roots*, should know that the stock is grown on this coast *from home-grown pits*. It is a well known fact that that most insidious and deadly foe to peach growing, the "Yellows," and for which no remedy has been found, is rapidly spreading over the peach-growing region of the East, causing the ruin and abandonment of all orchards where it once obtains a foothold; and if trees are imported from those sections *we will most assuredly get the disease with them*, and, quite likely, other dangerous pests. Fruit growers, ascertain positively where the trees are grown before making contracts.

H. B. MUSCOTT,
N. H. CLAFLIN,
W. E. COLLINS,

Horticultural Commissioners of San Bernardino County.

FRUIT GROWERS, ATTENTION!

We urge upon you the utmost care in making future contracts for trees. Make the acceptance of the stock, and payment for same, conditioned upon the fact that such stock shall be delivered to you absolutely free from any scale or other insect pests.

We take this method to put you on your guard, as we have been credibly informed that certain dealers are getting up their contracts so as to bind the purchaser to pay all expenses of inspection and disinfection.

H. B. MUSCOTT,
N. H. CLAFLIN,
W. E. COLLINS,

Horticultural Commissioners of San Bernardino County.

ORDINANCE RECOMMENDED FOR ADOPTION

BY THE DIFFERENT COUNTIES TO PREVENT THE BRINGING OF TREES INTO THE COUNTY.

Each county has the right to pass such ordinances as are lawful, to prevent the bringing of trees, vines, shrubs, flowers, fruits, vegetables, etc., into the county, and to prevent the sale, gift, or distribution of the same until the same shall have been properly disinfected to the satisfaction of the Commissioners or local Inspector. The County Board of Horticultural Commissioners of San Bernardino County caused the passage, by the Board of Supervisors, of the following ordinance, and other counties are urged to do likewise, viz.:

ORDINANCE No. 30.

CONCERNING HORTICULTURAL INTERESTS.

The Board of Supervisors of the County of San Bernardino, State of California, do ordain as follows:

SECTION 1. No person or persons, either as owner, agent, servant, or employé, shall bring or cause to be brought into San Bernardino County, California, from any district, county, or State, any trees, vines, shrubs, cions, cuttings, grafts, fruit plants, flowers, or vegetables, without giving notice within twenty-four hours after their arrival at their destination to a member of the County Board of Horticultural Commissioners of said county, or to the local Inspector of the district into which they are brought, nor plant, sell, expose for sale, give away, or otherwise distribute any of the articles mentioned in this

section, or cause the same to be done, until they shall first have been inspected as herein-after provided and disinfected to the satisfaction of the County Board of Horticultural Commissioners of said San Bernardino County or the local Inspector thereof acting under the direction of said County Board of Horticultural Commissioners.

SEC. 2. If upon a careful inspection by a Horticultural Commissioner or local Inspector of said county of San Bernardino any of the articles enumerated in section one (1) of this ordinance shall be found to be infested with any 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 forty-eight hours, at the expense of the owner, agent, or shipper, or destroyed. The owner, agent, or shipper shall have the right to elect as to the removal of said infested articles from the county or to have the same destroyed by order and under the direction of the County Board of Horticultural Commissioners.

SEC. 3. Whenever the said Board deem it necessary for the safety of the horticultural interests of the county, they may hold in quarantine, for subsequent inspection or disinfection, or both, any of the articles mentioned in section one (1) of this ordinance, for fourteen days or less, as in their judgment is necessary.

SEC. 4. The County Board of Horticultural Commissioners are hereby authorized to require any or all articles as enumerated in section one (1) of this ordinance brought into San Bernardino County to be disinfected, even though a careful inspection by a Horticultural Commissioner or local Inspector should show such articles to be apparently free from scale or insect pests.

SEC. 5. Every owner or owners, person or persons, in charge or possession of any orchard, nursery, or other premises in San Bernardino County on which are growing any trees, vines, shrubs, plants, vegetables, or flowers, infested with red or cottony-cushion scale, or the eggs, larvae, or pupæ thereof, shall, when required by the County Board of Horticultural Commissioners, as in their discretion may seem necessary, cut back and disinfect or fumigate said infested trees, vines, shrubs, plants, flowers, or vegetables, as well as all other articles as above mentioned that may be in the vicinity of such infested articles, and on refusal or neglect to comply at once therewith, to dig out and destroy the same as said Board may direct.

SEC. 6. Any person or persons who shall ship, or bring or cause to be shipped or brought into San Bernardino County, any trees, vines, cions, cuttings, grafts, shrubs, plants, flowers, or vegetables, shall have placed upon or securely attached to each box, package, or separate parcel of such trees, vines, cions, cuttings, grafts, shrubs, plants, flowers, or vegetables, a distinct mark or label showing the name of the owner, agent, or shipper, and the locality where produced.

SEC. 7. Any person violating any of the provisions of this ordinance shall be guilty of a misdemeanor, and on conviction thereof shall be punished by imprisonment in the county jail not less than ten days and not more than one hundred days, or by a fine not less than \$10 nor more than \$100, or by both such fine and imprisonment. A judgment that the defendant pay a fine may also direct that he be imprisoned until the fine be satisfied, specifying the extent of imprisonment, which must not exceed one day for every dollar of the fine.

SEC. 8. All ordinances or parts of ordinances in conflict with the provisions of this ordinance are hereby repealed.

SEC. 9. This ordinance shall take effect and be in force on and after the twenty-fifth day of January, 1891.

CALIFORNIA HORTICULTURAL LAWS IN FORCE, 1891.

The following is the amended Act passed at the last session of the Legislature of this State:

AN ACT

To protect and promote the horticultural interests of the State, approved March 14, 1881; amended by an Act approved March 19, 1889, and by an Act approved March 31, 1891.

SECTION 1. Whenever a petition is presented to the Board of Supervisors of any county, and signed by twenty-five or more persons who are resident freeholders and possessors of an orchard, or both, stating that certain or all orchards or nurseries, or trees of any variety, are infected with scale insects of any kind, injurious to fruit, fruit trees, and vines, codlin 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 their destruction as herein provided, the Board of Supervisors shall, within twenty days thereafter, select three Commissioners for the county, to be known as a County Board of Horticultural Commissioners. The Board of Supervisors may fill any vacancy that may occur in said Commission by death, resignation, or otherwise, and appoint one Commissioner each year, one month, or thereabouts, previous to the expiration of the term of office of any member of said Commission. The said Commissioners shall serve for a period of three years from the date of their appointment, except the Commissioners first appointed, one of whom shall serve for one year, and one of whom shall serve for two

years, and one of whom shall serve for three years, from the date of appointment. The Commissioners first appointed shall themselves decide, by lot or otherwise, who shall serve for one year, who shall serve for two years, and who shall serve for three years, and shall notify the Board of Supervisors of the result of their choice.—[Statutes of Cal., 1889, p. 413.]

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, store-room, sales-room, or any other place or articles in their jurisdiction, and if found infested with scale insects, or codlin 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, fruit, or articles thus infested, are hereby adjudged and declared to be a public nuisance. And whenever any 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 placed 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; which action to foreclose all such liens 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.—[Statutes of Cal., 1891, pp. 268-9.]

Sec. 3. Said County Boards of Horticultural Commissioners shall have power to divide the county into districts, and to appoint a local Inspector for each of said districts. The State Board of Horticulture, or the Quarantine Officer of said Board, shall issue commissions as Quarantine Guardians to the members of said County Boards 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 into any orchard, nursery, or place or places where trees or plants are kept and offered for sale or otherwise, or any house, store-room, sales-room, depot, or any other such place in their jurisdiction, to inspect the same, or any part thereof.—[Statutes of Cal., 1889, p. 414.]

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 first day of October of each year, of the condition of the fruit interests of 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 of all laws relative to the greatest good of the fruit interest. Said Board shall publish said reports in bulletin form, or may incorporate so much of the same in their annual reports as may be of general interest.—[Statutes of Cal., 1889, p. 414.]

Sec. 5. Each member of the County Board of Horticultural Commissioners, and each local Inspector, shall be paid, for each day actually engaged in the performance of his duties under this Act, payable out of the County Treasury of his county, such compensation as shall be determined by resolution of the Board of Supervisors of the county, before entering into the discharge of his or their duties.—[Statutes of Cal., 1889, p. 415.]

Sec. 6. The said County Board of Horticultural Commissioners shall have power to remove any local Inspector who shall fail to perform the duties of his office.—[Statutes of Cal., 1889, p. 415.]

Sec. 7. If any member of the County Board of Horticultural Commissioners shall fail to perform the duties of his office, as required by this Act, he may be removed from office by the Board of Supervisors, and the vacancy thus formed shall be filled by appointment by the Board of Supervisors.—[Statutes of Cal., 1889, p. 415.]

Sec. 8. It shall be the duty of the County Board of Horticultural Commissioners to keep a record of their official doings, and to make a monthly report to the Board of Supervisors; and the Board of Supervisors may withhold warrant for salary of said

members and inspectors thereof until such time as said report is made.—[Statutes of Cal., 1889, p. 415.

SEC. 9. All Acts or parts of Acts in conflict with the provisions of this Act are hereby repealed.—[Statutes of Cal., 1889, p. 415.

SEC. 10. [Repealed.]

SEC. 11. This Act shall take effect and be in force from and after its passage.—[Statutes of Cal., 1889, p. 415.

SEC. 12. When a petition is presented to the Board of Supervisors of any county, as required by section one of said Act,* the said Board of Supervisors may appoint a Commission, to consist of any number less than three members, at a compensation each of not less than four dollars, and if but one member, five dollars, for each day actually engaged in the performance of his duties under this Act; and all the provisions prescribing the duties of and conferring powers upon the County Board of Horticultural Commissioners contained in said Act shall apply to the Commission appointed under this section.—[Statutes of Cal., 1891, p. 260.

* * * It shall be the duty of the Inspector of Fruit Pests, or the Quarantine Guardian, to inspect fruit packages, and all trees and plants, cuttings, grafts, and cions, known or believed to be infested by any insect or insects, or the germs thereof, or their eggs, larvæ, or pupæ, injurious to fruit or fruit trees, or infested with any disease liable to spread contagion, imported or brought into this State from any foreign country, or from any of the United States or Territories; and if, upon inspection, such fruit or fruit packages are found to be infested or infected, it shall be a misdemeanor to offer the same for sale, gift, distribution, or transportation, unless they shall be first disinfected. [Sec. 2, Statutes of Cal., 1885, p. 40.

YELLOW S LAW OF THE STATE OF MICHIGAN.

The following is the new law concerning Yellows, enacted by the Legislature of the State of Michigan:

AN ACT

To prevent the spread of the yellows, a contagious disease, among peach, almond, apricot, and nectarine trees, and to provide measures for the eradication of the same, and to repeal Act thirty-two of the session laws of eighteen hundred and seventy-nine.

[Approved June 23, 1891.]

SECTION 1. The people of the State of Michigan enact, That it shall be unlawful for any person to keep any peach, almond, apricot, plum, prune, cherry, or nectarine tree infested with the contagious disease known as Yellows or Black-knot, or to offer for sale or shipment, or to sell or ship to others, any of the fruit thereof; that both tree and fruit so infested shall be subject to destruction as a public nuisance, as hereinafter provided, and no damage shall be awarded in any Court in the State for entering upon premises and destroying such diseased trees, or parts of trees and fruit, if done in accordance with the provisions of this Act; and 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 fruit or trees to be destroyed.

SEC. 2. In any township in this State in which such contagious disease exists, or in which there is good reason to think it exists, or danger may be justly apprehended of its introduction, as such information becomes known to the township Board, or any member thereof, it shall be the duty of said Board to appoint forthwith three competent freeholders of said township as Commissioners, who shall hold office during the pleasure of said Board, and such order of appointment and of revocation shall be entered at large upon the township records.

SEC. 3. It shall be the duty of said Commissioners, within ten days after appointment as aforesaid, to file their acceptance of the same with the Clerk of said township, 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 township.

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 or Black-knot exists, or is supposed to exist, within the limits of their townships, to proceed without delay to examine the tree or fruit supposed to be infested, and if the

*Section one provides for the appointment of a Commission of three members, and section five provides that the compensation be fixed by the Board of Supervisors. This later amendment gives the option to counties to appoint a Commission of one or two members, and fixes their compensation.

disease is found to exist, a distinguishing mark shall be placed upon the 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 and designated, or such parts thereof, within ten days (Sundays excepted) from the date of the service of the notice; and in case of trees known as nursery stock, or fruit so 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. Said notice and order to be signed by the full Board of Commissioners.

Sec. 5. Whenever any person shall refuse or neglect to comply with the order to remove and destroy the tree or parts of trees so designated and marked by the Commissioners as aforesaid, it shall become the duty of the Commissioners to cause said tree 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, and for the purpose of said removal and destruction the said Commissioners, their agents and workmen, shall have the right and power to enter upon any and all premises within their township.

Sec. 6. If any owner neglects to uproot and destroy, or cause to be removed and destroyed as aforesaid, such diseased tree, or parts of trees or fruit, after such examination and notification, and within the time hereinbefore specified, such person shall be deemed guilty of a misdemeanor, and punished by a fine not exceeding one hundred dollars, or by imprisonment in the county jail not exceeding three months, or both, in the discretion of the Court; and any Justice of the Peace of the township 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 "parts of trees," wherever used in this Act, shall refer to Black-knot only, and not to trees affected with Yellows.

Sec. 7. The Commissioners shall be allowed for services, under this Act, two dollars for each full day, and one dollar for each half day, and their other charges and disbursements hereunder, to be audited, as well as any other charges and disbursements under this Act, by the township Board, all of which costs, charges, expenses, and disbursements may be recovered by the township from the owner of said diseased fruit, or from the owner of the premises on which said diseased trees stood, in an action of assumpsit.

Sec. 8. All of Act number one hundred and seventy-four of the public Acts of eighteen hundred and eighty-one, be and the same is hereby repealed.

This Act is ordered to take immediate effect.

YELLOW S LAW OF NEW YORK.

The Yellows law of New York, passed at the session of the State Legislature of 1887, is as follows:

AN ACT

To prevent the spread of the disease in peach trees known as the Yellows.

[Passed May 19, 1887.]

The People of the State of New York, represented in Senate and Assembly, do enact as follows:

SECTION 1. It shall be unlawful for any one to knowingly or willfully keep any peach, almond, apricot, or nectarine tree infected with the contagious disease known as the Yellows, or to offer for sale or shipment, or to sell or ship to others, any of the fruit thereof; that both tree and fruit so infected shall be subject to destruction as public nuisances, as hereinafter provided, and no damages shall be awarded in any Court in this State for entering upon premises and destroying such diseased trees and fruit, if done in accordance with the provisions of this Act; and it shall be the duty of every person, as soon as he becomes aware of the existence of such disease in any tree or fruit owned by him, to forthwith destroy or cause the same to be destroyed.

Sec. 2. In any town of this State in which such contagious disease exists, or in which there is good reason to believe it exists, or danger may be justly apprehended of its introduction, as soon as such information becomes known to the Supervisor thereof, it shall be the duty of said Supervisor to appoint forthwith three competent freeholders of said town as Commissioners, who shall hold office during the pleasure of said Supervisor, and such order of appointment and of revocation shall be entered at large upon the town records.

Sec. 3. It shall be the duty of said Commissioners, within ten days after appointment as aforesaid, to file their acceptance of the same with the Clerk of said town, 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 town.

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 the disease known as Yellows exists or is supposed to exist within the limits of their town, to proceed without delay to examine the trees 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 remove and destroy, by fire or otherwise, the trees so marked and designated, within ten days (Sundays excepted) from the date of the service of the notice; and in case of fruit so 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. Said notice and order to be signed by the full Board of Commissioners.

SEC. 5. Whenever any person shall refuse or neglect to comply with the order to remove and destroy the trees marked by the Commissioners, as aforesaid, it shall become the duty of the Commissioners to cause said trees to be removed and destroyed forthwith, employing all necessary aid for that purpose, the expense of such removal and destruction of trees to be a charge against the town; and for the purpose of said removal and destruction the said Commissioners, their agents and workmen, shall have the right and power to enter upon any and all premises within their town.

SEC. 6. If any owner neglects to remove and destroy, or cause to be removed and destroyed, as aforesaid, such diseased trees and fruit after such examination and notification, and within the time hereinbefore specified, such person shall be deemed guilty of a misdemeanor, and punished by a fine not exceeding one hundred dollars, or by imprisonment in the county jail not exceeding three months, or both, in the discretion of the Court; and any Justice of the Peace of the town where such fruit is sold, shipped, or disposed of, as aforesaid, shall have jurisdiction thereof, and all such fines so collected shall be turned over to the Supervisor of the town, to be placed by him in the contingent fund of said town.

SEC. 7. The Commissioners shall be allowed for services, under this Act, two dollars for each full day and one dollar for each half day, and other reasonable charges and disbursements hereunder, to be audited, as well as any other charges and disbursements under this Act, by the Board of Town Auditors, to be paid to said Commissioners as other town accounts are paid. Such fees and all reasonable charges and disbursements of said Commissioners, in each case, may be recovered by the town, in the name of the Supervisor, from the owner of the diseased fruit or trees on account of which such fees, charges, and disbursements became payable or were incurred.

SEC. 8. This Act shall take effect immediately.



DELAWARE ORCHARD RUINED BY "YELLOW,"



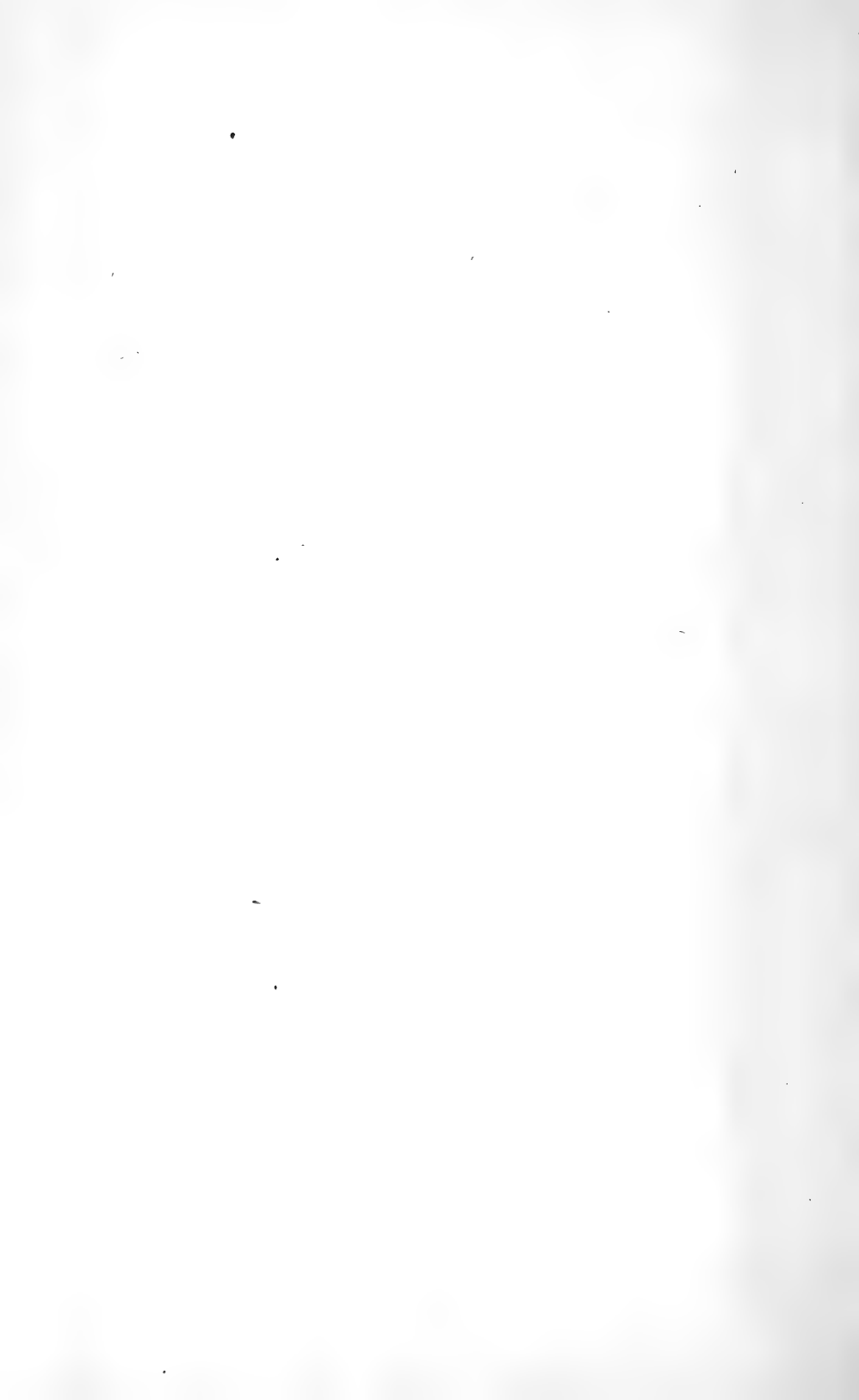
DELAWARE ORCHARD RUINED BY "YELLOW,"



MARYLAND ORCHARD RUINED BY "YELLOW S."



MARYLAND ORCHARD RUINED BY "YELLOW,"



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MAP SHOWING THE DISTRIBUTION OF THE PEACH AND OF PEACH "YELLOWS" IN THE UNITED STATES.



(Compiled by B. M. Lelong, with the assistance of Prof. B. T. Galloway and Dr. Erwin F. Smith.)



APPENDIX.

REPORT BY ALEXANDER CRAW,

State Quarantine Officer,

OF THE

INSPECTION AND DISINFECTION OF A CARGO OF ORANGE
TREES FROM TAHITI.

REPORT BY ALEXANDER CRAW,

STATE QUARANTINE OFFICER.

SAN FRANCISCO, August 31, 1891.

Mr. B. M. LELONG, Secretary State Board of Horticulture, 220 Sutter Street, San Francisco, Cal.:

DEAR SIR: I herewith submit my report to you of the inspection and disinfection of three hundred and twenty-five thousand Tahiti orange trees that arrived at the port of San Pedro, Los Angeles County, June 15, 1891.

Respectfully,

ALEXANDER CRAW,
State Quarantine Officer.

Early in the spring I learned that a schooner was chartered to bring a cargo of young orange trees from Tahiti. The vessel was due early in May, but owing to calms and unfavorable winds they did not arrive until the date above mentioned. On August sixteenth I received a telegram from George J. Mitchell, Secretary of the Los Angeles County Horticultural Commission, informing me that the schooner "Lena Sweasy" had arrived. I left for Los Angeles that same afternoon, and the following day, after conferring with the County Horticultural Board, proceeded to San Pedro.

The trees were packed in open boxes or crates, with soil about the roots. A few of the cases appeared to have been heated, as the trees were covered with a dry fungus.

As the soil in some boxes was too high about the stems, it was considered advisable to remove the trees to shallow trenches twenty-five feet long and five feet wide. Large oiled canvas sheets sufficient to cover a trench were used; these were spread over the trees, and the ends and edges covered with soil to prevent the gas escaping. To generate the gas two earthenware vessels were used, one at each end of the trench; into each were placed three ounces of fused cyanide of potassium and six fluid ounces of water, and when everything was ready six fluid ounces of sulphuric acid were added to each, and the tent immediately closed down and allowed to remain forty minutes. This was double the amount of chemicals necessary, but Mr. W. E. Collins, of Ontario, the gentleman superintending the work for the owners (Messrs. Meserve & Sons, of Pomona), thought it advisable to use a charge sufficiently strong to insure the death of every insect upon the trees. The work was done on the night of June twenty-fourth. Messrs. A. F. Kerchival, John Burr of the Los Angeles County Board of Horticultural Commissioners, and myself were present in the interest of the county and State.

The owners questioned our right to hold the trees, as nearly three hundred thousand were contracted for in San Bernardino County, and they claimed that they were still in transit, as they had not reached

their destination. Hints of personal suits and suits for damages against the State and county were freely indulged in; also, that the trees could be moved immediately after gasing; that the law had then been complied with. But this was not according to our idea of disinfection; so before the gasing I sent the following telegram to Attorney-General Hart at Sacramento:

LOS ANGELES, June 24, 1891.

Cargo of orange trees at San Pedro from Tahiti, badly infested with scale insects, several of which not found in this State. Trees quarantined and ordered them disinfected, which is being done. Owners claim right to remove trees immediately after, which I am not willing to concede. Have I legal power to hold trees say fourteen days or until I can determine if the scales are all destroyed. This is very urgent; wire answer immediately.

ALEXANDER CRAW,
Quarantine Officer.

The following prompt reply was received at San Pedro, signed by W. H. Layson, First Deputy Attorney-General:

It is my opinion that you keep infested trees until you can determine whether or not the insects are dead. More the reason when you discover new species.

Two weeks after the first fumigation, Prof. D. W. Coquillett, Assistant United States Entomologist, Horticultural Commissioners Kerchival, Burr, and Mitchell, and myself visited San Pedro and found live specimens of the large "mining scale" (*Chionaspis biclavis*,* Comstock). I consider this one of the most *destructive scales* that has come under our notice, from the gnarled and warty appearance of the wood where the insects locate and also from its remarkable habit of burrowing under the very thin outer epidermis of the tree, thus to a certain extent protecting the scale from the deadly hydrocyanic acid gas. The scale is light-colored, but as the thin layer over it retains all the characteristic markings of the bark surrounding the insect, it is very difficult to detect.

As the fumigation was not a success, a second notice was served upon owners, on July eighth, to again treat the trees. Five days after the second fumigation, an examination revealed the fact that some were still alive, and a third gasing was made by the owners in hopes of having the trees in such a condition that they would pass at the next inspection. On July seventeenth, we again found live "mining scales," some of them having living young under them, that tried to make their escape when the scale was removed. After such a showing, the responsibility of liberating such trees, even after a very thorough and careful examination, was greater than we cared to assume. So I stated the facts to the Attorney-General, and asked his advice about commencing condemnation proceedings to have the trees declared a nuisance and destroyed. On the night of July nineteenth a triple amount of chemicals was used. On the twenty-first, the date set for the official examination, in company with Commissioners Kerchival and Burr, we made another inspection, and still found live scales and eggs. Mr. Kerchival also found an undetermined borer upon the stem (under the ground) of one of the trees. This is a new pest to California, and at a subsequent examination I secured more specimens and will carefully breed them to the winged state in order to ascertain the family to which they belong. This borer has been claimed by the importers to be a native

*This species will be fully illustrated and described in a bulletin now in course of preparation.—[B. M. L.]

species, and that the trees became infested after their arrival. This undoubtedly is not correct, otherwise they would have been found attacking the orange trees in the county.

The largest specimens found measured about one half of an inch in length by a little over one eighth of an inch in diameter. It is a cylindrical grub, and resembles the peach-root borer, but differs in having the last segment of the body the same as the others—translucent. It has a brown head and black mandibles, with a few short hairs scattered over the body and head.

On July twentieth I received a letter from First Deputy Attorney-General W. H. Layson, wherein he says:

Go ahead and bring an action to declare the infected trees a nuisance under the Act of 1889. The sooner a test case is made the better. I believe the State Board of Horticulture can destroy trees, unplanted, if necessary to kill infecting scales.

This matter was fully discussed by County Commissioners Kerchival, Burr, Mitchell, and myself on July twenty-second, and after reviewing every point we were satisfied that the importers had been given every opportunity, and had put forth their best energies to destroy every scale, and had failed, after fumigating the trees four times—three times with a double dose, and once with a triple amount of chemicals producing the most deadly of gases. I then sent on that day the following telegram to Attorney-General Hart at Sacramento:

Instruct District Attorney, Los Angeles, to sue in name of people to condemn Tahiti trees at San Pedro as nuisance.

The same afternoon the subjoined answer was received, dated at San Francisco:

ALEXANDER CRAW, *Los Angeles*:

District Attorney of Los Angeles County, James McLachlan, is hereby authorized and directed to bring suit in name of people to condemn as nuisance Tahiti trees.

W. H. H. HART.

Before action was taken, the importers stated that they had been supplied with a lower grade of cyanide of potassium, through the misunderstanding of the druggist. But the fact remains that they used a quantity more than sufficient to compensate for the deficiency in strength, or, in other words, they used two and three parts of a 30 per cent cyanide of potassium, instead of one part of a 60 per cent grade; and as an indication that this gas was effective upon other species, I have only to state that but once did we find live specimens or eggs of the purple scale. However, when this matter was brought to our attention, we decided to postpone action until the importers had another opportunity to gas with 60 per cent cyanide.

After they had oiled and repaired their canvas, a double amount of this strong cyanide was used, with the result that the young shoots were injured. On the expiration of the fourteen days granted, we made another inspection, and after looking through three half-boxes of trees and finding tree borers in each, we then examined the large "mining scales," and, in the presence of their foreman, found live and healthy specimens, which I placed under the microscope, and were examined by him, also by Mr. H. Meserve and others, and acknowledged to be alive. The following day we examined other boxes, and finding more living

“mining scales,” Mr. Kerchival telegraphed the District Attorney to commence proceedings, and left on the forenoon train to attend to the matter.

Mr. Mitchell was then in Los Angeles and learned of the telegram, and, as a member of the County Board, swore to the complaint. Owing to a mistake in the copy served upon the defendants his name appeared as having been present at the inspection. Through this mistake he was arrested on complaint of defendants for perjury, but was subsequently released.

The District Attorney detailed his first deputy, Judge Waldo M. York, to take charge of the case, and he conducted it for the people in a manner satisfactory to the horticulturists of the State and with fairness to the defendants.

On August twenty-first, in company with Commissioner Kerchival, we made another inspection and found live “mining scales.” Also, upon trees in a box car we found live, young and old, “mealy bugs” (*Dactylopius citri*, Comstock). This insect was reported to me by Mr. Meserve, Sr., as very troublesome to coffee trees upon the island of Tahiti. I have letters in my possession from an extensive lemon grower in the province of Salerno, Italy, that the same insect (specimens of which he sent me) is destroying the lemon orchards in his section. On August twenty-second the injunction restraining Meserve & Sons from moving the trees came up for hearing before Judge Shaw, in Department 5 of the Superior Court, and, after the testimony was all given, arguments were set for Monday, the twenty-fourth. Dr. Dunn, of Pomona, in his testimony for the defense, stated that borers had been found in orange trees at the M. Baldrige grove at Covina, and also at Mr. Northcraft’s and Mr. Woody’s orchards in Pomona, and that they had destroyed a number of trees. I was inclined to believe that the doctor was mistaken as to the real cause of the death of the trees, and determined to investigate the matter.

So, on the twenty-fourth instant, Commissioner Burr and myself visited Covina, and there we met Mr. Layman, Mr. Baldrige’s foreman, who kindly accompanied us to the portion of the grove where trees had died, which it was said were killed by borers. Upon examination of the adjacent trees, we were satisfied that the trees died from gum disease. We found a few beetles that Mr. Layman said were the same as those to which he called Dr. Dunn’s attention, which proved to belong to the family of *Tenebrionidæ*, and are not injurious. He then showed us the dead trees on the woodpile, and in them we had unmistakable evidence that the trees died from gum disease. The following day Commissioners Kerchival, Burr, and myself visited Pomona, and at Mr. Northcraft’s place saw the young man that examined the trees in the spring, and from his description believe that they were wire worms he found, and not borers. The trees are very thrifty, and we failed to find any evidence of their work; but several trees died last spring, presumably from borers. Upon the other places mentioned we found a few trees affected with gum disease (mal-di-goma), but no evidence of borers.

After the testimony had been submitted to the Court, and argued by both sides, Judge Shaw rendered his decision to the effect that the trees must remain in quarantine at San Pedro until the owners can prove that all insects upon them are dead. I am fully convinced from his remarks on the bench that he is not disposed to take any risks, or that

the experience of the past with the red and white scales should be repeated.

From the location of the trees at San Pedro, I am satisfied there is no danger of infection from the scale pests. The only cause for alarm would be the development of the borers to the winged form, for when this takes place the removal of the trees would not be necessary to spread this pest.

The following is a list of the scales found upon the shipment:

Mytilaspis citricola, "purple scale."

Lecanium hesperidum, "soft brown scale."

Aspidiotus rapax, "greedy scale."

Aspidiotus sp. like "figus," a small circular black scale.

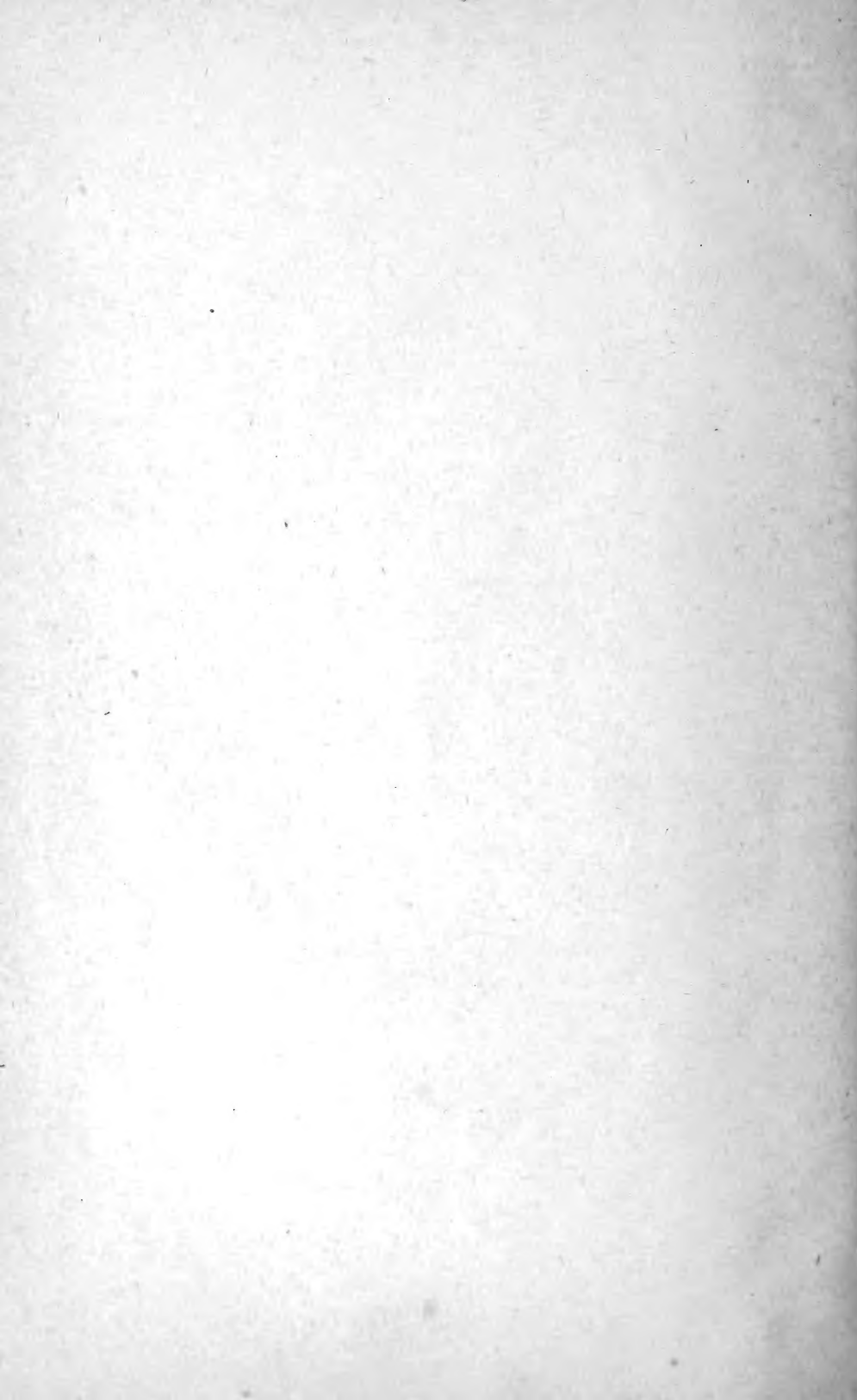
Aspidiotus lemoni, flat circular scale like the red.

Parlatoria, a species of "chaff scale."

Dactylopius citri, a species of mealy bug.

Chionaspis biclavis, "mining scale."

Also a tree borer probably an *Egeria*, and the first ever known to attack citrus trees on this coast.



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