







# BETTER FRUIT

VOLUME XII

JULY, 1917

NUMBER 1

## TWELFTH ANNIVERSARY EDITION OF BETTER FRUIT

### Not Overproduction of Apples But Lack of Distribution

The leading article in this edition, by E. H. Shepard, Editor, showing there are 35,085 towns in the United States, of which 611 have been sold Northwestern apples in carlots direct, or only 1 $\frac{7}{10}$ % — the most important facts that have ever been presented to the apple growers of the Northwest.

BETTER FRUIT has been a pioneer, an originator, creator and developer.

Better Fruit was the first big factor in standardizing and improving the pack of the Northwest.

Better Fruit was among the first to advocate advertising the apple.

Better Fruit was a pioneer in advocating serving apples as dessert for breakfast, luncheon and dinner.

Better Fruit was a pioneer in advocating fruit product factories, cider plants, vinegar plants, evaporators, driers and canneries.

Better Fruit was the first publication to call the attention of the fruit growers to the fact that exorbitant retail prices of apples were holding up consumption.

Better Fruit has been a pioneer in advocating every method for improvement and progress that has been adopted in the Northwest.

The Editor has put in eleven years of the hardest work of his life in helping the fruit growers of the Northwest to develop and improve their industry and better their condition.

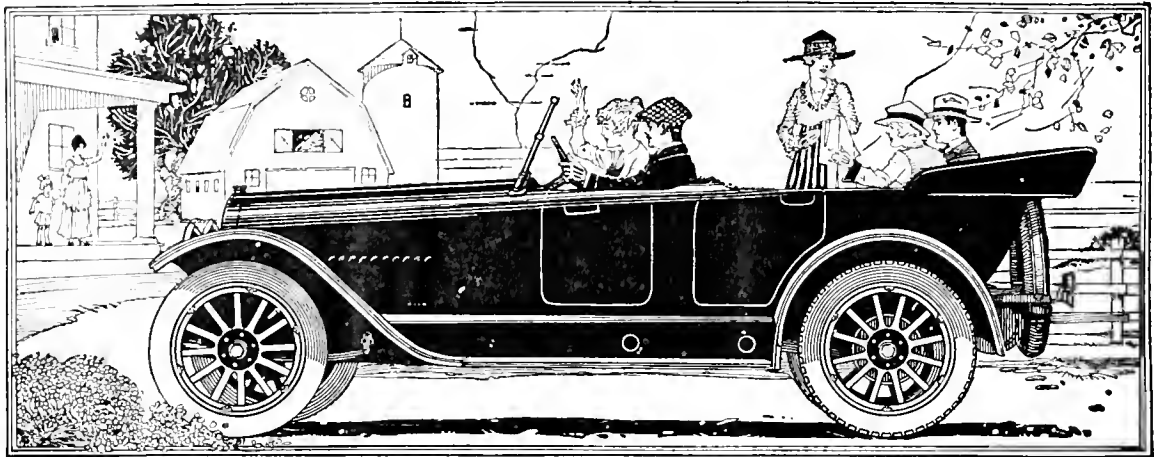
Better Fruit will continue the good work, helping the fruit grower to the fullest extent in every possible way.

Please show your appreciation by sending in your subscription and advising your neighbors to subscribe.

BETTER FRUIT PUBLISHING COMPANY, PUBLISHERS, HOOD RIVER, OREGON

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FOR FRUIT AND VEGETABLE CANNERS AND PACKERS

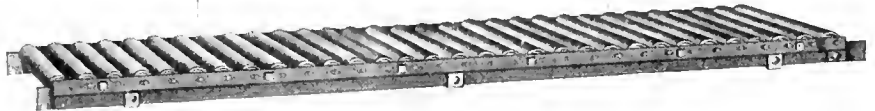
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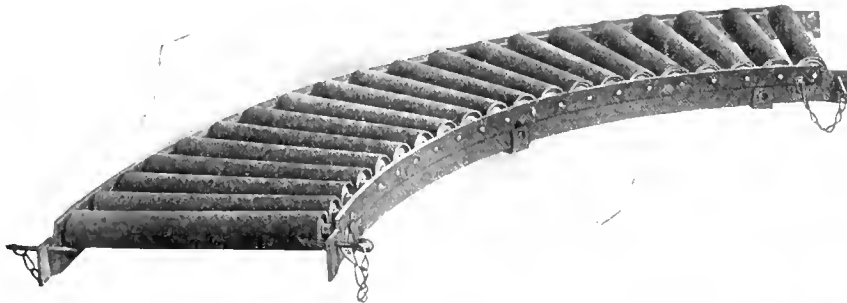
## Portable Roller Conveyor Units

To the right is shown a typical eight-foot unit. Rollers are spaced to suit sizes of packages to be handled. Diameter of rollers, 2¼ inches, cut from cold-drawn, seamless steel tubing, fitted with case-hardened, detachable ball bearings and full-length axles. Lock bars hold all rollers rigidly in place, eliminating use of nuts. Frame rails are of flat bar steel, rigidly braced crosswise and lengthwise. Whole unit construction is strong, neat, compact, and capable of giving almost unlimited service.



## Reversible Curves

General construction same as straight units. Curves can be made to direct conveyer lines in any desired direction to fit special conditions or requirements. See illustration to left showing typical 90° curve.

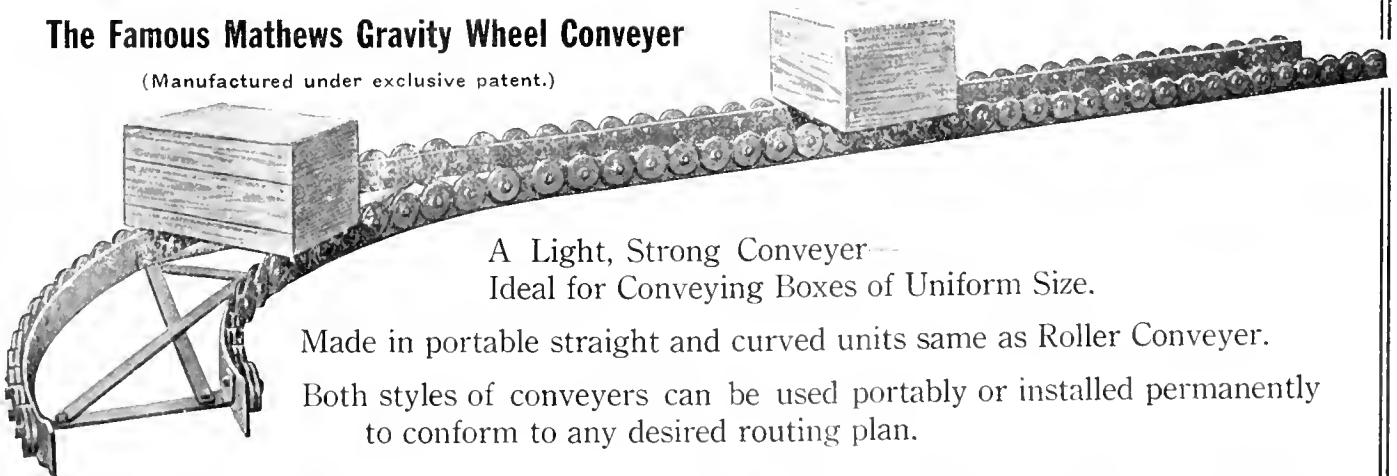


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Factories: Ellwood City, Pa.; Toronto, Ont.; London, Eng.

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DEER PARK, WASHINGTON



# BETTER FRUIT

AN ILLUSTRATED MAGAZINE PUBLISHED MONTHLY IN THE INTEREST OF MODERN, PROGRESSIVE FRUIT GROWING AND MARKETING

## Not Overproduction of Apples, But Lack of Distribution

The Country Has Not Been Sold, with Facts to Show It

By E. H. Shepard, Editor.

STATISTICAL TABLE SHOWING THE NUMBER OF TOWNS IN EACH STATE OF OVER 3,000 POPULATION, SOLD AND NOT SOLD IN CARLOTS

	Towns 3,000 to 5,000 Population		Towns 5,000 to 10,000 Population		Towns 10,000 to 20,000 Population		Towns 20,000 to 50,000 Population		Towns 50,000 Up Population	
	Sold	Not Sold	Sold	Not Sold	Sold	Not Sold	Sold	Not Sold	Sold	Not Sold
Alabama	12	5	1	5	1	2	2	2	2	2
Alaska	2	2	1	1	1	1	1	1	1	1
Arizona	4	2	2	1	1	1	1	1	1	1
Arkansas	9	1	1	1	1	2	1	1	1	1
California	39	1	14	3	13	5	2	4	1	2
Colorado	11	1	1	2	3	1	1	1	1	1
Connecticut	14	1	13	10	2	4	3	2	1	1
Delaware	1	1	1	1	1	1	1	1	1	1
District of Columbia	1	1	1	1	1	1	1	1	1	1
Florida	16	1	5	3	1	1	1	1	1	1
Georgia	18	1	14	1	3	2	1	1	1	1
Idaho	1	3	1	1	1	1	1	1	1	1
Illinois	44	41	1	19	4	14	3	2	2	2
Indiana	29	21	13	2	9	3	2	2	2	2
Iowa	30	20	4	4	8	2	2	2	2	2
Kansas	7	10	4	9	1	1	1	1	1	1
Kentucky	16	9	6	2	3	1	1	1	1	1
Louisiana	9	6	2	3	1	1	1	1	1	1
Maryland	7	5	2	2	1	1	1	1	1	1
Massachusetts	17	49	28	1	23	5	8	1	1	1
Michigan	25	22	17	8	1	3	1	1	1	1
Minnesota	15	6	11	2	5	3	1	1	1	1
Mississippi	11	7	1	4	2	1	1	1	1	1
Missouri	26	1	13	9	2	1	3	1	1	1
Montana	2	6	4	2	2	1	1	1	1	1
Nebraska	2	7	2	2	1	1	1	1	1	1
Nevada	6	2	1	5	2	1	1	1	1	1
New Hampshire	6	6	5	1	2	1	1	1	1	1
New Jersey	25	29	13	11	1	9	1	1	1	1
New Mexico	6	3	1	1	1	1	1	1	1	1
New York	50	39	1	33	1	15	3	10	1	1
North Carolina	15	14	5	1	5	1	1	1	1	1
North Dakota	2	2	2	2	1	1	1	1	1	1
Ohio	35	1	37	1	21	1	12	7	2	2
Oklahoma	3	25	6	2	6	2	1	1	1	1
Oregon	1	1	5	2	2	1	1	1	1	1
Pennsylvania	70	55	37	19	5	5	1	1	1	1
Rhode Island	2	1	3	3	1	1	1	1	1	1
South Carolina	9	7	3	2	1	1	1	1	1	1
South Dakota	3	3	1	2	1	1	1	1	1	1
Tennessee	13	7	2	2	1	3	1	1	1	1
Texas	9	29	9	14	1	5	1	4	1	1
Utah	1	8	1	1	1	1	1	1	1	1
Vermont	4	6	2	2	1	1	1	1	1	1
Virginia	10	6	5	1	5	2	1	2	1	1
Washington	2	13	2	1	3	2	1	3	1	1
West Virginia	1	3	6	1	5	1	2	1	1	1
Wisconsin	1	25	19	1	7	4	5	1	1	1
Wyoming	2	2	1	1	1	1	1	1	1	1
<b>Total</b>	<b>40</b>	<b>711</b>	<b>54</b>	<b>516</b>	<b>69</b>	<b>299</b>	<b>59</b>	<b>154</b>	<b>73</b>	<b>51</b>

Towns	Sold	Not Sold	Percentage Sold
3,000 to 5,000	40	711	5.34%
5,000 to 10,000	51	546	8.44%
10,000 to 20,000	69	299	22.74%
20,000 to 50,000	59	154	38.31%
50,000 up	73	51	58.82%
<b>Total</b>	<b>295</b>	<b>1,791</b>	<b>16.47%</b>

11 per cent only of towns over 3,000 sold in the United States. 86 per cent not sold. Towns under 3,000: Sold, 311; not sold, 9,298. Supporting one or more newspapers. Sold, 3 per cent; not sold, 97 per cent. Total towns in United States, approximately, 35,085. Sold, 611—1.74 per cent; not sold, 34,474—98.3 per cent.

### TOWNS OF OVER 3,000 POPULATION, SOLD APPLES IN CARLOTS

Alabama	Colorado	Idaho—Continued
Selma	Sterling	Twin Falls
Montgomery	Boulder	Pocatello
Birmingham	Trinidad	Boise
Mobile	Colorado Springs	Chicago
Arizona	Denver	Freeport
Bisbee	Pueblo	Bloomington
Globe	Connecticut	Decatur
Theson	New London	Galesburg
Arkansas	Stanford	Chicago
Jonesboro	Bridgeport	Peoria
Fort Smith	Hartford	Rockford
Texas	Waterbury	Indiana
Little Rock	District of Columbia	Logansport
California	Washington	Muncie
Marysville	Florida	Evansville
Bakersfield	St. Augustine	Fort Wayne
Richmond	Jacksonville	Indianapolis
Santa Ana	Tampa	Iowa
Fresno	Georgia	Oelwein
Pasadena	LaGrange	Fort Dodge
San Diego	Bome	Keokuk
San Jose	Augusta	Marshalltown
Stockton	Macon	Mason City
Los Angeles	Atlanta	Burlington
Oakland	Idaho	Cedar Rapids
Sacramento	Wallace	Clinton
San Francisco	Lewiston	

There are a great many people who believe that the unsatisfactory prices on apples are not due to overproduction but to a lack of distribution. I have given this matter a great deal of thought and study for years, and have done much research work, endeavoring to collect statistics and present facts that would be of value, but until recently I could find no arrangements of the population of the different towns with reference to their population sufficiently classified in a way to be of value. A few months ago I picked up the American Newspaper Annual and Directory of N. W. Ayer & Son, Philadelphia, and found a list of every town in the United States in which a newspaper was printed. In this list there are 11,695 towns, of which 9,298 are smaller than 3,000 population and 2,086 towns are over 3,000 population. But more important than this, the towns of over 3,000 population are arranged under the following classifications—in the forepart of the book, page 12, in Alabama, for instance, it gives the list of towns, arranged alphabetically, from 3,000 to 5,000 population; from 5,000 to 10,000 population; from 10,000 to 20,000 population; from 20,000 to 50,000 population, and from 50,000 upward, and so on with each state. In addition to this, under each state is given an alphabetical list of every town with a newspaper in each state with the population of each town or city. It must be borne in mind that in the list of towns published in the N. W. Ayer & Son American Newspaper Annual and Directory that only the towns are given where a newspaper is published. Upon counting the list of towns in the Produce Reporter Credit Book, 212 West Washington Street, Chicago, I find the number of towns listed where there are produce dealers, taking the State of Alabama as an example, are three times as great as the number of towns listed by N. W. Ayer & Son in the Newspaper Annual and Directory, which would make the towns in the United States approximately 35,085.

I have kept a record of every carload with destination, as reported to the Fruit Growers' Agency during the month of November, the heaviest shipping season, representing 75 per cent of the tonnage of the Northwest, and in addition have taken the published list of towns to which the Northwestern Fruit Exchange has sold for the years 1910, 1911, 1912, 1913, 1914, 1915, to December 28, 1916. All of these towns I have carefully checked up in the Newspaper Annual and Directory of



LIST OF TOWNS UNDER 3,000 POPULATION IN EACH STATE, SOLD CARLOTS,  
ARRANGED ALPHABETICALLY—Continued

Malta, Miles City, Norris, Pony, Rosebud, Stamford, Sweetwater, Townsend, White Fish, Wolf Creek.

Missouri—Hale.

Massachusetts—Bonita.

New York—Burt, Suspension Bridge, Wilson.

North Dakota—Alexander, Antler, Anamoose, Arnegard, Arthur, Beach, Berthold, Bismarek, Bowbells, Carrington, Charbonneau, Crosby, Dickinson, Drake, Finley, Hamlet, Hampden, Keene, Leeds, Lignite, Lisbon, Medina, Noonan, Plaza, Portal, Powers Lake, Rock Lake, Rugby, Stanley, Tioga, Towner, White Earth, Wildrose, Wolfard, New Rockford, Bowman, Braddock, Chamberlain, Cando, Edison, Flasher, Ft. Clark, Goodrich, Highmore, Hazelton, Hattinger, Hebron, Kildeer, Kenmore, Langdon, Lakota, Leith, Mandan, New Salem, New Berg, Oakes, Parshal, Began, St. Thomas, Sterling, Starkweather, Sheldon, Turtle Lake, Werner, Wahpeton, West Hope, York.

Oregon—Enterprise, Bend, Klamath Falls, North Bend, Niagara.

Oklahoma—Clinton, Ojima, Purcell, Woodward, Camanche, Herrington.

Nebraska—Danbury, Gothenburg, Giltner, Gering, Lester, Moorefield, Riverton, Scottsbluff, Upland, Waterlawn.

Pennsylvania—Biggerville, DeBois.

South Dakota—Browning, Gettysburg, Kodoka, Claremont, Canova, Eureka, Groton, Gregory, Hill City, Java, Lemmon, Mott, Parker, Rie Heights, Tuton, Timber Lake, Vermillion, Webster, White Lake, Wolsey.

Texas—Ennis, Llano, Bowie, Cisco, Comanche, Lockdale, Lockhart, Mexia, Plainview, Rockdale, San Augustine, Stamford, Dalhart, Victoria, Waurika.

Utah—Milwood Spur.

Washington—Sumner, Ballard, Krupp.

Wisconsin—Baron, Bosebel, Osceola, Broadhead, Bellinger.

West Virginia—Wheeler.

Wyoming—Gillette, Hanna, Pine Bluffs, Upton, Basin, Cody, Douglas, Gurnsey, Rawlins, Thermopolis.

be diverted elsewhere. With this immense list of towns unsold it seems worthy of suggestion to the selling agencies and association directors that they follow the method adopted by the big jobbers and manufacturers, by putting out a sufficient number of traveling representatives or salesmen to cover the different states and territories thoroughly, with a view of increasing the number of towns sold, creating a wider distribution and a greater consumption. If the town of medium-sized population can be sold direct, saving extra freight and unnecessary extra handling and extra unnecessary profit, the consumers in that city will receive their apples at just so much less per box, creating a greater consumption if these markets are properly worked and sold. Furthermore, it will mean that big cities and big distributing centers will be relieved from overcrowding and pressure, consequently firmer and better prices can be maintained and secured.

In connection with this statement it must be borne in mind and remembered that whatever the market price is in a town like St. Louis or Kansas City, that is the price set in all of the smaller towns in a certain radius. If you ask a dealer in a small town a quarter more than the St. Louis price you cannot sell him, because all that is necessary for him to do is to call up the commission house, broker or dealer and ask him to ship him 100 boxes, more or less. It must be admitted Michigan raises a lot of apples, yet there are 76 towns in the State of Michigan of over 3,000 population and only one has been sold. Illinois raises a lot of apples also; however, eight towns have been sold in the State of Illinois. Take as an illustration the cities in a state. In California, Marysville, with a population of 5,000, has been sold, yet Chico, with a population of 12,000, has not been sold; neither town is in an apple-producing section. But the number of deductions and conclusions to be drawn are infinite. Limited space prevents a complete analysis of the situation. The expense of publishing in detail is too great to publish in "Better Fruit." However, the statistical tables present

sufficient information to enable every shipping concern in the Northwest to analyze the situation completely. Every shipping concern should obtain a Produce Reporter Credit Book and the American Newspaper Annual and Directory of N. W. Ayer & Son, Philadelphia, and take a list of the towns as reported sold of over 3,000 population and under 5,000 population, and check them off in these two publications. After doing this at a glance you can see which towns have been sold, the population of each, and which have not been sold, in every state and territory in the Union. The American Newspaper Annual and Directory of N. W. Ayer & Son will give you the list specified, according to population, 3,000 to 5,000, 5,000 to 10,000, 10,000 to 20,000, 20,000 to 50,000 and 50,000 up, and the Produce Reporter furnishes a list of all the produce dealers and commission men in every town, with their credit rating.

I regret that space in "Better Fruit" is not sufficient and that "Better Fruit" cannot afford the expense of the publication of the complete list of towns unsold, but I have presented sufficient facts and have given the shipping concerns a list of the towns sold, so that every shipping concern at a small expense can check up from the list of towns sold according to the published list in this edition of "Better Fruit," and after doing this he can see at a glance just what towns in each state have not been sold, and by referring to the Produce Reporter Credit Book can find the names of the men engaged in the commission business with whom business can be done.

I do not claim that every town can be or should be sold direct; some of the towns are close to jobbing centers and can be supplied in a more satisfactory way than buying direct in carlots. On the other hand, there are many towns with sufficient population to take care of carlots where jobbing facilities do not serve them satisfactorily or where the distance is so great there is extra expense on account of freight and extra expense in rehandling and unnecessary intermediate profit. Whenever it is advisable to sell towns direct it should be done not only for the pur-

## FRUIT MEN ATTENTION!

Members of **The Farmers' Union Co-Operative Exchange** will ship hundreds of cars of **Peaches, Apples and Pears**. The Exchange buys merchandise and supplies, and sells fruit and farm products. All purchases cash. All fruit sold track, "hippers" order. All buyers receive same quotations. Those desiring to furnish supplies or to handle fruit, wire or write.

**The Farmers' Union Co-Operative Exchange**  
I. W. GROVES, Manager Grand Junction, Colorado

## DO YOUR BIT

By drying your surplus Fruits and Vegetables. Our small evaporators give perfect satisfaction. Inexpensive.

Send for Catalogue.

**THE EVAPORATOR CO.**  
55 Liberty St. New York

pose of increasing the markets but for the purpose of increasing consumption, because in so doing the purchaser will save the extra expense of extra freight and extra profit, and by receiving apples direct the dealer will save one extra handling, consequently he will be able to furnish the apples to the consumer in better condition at lower prices, which will be a big factor in increasing distribution and creating greater consumption.

I firmly believe if every shipping concern in the Northwest will accept the information in this article, and if each and every one of them will get busy in an earnest endeavor to increase their distribution that we won't hear much more complaint about overproduction, and I am equally and firmly convinced that if the suggestions given are followed out that every fruitgrower in the Northwest will get better prices for his apples and find his bank account larger at the end of the year than he has in the past few years that I have been engaged in growing apples, covering a period of fourteen years.

# Sebastopol Gravensteins

The crop of famous Sebastopol Gravenstein Apples is now moving. Season closes August 26th. The best apples from over 200 of our best orchards. Community packing houses insure uniform pack.

See our representative or wire us.

## Sebastopol Apple Growers' Union

SEBASTOPOL, CALIFORNIA

wooden back is preferable. The door is fastened to the apex of the dryer with a suitable catch. A removable frame of wooden slats or heavy wire elevated an inch or two above the base will furnish a free circulation of air from beneath, and the food spread on it will dry more quickly. The air enters the small holes at the base and, accompanied by the moisture from the evaporating fruit, passes out at the inch hole in the apex.

To save steps the dryer might be placed against a south window and could thus be filled and emptied without going outside. For protection in winter the dryer can be set under a shed. The owner of this dryer reports that it cost her six dollars complete. The position of the glass aids in concentrating the sun's rays and increasing the heat. The enclosure prevents the entrance of dust and insects.

The Bing cherries that were offered as samples were delicious and could be substituted for raisins, currants and other similar fruits in puddings, cakes and confectionery. Since the price of sugar is so high the drying of fruits should be of interest to all.

### A Home-Made Sun Dryer

By Jessie M. Hoover, Professor of Home Economics, Moscow, Idaho

A YEAR ago the writer visited four hundred farm homes in Southern Idaho. Before the home visits were made the women of each community or neighborhood were assembled at a central meeting place and were asked to consider the best labor-saving device they possessed and if possible show it to the visitor when she called at their home. Pictures were taken of many of the best devices and this dryer was one of the devices which seemed especially interesting. Judging by the results sampled the efficiency of the dryer cannot be questioned.

Figure I shows the completed dryer with ventilating holes at the base and apex.

#### To Make

Two panes of glass 36 by 36 inches each are required. Figure II shows one of these glasses cut diagonally so as to form two right-angled triangles. Figure III shows the second glass cut so as to form a triangle with two equal sides. In Figure III there is a waste of the two upper corners of the glass.

These three triangles are cased with wood in much the same way as a window sash.

For the base of the dryer build a square wooden platform of the same dimensions as the base of the cased glass. This should be placed on a table or substantial frame in the dooryard where it will have a good exposure to the sun, i. e., place the triangle A B C on the south side of the base, as shown in Figure I. On the east and west sides of the wooden base place the two triangles shown in Figure II, A' and A'', in each case being placed on the wooden base. The edge C' is joined to the edge C. The edge B' is joined to the edge B. The edges B' and C' will be slightly longer than the edges of B and C, but these can be extended up into the wooden apex. The back of this dryer may be made of tightly-matched boards, hinged along the north side of the base;

or it may be made of the wire gauze screening. Where dust storms or sudden showers are likely to occur the

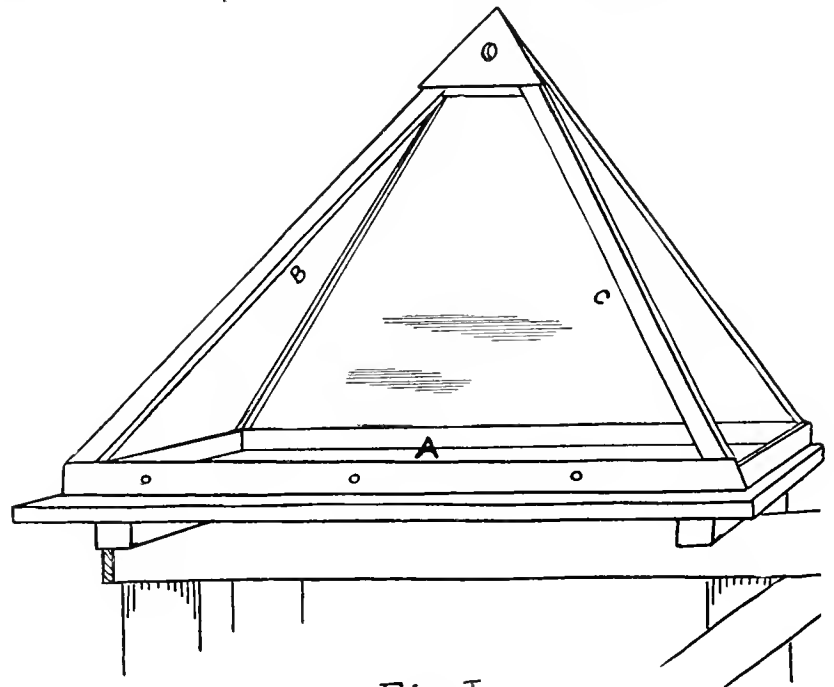


Fig I

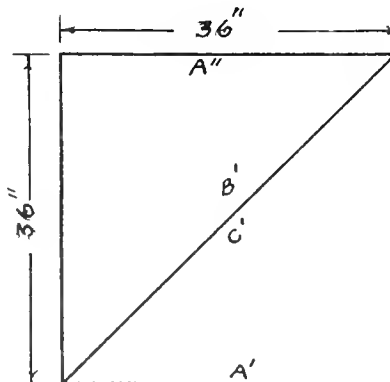


Fig. II

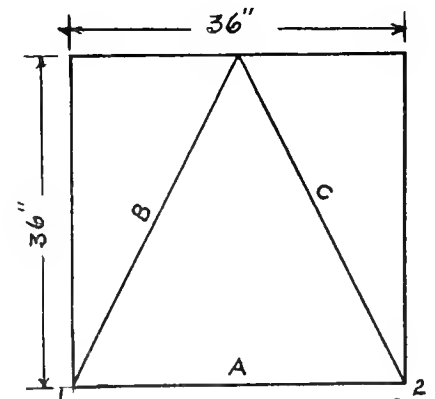


Fig. III

# 7000 Abusive Miles Prove HUDSON Endurance

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## Cork, Drouth Spot and Related Apple Diseases

By A. J. Mix, Geneva, New York, Agricultural Experiment Station

**T**WO little-known apple diseases are found in the Champlain Valley. These are perhaps only different types of the same disease, are non-parasitic in nature, and are apparently closely related to the well-known fruit-pit or stippen disease. The names cork and drouth spot are proposed for them. Associated with the drouth spot are abnormal conditions of the twigs and foliage; it is proposed to call these drouth die-back and drouth rosette.

Cork is also found in Ontario and in New South Wales. It affects chiefly the Fameuse variety. Apparently the drouth spot has occurred in Maine and Virginia; and a closely related trouble occurs in the Pacific Northwest. Rosette has been reported from Colorado, California and Idaho; and both the rosette and die-back from the irrigated sections of Washington and Oregon. In the Champlain Valley certain orchards and even individual trees are more affected than others. It is only in these particular cases that the diseases assume economic importance.

Cork is evident in late June as dead brown spots beneath the skin of the fruit or around the core. The fruit is normal externally. Later the fruit becomes distorted and knobby, and brown corky areas are found scattered throughout the flesh. Drouth spot occurs in early June and fresh stages may develop throughout the summer if the weather continues dry. Superficial or sunken, irregular, dead, brown spots

show in the skin of the fruit, and dead brown areas may occur in the flesh beneath. In late stages the apple becomes cracked and deformed. The internal spots of both diseases are in close proximity to branches of the vascular system, and superficial drouth spots often show a wavy pattern of wrinkles apparently marking the subepidermal vascular network.

Under the microscope these spots show cells with brown amorphous con-

tents shrunken away from the walls. Sometimes cells are collapsed.

Die-back consists in the death of a portion of the twig from the tip backward. Beyond this a brown discoloration in the cambial region extends back into healthy wood. The dead twig may be replaced by a healthy lateral from the base; but often there is found near the base of the twig a rosette-like cluster of dwarfed, lanceolate leaves. This appearance and one in which a compact cluster of similarly dwarfed leaves crowns a long, bare twig have been included under the name rosette.

Field observations show that these diseases may occur on the best types of soil in the locality, under conditions of careful culture, and in young and vigorous trees. In certain cases a shallow soil seems connected with their development. They may appear, however, on deep soils of good physical condition. A condition of soil conducive to poor moisture supply seems connected with severe outbreaks. Drouth accompanied by high, dry winds seems to bring on a large amount of drouth spot and cork; a subsequent rainy period, as in 1915, causes them to disappear. In a rainy spring, as in 1916, some disease occurs in trees that have been previously affected, but the amount is inconsiderable and the period of development much shortened.

The initial stage of die-back is found on the season's growth in midsummer. The following spring this die-back and the accompanying rosette are very noticeable. Dry weather in late summer seems directly responsible for die-back of the season's growth. If a wet summer follows a dry spring, this die-back is practically absent, and there is evident recovery from its preliminary stages. No abnormal condition of the roots is necessary to the occurrence of die-back and rosette.

Since these diseases may appear, to a limited extent, in a rainy season, lack of soil moisture cannot be considered their sole cause. It is, however, the one predisposing factor. Other factors, yet unknown, may be operative.

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Assuming that an insufficient moisture supply to the fruit, accompanied by great transpiration, may bring about these diseases, it is suggested that the exact method of their occurrence may be through the leaves robbing the fruit of water. Leaves have a higher cell-sap concentration than green fruits and can remove water from the fruits by the process of osmosis. Chandler has called attention to this fact and demonstrated it with detached twigs bearing fruits and leaves. Following Chandler's method fruits have been rapidly wilted, and then, by placing the twigs in water, caused to regain their original state of turgor. In many such fruits spots resembling those of drouth spot, and occasionally of cork, were produced.

One experiment indicated that a reduction of the leaf surface of the tree during the critical period might prevent the drouth spot, but this is not suggested as a practical means of control.

The only control method which offers promise of results is one looking to conservation of soil moisture, and an even distribution of the moisture supply throughout the season. Clean cultivation is not sufficient. From certain suggestions of benefit in the Champlain Valley, and from results secured in the Pacific Northwest, clean cultivation followed by a leguminous cover crop, or the planting of a leguminous crop such as alfalfa in the orchard, seem methods which should be tried. Certain growers in the Champlain Valley are testing them.

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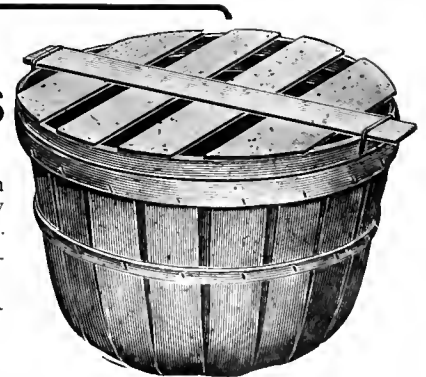
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crowding the large centers by greater distribution throughout the small towns in the United States, the pressure can be relieved and a better level of prices maintained in all markets. It is the editor's belief that if each one of the associations would do as every jobber or manufacturer does, divide the territory into districts and put on a reasonable number of salesmen—or, in plain English, "drummers"—to sell the towns that have not been sold, that consumption can be increased by greater distribution and a better demand created and better prices obtained. If the different selling concerns, sales managers and directors would give this matter proper attention and add on a sufficient number of salesmen, properly distributed, the 1917 apple crop can be disposed of, in the opinion of the editor, without any doubt at satisfactory prices.

**Winter Kill, or Die Back, has caused the fruitgrowers of the Northwest more or less anxiety in different sections. It is similar to the trouble called Rosette in some districts. While this trouble has caused more or less damage for many years, it is comparatively little understood, but investigation of the trouble in the Northwest points to drouth being at least the main factor as to the cause. However, the editor desires to call attention to the fact that, in his opinion, it may not be so much drouth as the nature of drouth. An orchard may not be irrigated at all and show very little winter kill. While an orchard that is irrigated that is allowed to become very dry in summer or fall may show up winter kill the next spring. So it seems, at least to the editor, that a change from wet to dry is more a factor than just simply dryness. Two articles on this subject, one by Leroy Childs of the Experiment Station at Hood River and one by A. J. Mix of Geneva, New York, appear in this issue, giving the result of their investigations and their conclusions, both well worth reading. Apparently it seems that the only remedy so far known is one of prevention, which is to maintain evenness of moisture condition and sufficient moisture throughout the season.**

**Economy in Harvesting.—The increasing cost of boxes, paper and all other supplies connected with harvesting the fruit crops apparently at the present time is unavoidable. With the increasing cost of living labor is demanding and is entitled to prices in accordance with living costs. It is important that every fruitgrower should introduce efficiency methods to the fullest possible extent to make up for increased costs so far as possible. It is a well-known fact that the expense of handling unpacked and packed boxes in the packing house and loading stations and warehouses is a large item, as most of this work has been done by hand. Some few up-to-date handling concerns and community packing houses have introduced gravity carriers, finding by so doing the cost of handling is greatly reduced. Without question if our warehouses had been equipped with gravity carriers last season the work would**

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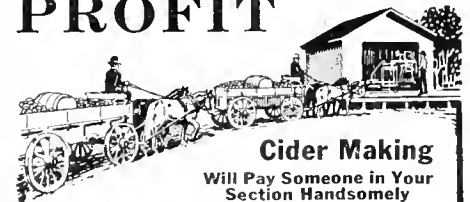
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The Editor of "Better Fruit," with many others, has believed for many years that in a large measure the unsatisfactory prices realized on apples during some of the past years have been due to a lack of distribution more than to overproduction. The editor has given the matter careful study in connection with considerable research work covering a long period. Some facts in connection with these views are presented in an article by the editor elsewhere in this edition. The price of wheat in Liverpool sets the price of wheat all over the world. It is also a fact, to a large extent, that the prices of apples in the large distributing centers set the prices in all of the surrounding territories. Therefore, if the fruitgrowers can avoid

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have been done much easier and the congestion relieved, and the fruit-grower would have saved considerable delay unloading at the warehouse.

**Home Drying of Fruits and Vegetables.—The June issue of "Better Fruit" contained a very interesting article on canning. In this issue is presented an article, with illustrations, as to the home drying of fruits and vegetables, with the suggestion and advice that every fruitgrower endeavor**



to the fullest extent possible to put up good supplies of dried fruits and vegetables, not only for home use but for sale, as there undoubtedly will be a large demand. It is the duty of every fruitgrower and farmer to conserve all of the waste, in fact to allow no waste to occur. Therefore every fruitgrower and farmer should either can or dry all kinds of fruits and vegetables, for which he does not find a ready market at a satisfactory price as fresh.

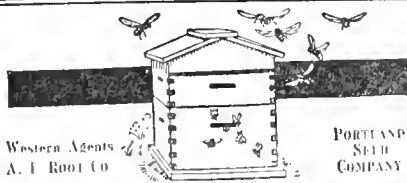
**The Red Cross Fund.**—The quota for the Red Cross fund has not only been given very cheerfully, but the amount subscribed will far exceed the amount

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ported to have been successfully operated in some districts throughout the Northwest. It is a simple, practical device, very inexpensive and easy to construct. Every fruitgrower and farmer should endeavor to conserve as much food during the summer, when it is plentiful, as possible, by all practical methods, such as canning, evaporating and drying.

**Home-Made Sun Dryer.**—Miss Hoover, in a short article appearing elsewhere in this edition, gives a design for a home-made sun dryer, which is re-

**Spraying Grapes to Increase the Yield.**—The grape industry of the Northwest is comparatively new, but an old industry in California and many other states, in which the industry has



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received very careful attention and the best methods adopted for securing the greatest yield possible. All growers of the Northwest may not fully appreciate the importance of spraying a vineyard. Therefore a short but interesting article on spraying grapes is published in this edition of "Better Fruit."

**Grading Machines.**—The cost of grading by hand, especially with the increased cost in labor, is an unnecessary expensive method that should be discarded. Grading machines are now being manufactured which do the work at a saving of several cents per box, in much less time, requiring a great deal less space for carrying on the work. A number of grading machines are being manufactured at various prices. Grading machines will save probably five cents per box in doing the work. Any grower with 3,000 to 5,000 boxes of apples can nearly save the cost of a grading machine in a year or two.

**Fruit Juices for Jelly Making.**—Containers are very expensive. It is also quite an item of expense to buy all the sugar necessary at one time to put up jelly for the entire season. Fruit can be converted into juice, bottled, ready for converting into jelly later in the year, as required. The housewives of a great many fruitgrowers have tried this method and found it very satisfactory. Therefore it seems one well worthy of suggesting to the fruitgrowers, and that they may fully understand the method a short article is published elsewhere, entitled "Fruit Juices for Jelly Making."



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**Winter Kill Needs Attention**

By Leroy Childs, Hood River Experiment Station

**DIE-BACK**, or so-called "winter kill" of apple and pear trees is a common disorder in many orchards of the valley this spring. The term "die-back" has been adopted in many sections of the country for this trouble and it is more appropriate than the old name of

"winter kill." Winter conditions have nothing to do with fully 90 per cent of the trees that have failed to throw out normal foliage, and for this reason the term was very confusing, especially so as it sounds much like the term "winter injury." Winter injury is a term used for mechanical disorder of the tree brought about by freezing and thawing. Our commonest form of winter injury

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is manifested in the form of a severe splitting of the trunk, usually on the southwest side of the tree.

Die-back, for the most part, is the result of mistreatment of the tree during summer and can be prevented by proper irrigation only. By irrigation is meant the maintaining of a uniform moisture condition of the soil during the growing season of the tree. Each orchardist must determine the condition of the soil at intervals during the summer; different soils demand different treatment. This determination can be made only by digging to a depth of three or four feet with a shovel or by using the soil augur at rather close intervals (not to exceed three weeks during the growing season.)

The cause which produces a diseased tree suffering from die-back has not been completely proved from an experimental standpoint. Observations of all workers, however, seem to indicate that it is the burning off of the root hairs or root feeders. Root hairs are the tender watery rootlets—soft and extremely delicate—by whose aid the plant draws food and water from the soil. These root hairs are very sensitive to heat and drought and if the soil—even though it be for a few days only—is permitted to become thoroughly dried out, these small rootlets are killed, resulting in a tree suffering from die-back the following spring.

Increasing soil fertility and neglecting the proper irrigation of the trees will work havoc in our orchards unless more attention is given to the proper use of water. By increasing fertility the number of root feeders is increased. The tree responds to this stimulus, forming a vigorous top which requires much moisture to maintain in a normal condition. If this supply of root feeders is all wiped out at one time, the tree undergoes a tremendous shock and the

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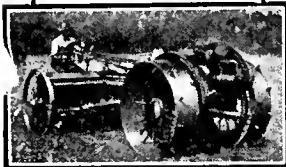
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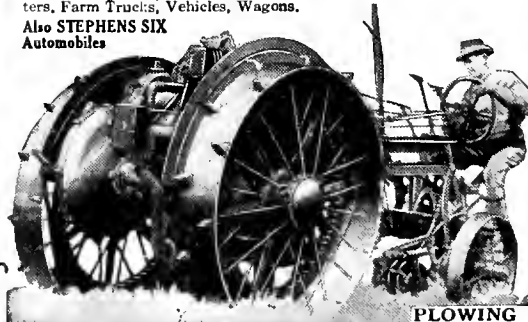
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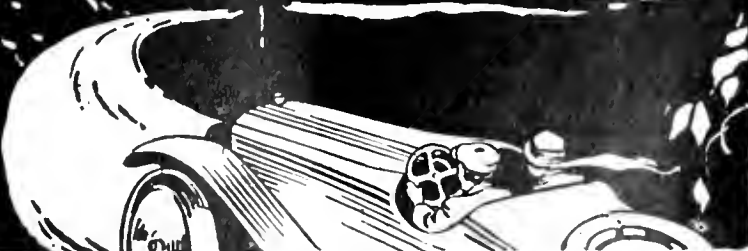
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Seattle, Wash., 1215 8th Ave.

Spokane, Wash., 806 3rd Ave.

transpiration, which occurs in the portion of the tree above ground quickly drains the tree of available moisture and food. Most trees suffering from die-back make a slight growth in the spring. This feeble start consumes all of the stored-up food and moisture, and as there are no more root feeders to supply more food and moisture growth stops. The result is that the tree dies back until it can reorganize its feeding system.

There are a good many orchards in the valley which are just on the edge of a die-back condition. A close observer can detect this condition by a few simple warnings given out by the trees before a serious condition has been reached. The writer has observed three which have proven good indicators and which are worthy of consideration. (1) Trees which have burned badly in the delayed dormant spray. (2) Dying and dropping of the fruit buds (before the pink stage is reached) on trees that appear fairly vigorous. (3) Premature yellowing and dropping of foliage in early fall. All of these indicators could be due to some other disorder than drought, but as a general rule drought condition could be suspected.

We are now more than ten inches behind in normal rainfall and for this reason irrigation should be started at once, especially in the orchards that are in cover crops.

This article has been written in the hope that it might bring to the grower the serious results that will continue if

As it is—

## TRUE

—that—

### Caro Fibre

## FRUIT WRAPPERS

Prolong the Life

—OF—

### Apples

You who Grow Apples with great Expense should Dress them Warm and Attractively.

Use Your Brains to Wrap Your Fruit.

Give Your Apples a Fair Show.

Get the Top Price.

The Apple Buyer knows Caro Fibre— Wouldn't You Pay a little more for a box of apples if you knew that it Would Keep Longer.

If Your Shipper Doesn't Use

### Caro Fibre Fruit Wrappers

he is not giving your fruit a

Fair Show

### Union Waxed & Parchment Paper Co.

MANUFACTURERS

F. B. DALLAM, Pacific Coast Representative  
417 Market Street  
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LESLIE BUTLER, President  
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Established 1900

## Butler Banking Company

HOOD RIVER, OREGON

Capital . . . \$100,000.00

4% Interest Paid in our Savings Department

WE GIVE SPECIAL ATTENTION TO GOOD FARM LOANS

If you have money to loan we will find you good real estate security, or if you want to borrow we can place your application in good hands, and we make no charge for this service.

THE OLDEST BANK IN HOOD RIVER VALLEY

irrigation is neglected. During the past two years this neglect has cost Hood River many trees and many thousands of dollars. Unlike some of our plant diseases and insect pests, remedial measures lie in the hands of the orchardist and of him alone. This remedy is the proper use of water.

In the near future the writer will submit a few suggestions for the handling of trees that have become so diseased.

**Increase Grape Yield by Spraying**

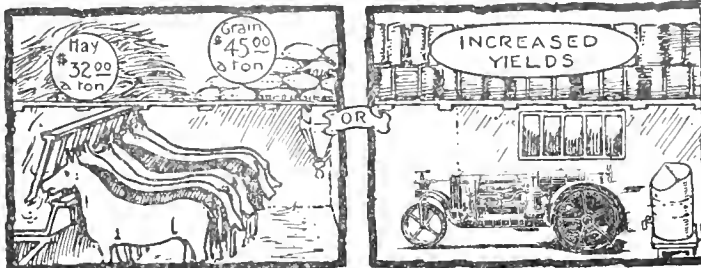
(U. S. Department of Agriculture)

**G**RAPE insect enemies and diseases may be controlled and a good crop of the berries practically assured if a careful spraying schedule is carried out, say A. L. Quaintance of the Bureau of Entomology and C. L. Shear of the Bureau of Plant Industry of the United States Department of Agriculture. Owners of small orchards and vineyards do not sufficiently appreciate the fact, the specialists point out, that by the expenditure of a little time and money a large proportion of the fruit may be saved, repaying many times the trouble involved in its protection.

The principal insect enemies of the grape are the grape berry moth, the grape rootworm, the rose chafer, the grape-leaf folder, and the eight-spotted forester, all of which are eating insects; and the grape leafhopper and the brown grape aphid, sucking insects. The principal diseases which attack grapes are black rot, downy mildew, powdery mildew and anthracnose.

The use of combination spray solutions containing chemicals which act as insecticides or fungicides is advocated by the specialists. The following spray schedule is recommended:

# Which?



\$ 6. to 8. PER Day

NOT ONE CENT!

## During the Summer

the Samson Sieve-Grip Model S-25 can save you from \$6 to \$8 every day it does not work!

The number of horses replaced by this tractor would cost that much to feed every day, whether working or not.

Start making this saving RIGHT NOW by using a

# SAMSON SIEVE-GRIP

Reg & Pat U. S. & Foreign Countries

For stationary work the motor delivers its power straight to the belt-pulley—not a gear in motion

Ask us how a Samson Sieve-Grip can benefit you—we'll send the catalog and "Samson Siftings" with our answer

Two Sizes—Models S-25 and R-12

**SAMSON SIEVE-GRIP TRACTOR CO., Stockton, California.**

**National**  
STEAM PRESSURE  
CANNING-OUTFITS

Housekeepers, farmers, growers—everybody can save and make money preserving meats, fruits and vegetables with a National Outfit. Makes cheap and toughest meat-cuts tender and delicious. Preserves fruits and vegetables without waste or spoilage. Use glass jars or cans. Simple—safe—economical. Outfits for home or larger. Write for details, stating what you will can and capacity desired.

Northwestern Steel & Iron Works  
820 Spring St., Eau Claire, Wis.

## Richey & Gilbert Co.

H. M. GILBERT, President and Manager

Growers and Shippers of

### Yakima Valley Fruits and Produce

SPECIALTIES:

Apples, Peaches, Pears and Cantaloupes

TOPPENISH, WASHINGTON

# Ridley, Houlding & Co.

COVENT GARDEN, LONDON

Points to remember when consigning apples to the London Market

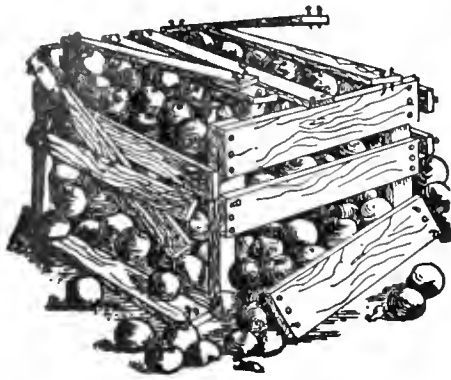
1.—We Specialize in Apples

2.—All Consignments Receive our Personal Attention

3.—The Fruit is Sold by Private Treaty

CABLE ADDRESS: BOTANIZING, LONDON





BEFORE using Cement Coated Nails

## Western Cement Coated Nails for Western Growers

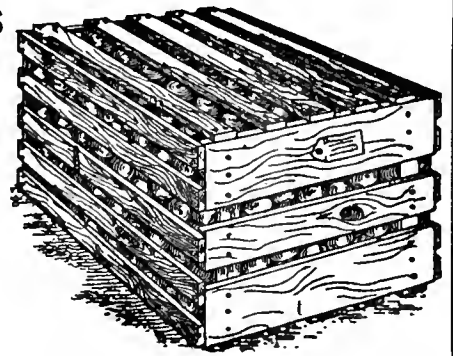
Our Cement Coated Nails are always of uniform length, gauge, head and count. Especially adapted to the manufacture of fruit boxes and crates. In brief, they are the Best on the Market.

Write for Growers' testimonials.

### Colorado Fuel & Iron Co.

DENVER, COLORADO

Pacific Coast Sales Offices  
Portland, Spokane, San Francisco  
Los Angeles

AFTER use of C. F. & I. Co.'s  
Cement Coated Nails

# The Cutler Fruit Grader

IS an EFFICIENT and RELIABLE MACHINE which will lower the cost in your Packing House and relieve you from dependence on expert packers.

It has proven a good investment in scores of up-to-date packing houses during the past five years.

Order early if early delivery is desired.

Send for Descriptive Literature and Prices.

**Cutler Fruit Grader Company**  
HOOD RIVER, OREGON

# SUMMER VACATION TIME is Here.

Low Round Trip Fares will be on sale to many points in Western Oregon.

**Mt. Jefferson Country**  
**Newport Beaches**  
**Tillamook County Beaches**  
**Coos Bay Country**  
**Crater Lake**  
**Josephine County Caves**

Plan your trip now and secure copy of latest folder "Oregon Outdoors" from our local agent or write  
**John M. Scott, General Passenger Agent, Portland**

**SOUTHERN PACIFIC LINES**

### SPRAY SCHEDULE

**First application:** About a week before the blossoms open or when the shoots are 12 to 18 inches long, spray with bordeaux mixture, 4-3-50, for fungus diseases, adding 2 to 3 pounds of arsenate of lead paste, or one-half that quantity of the powdered form, for flea-beetle, rose chafer, etc.

**Second application:** Just after the blossoms fall, spray with the same materials as in the first application for the same fungus diseases and insects and for the grape berry moth, grape leaf folder, and adults of the grape rootworm.

**Third application:** About two weeks later use bordeaux mixture 4-3-50, arsenate of lead paste 2 to 3 pounds, 40 per cent nicotine sulphate 1 part to 1500 parts of the spray mixture, for fungus diseases, berry moth, light-spotted forester, grape leaf folder, brown grape aphid, grape rootworm, and grape leaf hopper. To destroy the leaf hopper, direct the spray against the lower surface of the leaves. To control the berry moth thoroughly coat the grape bunches with the spray.

**Fourth application:** About 10 days later, or when the fruit is nearly grown, if black rot or mildew are still appearing, spray with neutral copper acetate or verdigris at the rate of 1 pound to 50 gallons of water.

### Fruit Juices for Jelly Making Without Sugar

Fruit juices for use later in jelly making can be sterilized and bottled without sugar and made into jellies at the housewife's convenience. This enables her to do with fewer jelly glasses and to distribute her purchases of sugar for jelly making through the year. Moreover, with the bottled juice she can make a greater variety of jellies, as juices which will not jell can be put up when the fruit is ripe and combined later with fruits that will jell, or fruits ripening at different seasons can be combined. For example, the juice of strawberries, cherries or pineapple can be kept without sugar and later when apples are plentiful can be made into combination jelly.

From the unsugared sterilized juices of currants, apples, crabapples and grapes, kept from 9 to 18 months, the

Bureau of Chemistry, United States Department of Agriculture, recently made jellies of excellent texture, flavor and color.

To put up unsugared fruit juices for jelly making, proceed exactly as if jelly were to be made at the time. Cook the fruits until they are soft and strain out the juice through a flannel bag. Heat and pour while hot into bottles previously scalded. Fill the bottles full, leaving no air space between juice and cork or seal. Place the filled sealed bottles on their sides in water near the boiling point, and keep them in the bath for about 30 minutes. Make sure that the corked or sealed end is under the hot water. As soon as the bottles are cool, cover the cork with a paraffine seal. Thorough sterilization and sealing are absolutely essential to success.

To make jelly from the sterilized juice, test its jelling quality, add the proper amount of sugar, and proceed as in making jelly from freshly expressed juice.

### Helping Fruit Growers and Shippers

THE results of investigations carried on by the United States Department of Agriculture in the handling of North-western apples for and in cold storage have been so conclusive that this work may be considered as completed, according to the annual report of the Bureau of Plant Industry. The results brought out particularly the importance of picking apples of various varieties at the proper stage of maturity, of careful handling in all harvesting and storage operations, of prompt cooling, and of proper storage temperatures. During past seasons the growers have frequently suffered very large financial losses from either too early or too late harvesting of apples of certain varieties, such as Jonathan, Rome Beauty and others. The work has demonstrated clearly that the storage life of apples can be prolonged from weeks to months by picking at proper maturity, and has shown how the grower may know when his fruit is of proper maturity for best

### ORCHARD YARN

Listen, Orchardists: Now is the time to tie your fruit trees. All limbs can be readily seen; the spurs are less easily broken off than later; the saving of time is considerable and yarn is probably as cheap as it will be this season. **Orchard Yarn** is the correct method of supporting trees and the saving of a few trees is worth the cost of the yarn for an entire orchard.

Sold by all dealers. If they cannot supply you, please order direct from

**The Portland Cordage Company**  
Portland, Oregon      Seattle, Washington

### PORTLAND WHOLESALE NURSERY COMPANY

Rooms 6 & 7, 122 1/2 Grand Ave., Portland, Oregon

Wholesale of Nursery Stock and Nursery Supplies  
A very complete line of  
Fruit and Ornamental Trees, Shrubs, Vines, Etc.

#### SPECIALTIES

Clean Coast Grown Seedlings  
Oregon Champion Gooseberries and  
Write Now      Perfection Currants      Write Now



## You need a new DE LAVAL SEPARATOR NOW

### 1st If you are still using some gravity or setting process of creaming—

BECAUSE YOUR WASTE IS GREAT-est and quality of product poorest in mid-summer when the milk supply is heaviest.

BECAUSE TIME IS OF GREATEST value on the farm at this season and the time and labor saving of the good separator counts for most.

BECAUSE THE SKIM-MILK IS poorest without a separator in hot weather and often more harmful than helpful to calves.

BECAUSE THE WORK OF A NEW De Laval Cream Separator is as perfect and its product as superior with one kind of weather as with another.

### 2nd If you have a very old De Laval or an inferior separator of any kind—

BECAUSE THE LOSSES OF THE poor separator from incomplete skimming and the tainted product of the hard-to-clean and insanitary separator are the greatest at this season.

BECAUSE OF THE GREAT ECONOMY of time at this season in having a separator of ample capacity to do the work so much more quickly.

BECAUSE THE NEW DE LAVAL IS so much simpler and more easily handled and cared for than any

other, and you can not afford to waste time these busy days "fussing" with a machine that ought to have been thrown on the junk-pile long ago.

BECAUSE THE DE LAVAL SEPARATOR of today is just as superior to other separators as the best of other separators to gravity setting, and every feature of De Laval superiority counts for most during the hot summer months.

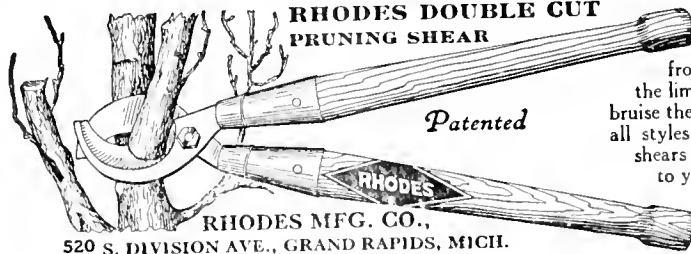
These are all facts every De Laval local agent is glad of the opportunity to prove to any prospective buyer. If you don't know the nearest De Laval agency simply write the nearest main office, as below.

### DE LAVAL DAIRY SUPPLY CO.

LARGEST DAIRY SUPPLY HOUSE ON THE PACIFIC COAST.  
Alpha Gasoline and Distillate Engines, Ideal Green Feed Silos, Acme Ensilage Cutters and Blowers, Irrigation Equipment, Centrifugal and Deep Well Pumps and Alpha Spraying Outfits. Send for special catalog.

61 BEALE STREET, SAN FRANCISCO

50,000 BRANCHES AND LOCAL AGENCIES THE WORLD OVER



RHODES DOUBLE CUT PRUNING SHEAR

Patented

RHODES MFG. CO.,

520 S. DIVISION AVE., GRAND RAPIDS, MICH.

THE only pruner made that cuts from both sides of the limb and does not bruise the bark. Made in all styles and sizes. All shears delivered free to your door.

Write for circular and prices.

## Pittsburgh Perfect Cement Coated Nails are of the highest standard

The Heads don't come off. Given Preference by Largest Pacific Coast Packers

MANUFACTURED EXCLUSIVELY BY  
PITTSBURGH STEEL COMPANY, Pittsburgh, Pa.

A. C. RULOFSON COMPANY, Pacific Coast Agents  
359 Monadnock Building, San Francisco, California

## Adaptability and Speed on All Kinds of Work

The "Silent Smith" typewriter is equally efficient,  
whether the work is specialized or diversified

Modern business demands typewriting, not only for correspondence, but for more complex work—billing, stencil writing, check writing, tabulating, label writing, card index work, filling in ruled forms.

The "Silent" models of the L. C. Smith & Bros. typewriter, called "silent" because of the extremely small amount of noise in their operation, provide for this wide variety.

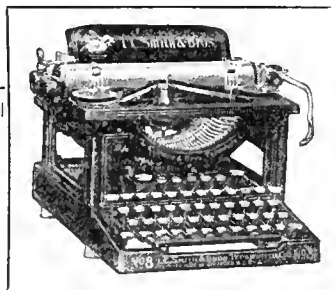
The quickly interchangeable platen, the variable line spacer and the decimal tabulator make possible a great variety of work on one machine. The speed of all these operations is only limited by the speed of the operator.

More information is given in our handsomely illustrated catalog which is free for the asking.

### L. C. Smith & Bros. Typewriter Company

Factory and Home Office: Syracuse, N. Y.

Branches in all Principal Cities



104 A Fifth St.

Portland, Oregon

results in storage. In connection with the investigations of the cold storage of Newtown apples in the Watsonville district in California, the most important discovery is without doubt the relation of tree vigor to keeping quality of fruit in storage. Experiments extending over two seasons have clearly shown a marked and consistent difference in the keeping quality of fruit from different trees, particularly trees that for any reason differ in vigor and general healthfulness. During the past season the possibilities of common or air-cooled storages in different sections

were carefully investigated. The results of these investigations have shown clearly the practicability of such storage and the economic saving resulting to the industry in the use of houses properly constructed and managed.

The results of fruit-handling investigations during the past few seasons show that the most important factor in determining the condition of either fruits or vegetables in transit and after arrival on the market is the temperature maintained in refrigerator cars during transportation. All fresh fruit is alive and the life activities continue

with greater or less rapidity until it goes into consumption; the temperatures maintained in transit determine to a great degree both the rate of ripening and the development of fungi and other decay-producing organisms. The investigations during the past season have had mainly in view the improvement in refrigerator car equipment, especially as regards insulation and facilities for free air circulation. The results of the work thus far have shown that through certain modifications in the ice bunkers, through the use of racks, or false floors, and through better insulation, it is entirely practicable to increase the efficiency of refrigeration, and to haul larger loads of fruit than formerly and with a lesser ice consumption.

The results are particularly of importance to the shippers in that they can obtain uniformly better refrigeration ultimately at a lesser cost. Probably the most important development in connection with these investigations is the practicability of using small amounts of salt during the first two icings in cars with modified bunkers and racks to accomplish a quick cooling comparable with precooling in either warehouses or car-precooling plants, with practically no extra cost and no delays for precooling. Another important factor is the fact that the fruit is subjected to no extra handling except the handling that is necessary to place it in the car as it is ordinarily loaded. It also makes possible the shipment of tree-ripened or more fully matured



Scores of the most successful fruit-growers in the Pacific Northwest now recognize the need of an

## INDIANA SILO

This silo and a few good cows will start you on the road to successful dairying.

Write for FREE Silo Book.  
Address Dept. L.

**The Chas. K.  
Spaulding  
Logging Co.  
Salem,  
Ore.**



fruit in good condition, thus supplying the consumer with a product possessing its maximum fine quality.

In addition to outlining the work done in the interest of citrus fruit growers, and in lessening the losses from watermelon rot and developing better methods of handling muskmelons, the report mentions results obtained in dealing with diseases of deciduous tree fruits. Cedar rust on apples, it states, continues to attract considerable attention and has been severe in certain localities. One of the striking things, however, in orchard pathology has been the fact that in many of the large commercial orchard districts of the eastern Appalachian Mountains, where cedar rust threatened the destruction of the value of the orchards, complete or partial eradication of the cedar trees in the vicinity of the apple orchards, usually within a radius of one mile, has completely solved the problem in the most practical, simple and permanent way and at very slight expense. While the destruction of the red cedars is to be regretted, this tree in the vicinity of apple orchards has come to be a veritable pest tree, and where the cedar rust fungus has been peculiarly abundant the necessity for its destruction has been amply demonstrated by the repeated experiences of the past few years.

Practical field tests in perfecting the methods of control of apple bitter rot have been carried on in the Ozark section with very satisfactory results. Removal of cankers and diseased fruit, supplemented by spraying, reduced damage by the disease to two per cent on early varieties and one per cent on late varieties. The orchard in which these field tests were conducted had previously, despite our best efforts in

### Attention, Fruit and Vegetable Growers

CAN your Fruits, Vegetables, Meats and Fish in Sanitary Cans, with the H. & A. Steam Pressure Canning Outfits, built in Family, Orchard and Commercial size; seal the cans with the H. & A. Hand or Belt Power Double Seamer; they will save your perishable fruits and vegetables at ripening time when nothing else will. Write for descriptive matter.

**Heninger & Ayes Mfg. Co.**  
47 S. First St., Portland, Ore.

### Nice Bright Western Pine FRUIT BOXES AND CRATES

Good standard grades. Well made. Quick shipments. Carloads or less. Get our prices.

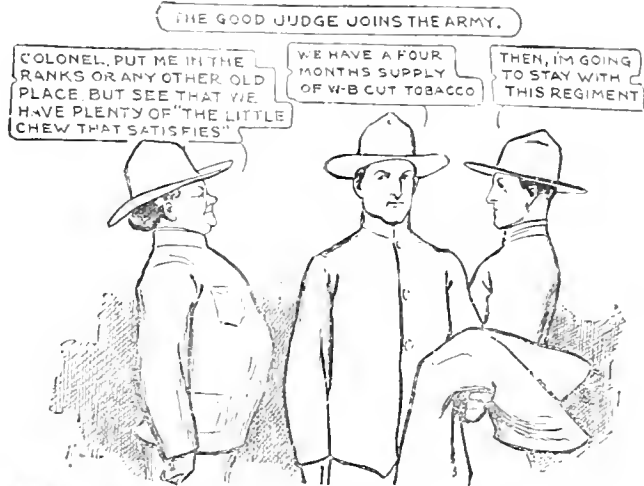
**Western Pine Box Sales Co.**  
SPOKANE, WASH.



**YOU CAN EARN \$50.00 PER DAY WITH THE Gearless Improved Standard Well Drilling Machine**

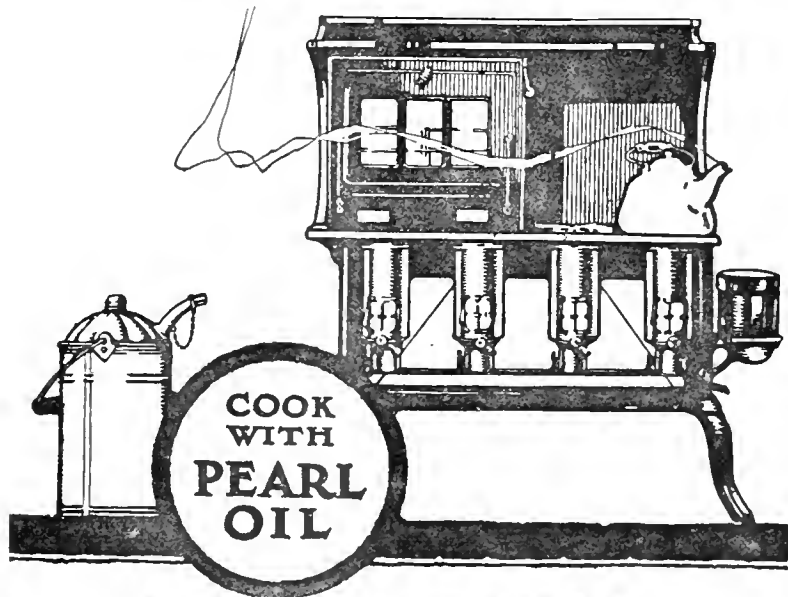
Drills through any formation. Five years ahead of any other. Has record of drilling 130 feet and driving casing in 9 hours. Another record where 70 feet was drilled on 2½ gallons distillate at 9c per gallon. One man can operate. Electrically equipped for running nights. Fishing job. Engine ignition. Catalogue W.S.

**REIERSON MACHINERY CO., Mfg., 1295-97 Hood St., Portland, Ore.**



**W**HEN men are drawn together in the army, you find out a lot about their likes and dislikes. It's always been a great place for the spread of W-B CUT popularity. They show each other why you shouldn't take more than a *little* chew of W-B CUT. Every shred is chock full of sap; a big chew is too rich. They take to W-B CUT, strong; nothing is too good for our soldiers.

Made by WEYMAN-BRUTON COMPANY, 1107 Broadway, New York City



## ECONOMY

An oil cook-stove is cheaper to buy than a wood or coal stove and it's much cheaper to operate. Meals in a jiffy, and a cool kitchen in summer.

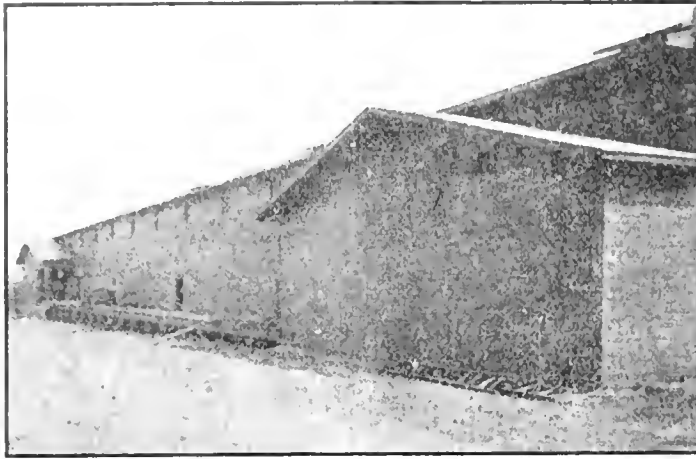
All the convenience of gas—economical for all the year 'round cooking. Bakes, broils, roasts, toasts. Steady, evenly-distributed heat, the best for cooking.

The long blue chimneys prevent all smoke and smell.

In 1, 2, 3 and 4 burner sizes, with or without ovens. Also cabinet models. Ask your dealer today.

## NEW PERFECTION OIL COOK-STOVE

**STANDARD OIL COMPANY**  
(California)



This Hood River Apple Storage House  
IS INSULATED WITH

## Cabot's Insulating "Quilt"

at the lowest cost and with the greatest efficiency and permanence. Quilt is made of eel-grass, the fiber that will not rot, will not burn, will not harbor insects or vermin. It makes a thick cushion of dead air spaces that keeps out heat better than other insulators that cost much more and that are not permanent, sanitary or safe. One layer of Quilt is equal in insulating power (by actual test) to forty or fifty layers of common building paper. It is easy to apply, low priced and never goes to pieces in the work.

Send for sample of Quilt, with catalog and prices, to

**SAMUEL CABOT, Inc., Manufacturing Chemists, Boston, Mass.**  
or to the Northwest Distributors:

**S. W. R. DALLY, Globe Building, Seattle**  
**TIMMS, CRESS & CO., Portland**

Conservo Wood Preservative—preserves posts, planks and all other timbers.  
Cabot's Creosote Stains—for shingles, siding and other outside finish.

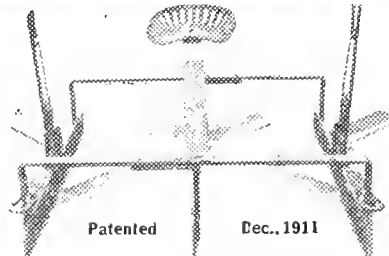
United States Government Bureau of Standards tests show Cabot's Quilt more efficient than any other insulator, including cork board.

## Golden Gate Weed Cutter and Mulcher

Farmers, order early if you want the Golden Gate Weed Cutter and Mulcher, as the demand this year will be great, as it not only cuts weeds, but kills them, and leaves finely pulverized top soil. Cuts any depth. Prevents evaporation by working under the soil without disturbing soil on top. Write for circular.

**C. G. SIGURD**

Capital Avenue and McKee Road, San Jose, California



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## Printers · Binders



Unexcelled facilities for the production of Catalogues, Booklets, Stationery, Posters and Advertising Matter. Write us for prices and specifications. Out-of-town orders executed promptly and accurately. We print BETTER FRUIT.

CORNER FIRST AND OAK STREETS  
PORTLAND, OREGON

spraying, lost from 10 to 25 per cent each year. Adjacent orchards during the year lost about 50 per cent on early varieties and 25 per cent on the late varieties.

The bacterial spot on peach and plum has not proved amenable to spray treatment. Experiments in controlling this disease by means of nitrate of soda applied to the soil were tried out on a large scale with complete success. The life history of the organism causing this disease is being studied.

The work of the present year on stigmomose of fruits has given further confirmation of the previous year's experiments and established the connection of certain insects with particular types of fruit spotting. Experiments on rosy aphid stigmomose have been carried out at Staunton, Virginia, and similar work has been carried on, in co-operation with the Bureau of Entomology, at Wenatchee, Washington. The work in Virginia has shown conclusively that much of the so-called "York" spot of the Eastern states is stigmomose due to insects. This type of disease is, therefore, capable of control by spraying methods developed by the Bureau of Entomology. Experiments have been made in the control of this disease, and the first year's results of spraying show that the shipping qualities of the fruit from sprayed plats will stand up in shipment far better than the fruit from the unsprayed plats.

Frank H. Lathrop has been appointed research assistant in entomology at the Oregon Agricultural College Experiment Station. He will conduct laboratory and field work in entomology.

Be sure to visit our special display at the Fremont, Nebraska, Tractor Demonstration, August 6th to 10th. Moline Plow Company, Moline, Illinois.—Adv.

**BUY AND TRY**

# White River Flour

**MAKES**

**Whiter, Lighter Bread**

# The Ideal Fruit Grader

**SIMPLICITY, ECONOMY AND EFFICIENCY  
ABSOLUTELY NO BRUISING**

Two men, one an **experienced machinest**, the other an **experienced cabinet maker**, with many years' practical experience in the fruit industry in Hood River, combined their **mechanical skill** and practical knowledge of fruit handling in perfecting a **grading machine**—a **model of simplicity, economy and efficiency**.

There is no machinery—Nothing to get out of order or be fixed connected with the Ideal Fruit Grader. It is practically all wood.

The operation is simple, consisting of a belt for a conveyor, operated by electricity or gasoline engine, and short elastic belts, which move each apple in the proper bin from the belt conveyor.

The Ideal Fruit Grader divides the crop into Extra Fancy, Fancy and C-grade, all at one time. The Extra Fancy being divided into seven bins on one side, the Fancy into seven bins on the other side and the C-grade going into six bins at the end of the grader.

Built for four sorters, the grader is 28 feet long and 9 feet wide; built for eight sorters, 32 feet long.

In 1916 we packed 9,000 boxes with the Ideal Fruit Grader with two packers without the machine ever stopping once for repairs of any kind. Further detailed information, illustrated circulars and prices will be furnished upon request.

**IDEAL FRUIT AND NURSERY CO.**  
HOOD RIVER, OREGON

Pacific Coast Agents  
**United States Steel  
Products Co.**

San Francisco  
Los Angeles  
Portland  
Seattle



**J.C. Pearson Co., Inc.**  
Sole Manufacturers

Old South Bldg.  
Boston, Mass.

**PEARSON**

**ECONOMY** In buying is getting the best value for the money. not always in getting the lowest prices. PEARSON prices are right.

**ADHESIVENESS** or holding power is the reason for PEARSON nails. For twenty years they have been making boxes strong. Now, more than ever.

**RELIABILITY** behind the goods is added value. You can rely on our record of fulfillment of every contract and fair adjustment of every claim.

**SATISFACTION** is assured by our long experience in making nails to suit our customers' needs. We know what you want; we guarantee satisfaction.

**ORIGINALITY** plus experience always excels imitation. Imitation's highest hope is, to sometime (not now) equal Pearson—meantime you play safe.

**NAILS**

**TRUE-TO-NAME**  
**Free From Pests**

That's what you want when you plant fruit trees. That's what you get when you order the

**O. & F. Unxld Brand**

Get our prices before planting this spring.

Largest stock in the Northwest. All grown on virgin soil.

Everything in fruit trees and a full line of

**Flowering Shrubs  
Roses, Shade and  
Ornamental Trees**

**Ornamental and Fruit  
Nursery Co.**

Box 217 K

WAPATO, WASH.

Catalog will be mailed free upon request.

THE WORLD-  
OUR ORCHARD

# STEINHARDT & KELLY NEW YORK

UNQUESTIONABLY THE  
MOST IMPORTANT FACTOR  
IN THE DISTRIBUTION OF  
THE COUNTRY'S FANCY  
APPLES  
AND OTHER FRUITS

OUR MARKET-  
THE WORLD

# BETTER FRUIT

VOLUME XII

AUGUST, 1917

NUMBER 2

## SPECIAL FEATURES

Grading Rules and Regulations for  
Washington, 1917.

Distribution of the Strawberry Crop  
of 1915.

Cities of Over 3,000 Population in  
Minnesota, Ohio and Louisiana  
that have not been sold carlots  
of apples from the Northwest  
direct.

Estimates of the Apple Crop for  
Washington, Idaho, Oregon and  
Montana.

Preserving Fruits and Vegetables by  
Drying.

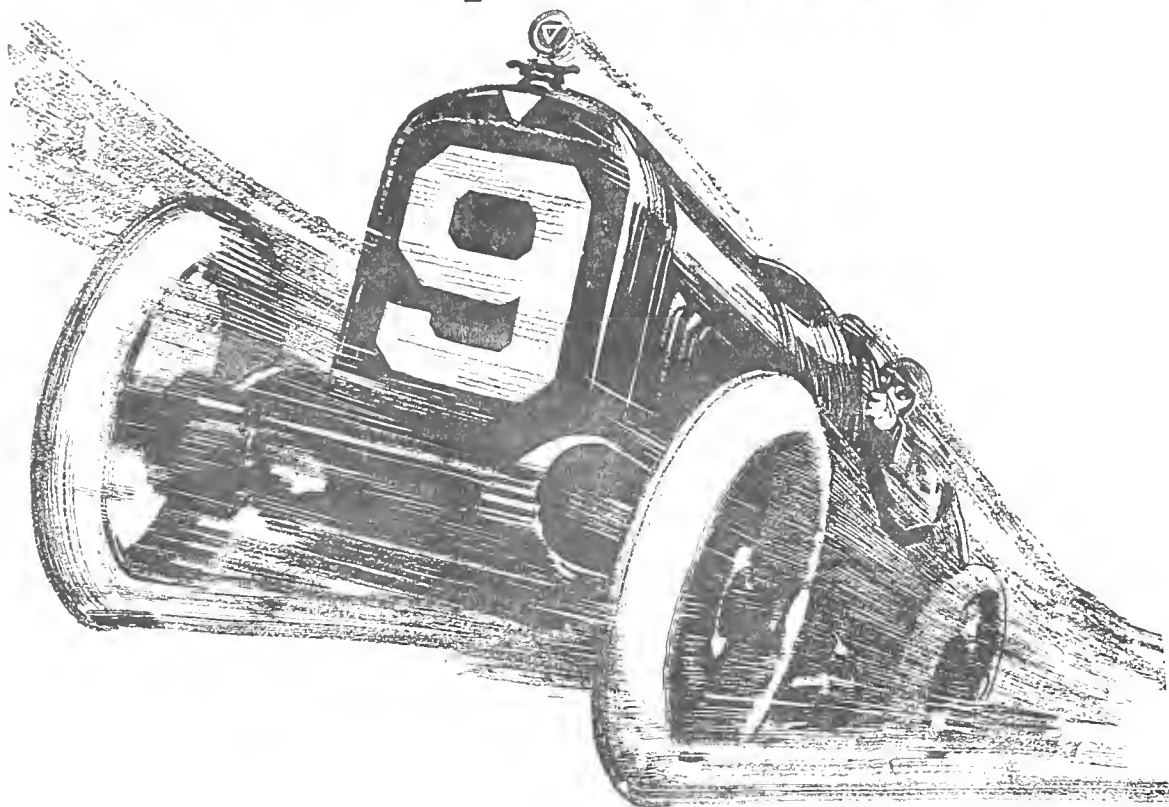
Bitter Pit; It's Cause and Control

BETTER FRUIT PUBLISHING COMPANY, PUBLISHERS, HOOD RIVER, OREGON

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# Speedway's Crushing Tests Prove Hudson Super-Six Endurance



*Four Hudson Super-Six Specials raced at Cincinnati. All four finished in the prize money: First, in the Free-for-All; Second, Seventh and Ninth in the 250-mile classic.*

*At Chicago on June 16, Ralph Mulford in a Hudson Super-Six Special broke the American speedway records for 150 and 200 miles. For 200 miles he averaged 104 miles an hour—faster than any car ever traveled such a distance before.*

Speedway racing is the most abusive of all motor tests. Every part of a car is subjected to manifold destructive stresses. It is endurance that counts most on the Speedway.

Hudson Super-Six speed tests are in reality endurance tests. It is possible to build faster cars than the Hudson Super-Six Special, but the speedway record of 104 miles an hour for 200 miles, now held by a Hudson Super-Six Special, proves that endurance is more important.

Our interest in racing is not so much to see how fast we can make the Hudson Super-Six. It is to demonstrate motor endurance. It would take too long, at ordinary driving speed, to demonstrate the endurance life of a Super-Six. The speedway in a few hours calls for all the stamina required in years of ordinary use.

No other racing car of prominence so nearly resembles stock production as does the Hudson Super-Six. Practically all of the notable racing cars, and particularly those against which the Hudson Super-Six Special has shown its superiority, were built especially for racing. They bear slight resemblance to the stock production of any factory. Their cost is usually so great that not more than two or three cars are ever built. The Hudson Super-Six is essentially a production car.

The very qualities of endurance that are necessary in racing are the qualities you should demand in the car you buy. It guarantees safety, low maintenance cost and long service.

You can get a Hudson Super-Six in any body type you may desire. There are eight designs to choose from. The carriage detail matches the high quality of the chassis construction.



Phaeton, 7-passenger	\$1650	Touring Sedan	\$2175	Town Car Landaulet	\$3025
Speedster, 4-passenger	1750	Town Car	2925	Limousine	2925
Cabriolet, 3-passenger	1950	<i>(All prices f. o. b. Detroit)</i>		Limousine Landaulet	3025

**HUDSON MOTOR CAR COMPANY**  
DETROIT, MICHIGAN





# Mathews Gravity Conveyers

FOR FRUIT AND VEGETABLE CANNERS AND PACKERS

MADE ENTIRELY OF STEEL

NEAT — LIGHT — DURABLE — SANITARY

Manufactured by the Originators and Designers of the First Steel, Ball-Bearing Gravity Conveyor

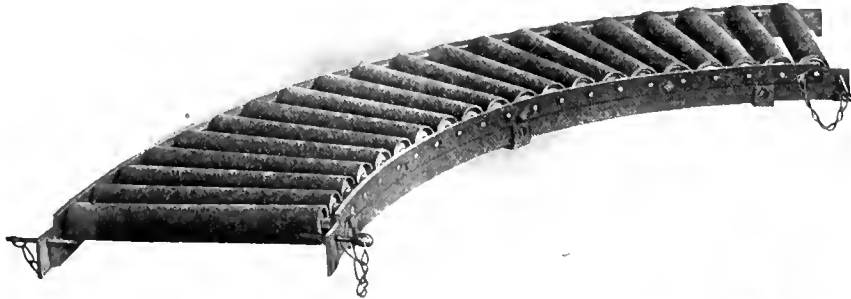
## Portable Roller Conveyor Units

To the right is shown a typical eight-foot unit. Rollers are spaced to suit sizes of packages to be handled. Diameter of rollers, 2¼ inches, cut from cold-drawn, seamless steel tubing, fitted with case-hardened, detachable ball bearings and full-length axles. Lock bars hold all rollers rigidly in place, eliminating use of nuts. Frame rails are of flat bar steel, rigidly braced crosswise and lengthwise. Whole unit construction is strong, neat, compact, and capable of giving almost unlimited service.



## Reversible Curves

General construction same as straight units. Curves can be made to direct conveyer lines in any desired direction to fit special conditions or requirements. See illustration to left showing typical 90° curve.

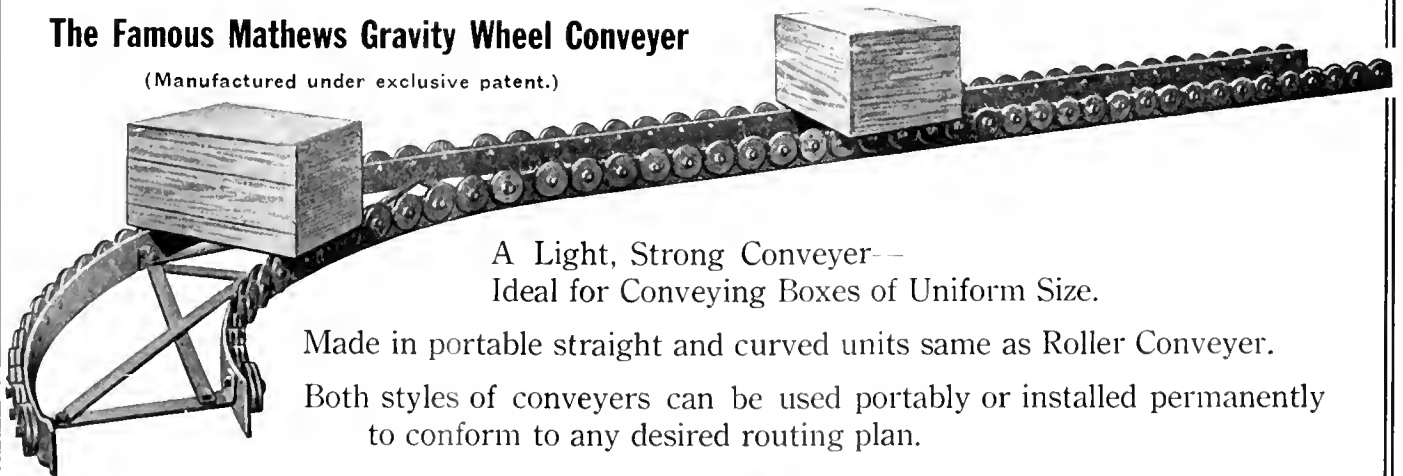


## Automatic Straight-Lift Elevator Automatic Inclined Elevator Gravity Roller Spiral Spiral Chutes, Etc.

These are useful in providing continuous routing of packages between floors, designed to connect up with gravity conveyer lines.

## The Famous Mathews Gravity Wheel Conveyor

(Manufactured under exclusive patent.)



A Light, Strong Conveyor—  
Ideal for Conveying Boxes of Uniform Size.

Made in portable straight and curved units same as Roller Conveyor.

Both styles of conveyers can be used portably or installed permanently to conform to any desired routing plan.

## IMPORTANT NOTICE

Expert advice and personal service can be had on short notice, by addressing one of our nearest Coast agents. This service is free and without obligation.

We are also prepared to ship all orders for standard roller and wheel conveyer units promptly.

## Mathews Gravity Carrier Co.

Factories: Ellwood City, Pa.; Toronto, Ont.; London, Eng.

Address or wire inquiries to our nearest Coast sales office.

Spokane—Hofius Steel & Equipment Co.

Wenatchee—Wells & Wade.

Seattle—W. R. Hendrey Co., 313 Hoge Bldg.

San Francisco—Mailler Searles, Monadnock Bldg.

Los Angeles—John F. Willard, 315 Broadway.

# THE ORIGINAL 2-WHEEL TRACTOR

## That Does All Farm Work

### WITHOUT HORSES

When you come to buying a tractor, whether for a farm of 80 acres, 280 acres or more, there are a number of questions you will need to ask yourself before you buy. Here are some of them:

- Will it *CULTIVATE* as well as *plow*?
- Will it do *ALL* my farm work without horses?
- Will it work on plowed ground without packing the soil?
- Will it do the work quicker; easier; and save on hired help?
- Is it really a *ONE-MAN* tractor?
- Will it handle as easy as a team of horses, rather than be too heavy, clumsy, and inconvenient?
- Do I ride on the tool where I can see the work I am doing, or will I have to have someone run the tractor while I am operating the farm implement?

The tractor that answers these and all other farm power problems most practically and profitably is the

## ORIGINAL MOLINE 2 WHEEL UNIVERSAL TRACTOR

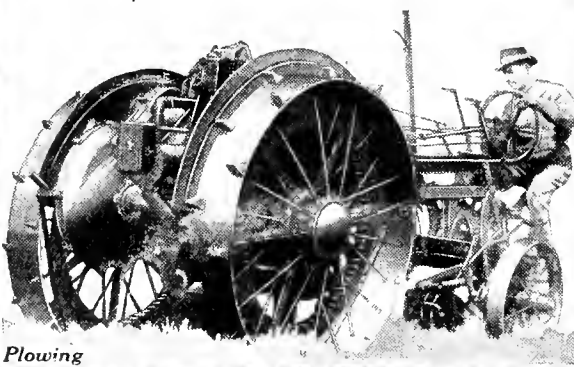
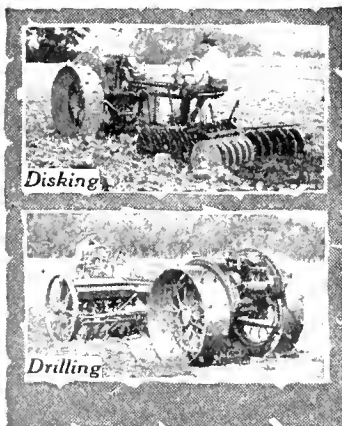
This is the original Two-Wheel Farm Tractor. It pulls two 14-in. plows; will disc, harrow, plant, *CULTIVATE* all hill and row crops, pull mower; binder, manure spreader, fill your silo—and do all belt work on the average farm. In fact, it will do anything you can do with horses; do it quicker; easier; and with less hired help. It weighs only 2,800 lbs., but all its weight being on its two wheels—*all its weight is traction weight*. The tool you hitch it to forms the rear wheels and you do not have to pull around a ton of needless weight. It will back up with tools attached easier than a team will back. You can turn around in a small space; get close to the rows and the fences. It is the ideal tractor for the farmer because it costs less than four horses; is as powerful as five horses; does more work than seven horses; is inexpensive to operate; and eats only when it works.

Write for our new Tractor Catalog and read how farmers everywhere are solving the power and hired help problems on their farms; how they are changing the drudgery of farming to a profitable pursuit. Learn how you can make your work easier and get it done on time and grow bigger, better crops. Write today.

**MOLINE PLOW CO.,** Dept. 64, **MOLINE, ILL.**

The Moline Line includes: Corn Planters, Cotton Planters, Cultivators, Corn Binders, Grain Binders, Grain Drills, Harrows, Hay Loaders, Hay Rakes, Lime Spreaders, Mowers, Manure Spreaders, Plows, Chilled and Steel, Reapers, Scales, Seeders, Stalk Cutters, Farm Trucks, Vehicles, Wagons.

Also Stephens Six Automobiles





# BETTER FRUIT

AN ILLUSTRATED MAGAZINE PUBLISHED MONTHLY IN THE INTEREST OF MODERN, PROGRESSIVE FRUIT GROWING AND MARKETING

## Washington Grading Rules and Regulations for 1917

[Adopted under authority of Section 17, Chapter 166, Session Laws 1915.]

**First Grade, Grade No. 1 or Extra Fancy Apples** are defined as sound, smooth, mature, clean, hand-picked, well-formed apples only, free from all insect pests, diseases, blemishes, bruises and other physical injuries, scald, scab, scale, dry or bitter rot, worms, worm stings, worm holes, spray burn, limb rub, visible water core, skin puncture or skin broken at stem, but slight russeting within the basin of the stem will be permitted.

**Second Grade, Grade No. 2 or Fancy Apples** are defined as apples complying with the requirements for first-grade apples, except that slight sunscald or other blemishes not more than skin deep shall be permitted up to a total of 10 per cent of the surface of the apple.

**Third Grade, Grade No. 3 or C Grade Apples** shall include all remaining apples free from infection excepting that two stings to each apple shall be permitted, and if shipped in closed packages shall be marked "Third Grade or C Grade."

**Combination Grade** may also include all other apple varieties not provided for in first and second grades.

When second and third grade apples are packed together the packages must be marked "Combination Second and Third Grade."

When first, second and third grade apples are packed together, the package must be marked "Orchard Run," but orchard-run packages must not contain any apples that would not meet the requirements of third grade.

Summer and early fall varieties: Summer varieties such as Astrachan, Bailey's Sweet, Beitigheimer, Duchess, Early Harvest, Red June, Strawberry, Twenty Ounce Pippin, Yellow Transparent and kindred varieties not otherwise specified in these grading rules, together with early fall varieties such as Alexander, Blue Pearmain, Wolf River, Spokane Beauty, Fall Pippin, Waxen, Tolman Sweet, Sweet Bough and other varieties not provided for in these grading rules, as grown in sections of early maturity, shall be packed in accordance with the grading rules covering Fancy Grade as to defects but regardless of color.

The following varieties shall be admitted to the Extra Fancy and Fancy grades, subject to the color requirements herewith specified:

### SOLID RED VARIETIES

	Extra	Fancy	Fancy
Aiken Red	75%	25%	
Arkansas Black	75%	25%	
Baldwin	75%	25%	
Black Ben Davis	75%	25%	
Gano	75%	25%	
King David	75%	25%	

	Extra	Fancy	Fancy
Spitzenberg (Esopus)	75%	25%	
Vanderpool	75%	25%	
Winesap	75%	25%	
Black Twig	50%	15%	
McIntosh Red	50%	15%	

### STRIPED OR PARTIAL RED VARIETIES

Delicious	66 <sup>2</sup> / <sub>3</sub> %	15%	
Jonathan	66 <sup>2</sup> / <sub>3</sub> %	15%	
Stayman	66 <sup>2</sup> / <sub>3</sub> %	15%	
Ben Davis	50%	10%	
Hubbardston	50%	10%	
Geniton	50%	10%	
Missouri Pippin	50%	10%	
Northern Spy	50%	10%	
Rainier	50%	10%	
Rome Beauty	50%	no color	
Snow	50%	10%	
Wagener	50%	10%	
Wealthy	50%	10%	
York Imperial	50%	10%	
Gravenstein	25%	10%	
Jeffrey	25%	10%	
King of Tompkins County	25%	10%	

### RED CHEEKED OR BLUSHED VARIETIES

*Perceptibly blushed cheek; tinge color.*

Hydes King,  
Maiden Blush,  
Red Cheeked Pippin.

*Perceptibly blushed cheek; characteristic color.*  
Winter Banana.

### YELLOW OR GREEN VARIETIES

*Extra Fancy—Characteristic color.*  
*Fancy—Characteristic color.*

Grimes Golden,  
Yellow Newtown,  
Cox's Orange Pippin,  
Ortley,  
White Winter Pearmain,  
Yellow Bellefleur,  
Northwestern Greening,  
Rhode Island Greening.

All apples packed otherwise than according to the foregoing rules shall be accompanied by a printed description of the contents on each package.

The term "worm stings," as used in the above rules, shall be interpreted to mean "healed-over stings," as the healing over of the sting is the only evidence we have to show that the so-called sting is not infected.

Grading rules recommended by regularly elected delegates to the Apple Grade and Pack Conference held in Spokane, November 25th, 1916, and adopted by the Advisory Board of the State Department of Agriculture, January 11th, 1917.

### APPLE PACK

Style of Pack	No. in Box
2x1 diagonal pack 5x5 long, 3-tier deep..	45
2x1 diagonal pack 5x6 long, 3-tier deep..	50
2x2 diagonal pack 3x3 long, 4-tier deep..	48
2x2 diagonal pack 3x4 long, 4-tier deep..	56
2x2 diagonal pack 4x4 long, 4-tier deep..	64
2x2 diagonal pack 4x5 long, 4-tier deep..	72
2x2 diagonal pack 5x5 long, 4-tier deep..	80
2x2 diagonal pack 5x6 long, 4-tier deep..	88
2x2 diagonal pack 6x6 long, 4-tier deep..	96
2x2 diagonal pack 6x7 long, 4-tier deep..	104
2x2 diagonal pack 7x7 long, 4-tier deep..	112
2x2 diagonal pack 7x8 long, 4-tier deep..	120
3x2 diagonal pack 4x5 long, 5-tier deep..	113
3x2 diagonal pack 5x5 long, 5-tier deep..	125
3x2 diagonal pack 5x6 long, 5-tier deep..	138
3x2 diagonal pack 6x6 long, 5-tier deep..	150
3x2 diagonal pack 6x7 long, 5-tier deep..	163
3x2 diagonal pack 7x7 long, 5-tier deep..	175
3x2 diagonal pack 7x8 long, 5-tier deep..	188
3x2 diagonal pack 8x8 long, 5-tier deep..	200
3x2 diagonal pack 8x9 long, 5-tier deep..	213
5 straight pack 8 long, 5-tier deep..	200
5 straight pack 9 long, 5-tier deep..	225

The standard size of an apple box shall be 18 inches long, 11<sup>1</sup>/<sub>2</sub> inches wide, 10<sup>1</sup>/<sub>2</sub> inches deep, inside measurement.

### Dimensions of apple-box materials:

Ends—<sup>3</sup>/<sub>4</sub>x10<sup>1</sup>/<sub>2</sub>x11<sup>1</sup>/<sub>2</sub>, 2 pieces.... 20 to bundle  
Sides—<sup>3</sup>/<sub>4</sub>x10<sup>1</sup>/<sub>2</sub>x19<sup>3</sup>/<sub>4</sub>, 2 pieces.... 40 to bundle  
T. & B.—<sup>1</sup>/<sub>4</sub>x5<sup>1</sup>/<sub>2</sub>x19<sup>3</sup>/<sub>4</sub>, 4 pieces....100 to bundle  
Cleats—<sup>3</sup>/<sub>4</sub>x<sup>3</sup>/<sub>4</sub>x11<sup>1</sup>/<sub>2</sub>, 4 pieces....100 to bundle  
32 6d nails commonly used per box.

### RULES FOR ESTIMATING PAPER AND CARDBOARD

	Apples	Pears	Peaches
	lbs.	lbs.	lbs.
Wraps for packing 100 bxs	50	50	25
Lining for packing 100 bxs	7 <sup>1</sup> / <sub>2</sub>	..	..
Cardboard for packing 100 boxes	16	..	..

### RULES FOR USE OF PAPER

#### Apples—

Use 8x8 for 188-200-213-225 packs.  
Use 9x9 for 175-163-150-138-125-113 packs.  
Use 10x10 for 112-104-100-96-88 packs.  
Use 11x11 for 80-72-64-56 packs.  
Use 12x12 for 50-48-41-36-32 packs.

#### Pears—

Use 8x8 for 210-228-215 packs.  
Use 9x9 for 193-180-165 packs.  
Use 10x10 for 150-135-120-110-100 packs.  
Use 11x11 for 90-80-70-60 packs.

#### Peaches—

Use 8x8 for 96-90 packs.  
Use 9x9 for 81-78-72-65-60 packs.  
Use 10x10 for 55-50-45 packs.  
Use 11x11 for 40-36 packs.

#### Cement-Coated Nails, per Keg—

4d, 55,000; 5d, 39,700; 5<sup>1</sup>/<sub>2</sub>d, 31,000; 6d, 23,600.

[Section 15, Chapter 166, Session Laws 1916.]

It shall be unlawful for any person to import into this state, sell, barter, or otherwise dispose of or offer for sale or have in his possession for the purpose of sale or barter any fruit which is or has been infected with peach mildew, peach-twig borer, San Jose scale or other insect pests or the larvae of the codling moth or peach-twig borer, and the fact that any fruit bears the mark of any such scale insect or is worm eaten by any such larvae, shall be conclusive evidence that the fruit is infected, within the meaning of this section, provided that nothing in this section shall be construed to prevent the grower of such infected fruit grown within the State of Washington from manufacturing the same into a by-product or selling and shipping the same to a by-product factory.

### The Orchardist's Opportunity

To every owner of an orchard which is not yet in heavy bearing, there is offered an unusual opportunity. In some orchards from one to five years of age tilled crops can be grown to good advantage. Potatoes, beans, cabbage, squash, cauliflower, Broccoli and tomatoes are among the best to be planted. Berries, such as strawberries, are also good. By regulating the work some of these crops may be planted in early spring, some in July and some even in the early fall. Strips of vetch and hay can also be grown to advan-

tage, but where this is done strips should be left close to the trees and given good tillage.

Where hogs are kept on the place large quantities of turnips, such as Cowhorn and Aberdeen and vetch may be planted. Vetch seed should be drilled in the latter part of July to make good feed for the fall and early winter.

In orchards from six to eight years of age which have not yet reached heavy bearing, grain and hay crops are preferred to horticultural crops unless the trees are undersized and do not show sufficient vigor. Many orchards at this age show too much vigor and

have a tendency to produce too much wood, and then the handling of a grain crop will tend to harden the trees and cause them to produce fruit buds. Barley and oats are two of the best grains to consider. Narrow strips may be left close to the trees and tilled, but if the trees are unusually vigorous no tillage of these strips is desired. Oat hay would be a very desirable crop to produce. As a summer crop drill in large quantities of turnips, rape and vetch to be used as hog feed. If desired the barley can be easily harvested by hogs.—C. I. Lewis, Chief of Division of Horticulture, Oregon Agricultural College, Corvallis, Oregon.

cherries, 6 of peaches, 8 of pears, 45 of prunes, and 2 of quince.

About the first of August another report will be issued in which we hope to give further detailed data regarding the estimated fruit crop, and also some information as to the planted acreage of potatoes, beans, peas and corn. Many of the leading commercial vegetables will be included. In some sections some fruits still continue to drop, but by August 1st this condition will have ended, and when the crop is normal growers will have the crop thinned, so that we hope to get a close estimate of the crop. In comparison with the 1916 crop the estimates are as follows:

## Washington Fruit Crop Report, July, 1917

Department of Agriculture, Division of Horticulture, Olympia, Washington

**I**N collecting the data for this report, the District Inspectors and their deputies in their various districts, have very carefully studied the conditions before making their estimates. They have consulted with growers, shippers and representatives of various organizations, who have given them much valuable assistance which has aided us in getting as accurate an estimate of the crop prospects as possible. In October, 1916, the entire Northwest was visited by a freeze which in some places did a considerable damage to unpicked fruit. Trees in many places show the results of the freeze by being badly killed back. Based upon the excessive bloom of this season reports were given out predicting a very heavy crop of all tree fruits, but due to cold, unseasonable weather at blossoming time, indications show a poor pollenization which was followed by an extra heavy "June drop." The season has been cold and backward, the blooming period being about thirty days late. Thorough spraying for the control of the codling moth and apple scab in infected sections is being done.

### Yakima Valley District

The Yakima Valley district, including the Counties of Yakima, Kittitas and Benton, promises about the same yield as in 1916. The blight is active in some parts of the valley and it may shrink the present estimates somewhat. The estimate from this district, in carloads, is as follows:

Yakima County—	Apples
North Yakima .....	2,500
Selah and Naches .....	2,200
Zillah .....	2,100
Grandview .....	1,150
Sunnyside .....	200
Benton County .....	472
Kittitas County .....	180
Totals .....	8,802

### Wenatchee District

The Wenatchee district comprises Chelan, Okanogan, Douglas and Grant Counties. In 1916 in this district there were 1,962,870 trees five years of age or older. The number reaching five years of age in 1917 is 340,769, making a total of 2,203,639 trees five years old or older. About 4,000 acres, or 320,000 trees, have been abandoned or taken out, leaving a total of 1,883,630 trees of bearing age

in 1917. The average yield per tree for the past four years has been:

Year	Boxes Per Tree
1913.....	3.05
1914.....	3.00
1915.....	2.65
1916.....	2.41

Making a four-year average of 2.71 boxes per tree.

Present indications give an estimated crop of about the same yield as 1916, hence figuring 1,883,630 trees at 2.41 boxes per tree and 650 boxes per carload, it gives a total of 6,983 carloads for 1917.

### Walla Walla District

The Walla Walla Valley promises a normal crop. The "June drop" did not seem to be as heavy in this section, and District Inspector C. W. Gilbreath reports a probable shipment from that section of the following numbers of carloads:

	Apples	Cherries	Peaches	Pears	Prunes
Asotin County .....	15	80	60	10	25
Columbia County .....	175	2	15	3	5
Garfield County .....	15	6	45	5	10
Walla Walla County .....	325	30	10	10	250
Snake River section of Whitman County.....	10	50	75	15	15
Totals .....	510	168	205	38	305

### Spokane District

The weather conditions are responsible for the heavy shrinkage of the fruit crop in the eastern part of the state, yet we occasionally find an orchard in that section which has a full crop. The reports from District Inspector H. W. Samson of Spokane indicate that Ferry, Lincoln, Pend Oreille, Spokane, Stevens and Whitman

	Peaches	Pears	Prunes	Cherries	Apricots
250	225	42	40	..	
100	100	10	11	..	
900	490	111	35	..	
75	25	10	16	..	
45	10	6	4	..	
225	121	2	7	2	
..	..	..	..	..	
1,595	971	187	116	2	

Counties will not ship to exceed 600 carloads of all fruits in 1917. The quality promises to be good.

In Klickitat County it is estimated that there will be 150 cars of apples, 15 of peaches, 100 of prunes, and 5 of pears.

In Skamania County there will probably be 30 carloads of apples.

In King County there will probably be about 100 carloads of apples, 30 of

### Estimates for Other Northwestern States

Hood River .....	1,200 cars
Western and Southern Oregon.....	1,000 cars
Eastern Oregon .....	300 cars
Idaho .....	2,000 cars
Montana .....	500 cars

**EDITOR'S NOTE:** It must be taken into consideration the data for the State of Washington was furnished the inspectors during the month of June. This early in the year it is very difficult to estimate very accurately, as every fruit-grower knows from experience. While the total tonnage from these figures amounts to 21,955 cars, the editor rather inclines to the opinion that the total crop of commercial apples of the Northwest will be nearer around 18,000 cars. This figure may be increased or decreased later in the season, in accordance with the development of fruit, that may or may not suffer seriously by loss from disease or pest. At the present time it is too early to estimate how serious the damage may be later, either from fungus or codling moth.]

## Seeks Far East Markets

To help American fruit shippers obtain Pacific outlets for their products during the coming season, the Office of Markets and Rural Organization is sending a representative to China, Japan, Australia, the Philippines and Eastern Siberia to investigate the marketing of American fruit in these countries.

The need of expanding the Pacific outlet is made evident by the closing, practically, of the English and Scandinavian markets to which the United States has previously forwarded large quantities of fruit, particularly apples and pears. The representative, Anson Penfield Bateham, special investigator in foreign fruit markets, sailed from Vancouver June 7. The Bureau of Foreign and Domestic Commerce, of the Department of Commerce, and the Consular Service, of the Department of State, will co-operate with the Office of Markets and Rural Organization in the investigation through the commercial attaches and the various consular officers in the countries to be visited.

# More Information On Fruit Distribution

By E. H. Shepard, Editor

Distribution of apples in the Northwest, showing cities of over 3,000 population in Minnesota, Ohio and Louisiana that have not been sold apples from the Northwest in carlots.

Every subscriber of BETTER FRUIT will recall the article appearing in the in the July edition on the "Distribution of the Apple Crop of the Northwest," showing the towns and cities which had been sold apples in carlots direct, giving the percentage of the total number of towns sold in the United States—or, in other words, there are 35,085 towns of over 3,000 population, of which 611 have been sold in carlots direct. A list of the towns sold appears in the July edition. Space will not permit in BETTER FRUIT the publication of all of the towns not sold in the United States, but as an example we publish a list of the towns not sold of over 3,000 in Minnesota, Ohio and Louisiana. In Minnesota there are 34 towns of over 3000 population, of which 13 have been sold, 31 not sold; in Ohio 117 towns of over 3,000 population, of which 10 have been sold, 107 unsold; in Louisiana there are 22 towns of over 3,000 population, of which 4 have been sold and 18 not sold. These three states are a fair example of sections—Minnesota being one of the Northwestern States, Ohio a Middle State and Louisiana one of the Southern States. Similar conditions prevail in nearly all of the other states. Comparatively few apples are grown in the State of Minnesota. Ohio has a large number of manufacturing towns, which are very prosperous. Louisiana is a Southern State, where apples are not grown, most of the fruit being citrus. The large quantity of apples consumed in New Orleans shows that people in sections where citrus fruits are produced desire apples just the same. Every one of the Southern States should be a good market for Northwestern apples if properly worked. The list of towns, as given below, are taken from the American Newspaper Annual and Directory, Copyright Edition 1917, published by N. W. Ayer & Son, Philadelphia:

<i>Minnesota</i>	<i>Ohio</i>
Anoka	Barnesville
Ely	Bridgeport
Fairmont	Bryan
Hastings	Byesville
International Falls	Celina
Lake City	Crestline
Marshall	Crooksville
Montevideo	Dennison
New Duluth	Eaton
Northfield	Elmwood Place
Pipestone	Greenfield
Princeton	Gukksbiri
St. Peter	Keetibua
Two Harbors	Lishon
Waseca	Lockland
Austin	Logan
Bemidji	London
Chisholm	Marysville
Cloquet	Niamisburg
Eveleth	Middleport
Faribault	Mingo Junction
Little Falls	Napoleon
New Ulm	New Lexington
Owatonna	Oberlin
Red Wing	Orrville
South St. Paul	Pomeroy
Hibbing	Port Clinton
Mankato	Sebring
Rochester	Shelby
Stillwater	Toronto
Virginia	Uhrichsville

*Ohio—Cont'd*

Upper Sandusky
Wadsworth
Wauseon
Wilmingon
Ashland
Athens
Bellevue
Bowling Green
Bucyrus
Circleville
Cuyahoga Falls
Defiance
Delaware
Delphos
Dover
East Palestine
Galion
Gallipolis
Greenville
Jackson
Kent
Kenton
Martins Ferry
Nelsonville
New Philadelphia
Niles
Norwalk
Painesville
Ravenna
St. Marys
Salem
Struthers
Troy
Urbana
Van Wert
Wapakoneta
Washington
Wellston
Wellsville
Wooster
Xenia
Alliance
Barberton
Bellaire
Cambridge
Chillicothe
Conneaut

*Ohio—Cont'd*

Coshocton
East Cleveland
Elryia
Findlay
Fostoria
Fremont
Ironton
Lancaster
Massillon
Middletown
Mount Vernon
Piqua
Sidney
Tiffin
Warren
Ashtabula
East Liverpool
Hamilton
Lima
Lorain
Mansfield
Marion
Norwood
Portsmouth
Sandusky
Steubenville
Zanesville
Springfield

*Louisiana*

Donaldsonville
Franklin
Jennings
Kentwood
Minden
Opelousas
Plaquemine
Ruston
Thibodaux
Crowley
Gretna
Houma
Lafayette
Morgan City
New Iberia
Baton Rouge
Bogainsa
Monroe

### Distribution of strawberries in carlots in Oregon and Washington.

The total number of strawberries reported shipped by the government from Oregon during the year 1915 was 193 cars; from Washington 142 cars. The following is a list of the cities to which carlots were sold direct in 1915, showing the destination of 191 cars, which probably includes only the full carlot shipments, not including less-than-carlot shipments, local shipments and home consumption, or the strawberries going to the canneries. Forty-six towns were sold in carlots in the year 1915:

<i>Cars</i>	<i>Cars</i>
Billings, Mont..... 4	Livingston, Mont.... 1
Bismarck, N. D.... 2	Minneapolis, Minn..15
Brandon, Man..... 6	Moosejaw, Sask.... 1
Butte, Mont.....16	Omaha, Neb. ....10
Calgary, Alta..... 7	Pocatello, Idaho... 4
Cheyenne, Wyo.... 1	Portage La Prairie,
Chicago, Ill.....11	Man..... 2
Crookston, Minn... 4	Rugby, N. D..... 1
Deadwood, S. D... 3	St. Louis, Mo..... 1
Denver, Col..... 2	St. Paul, Minn.... 6
Detroit, Mich.... 3	Salt Lake, Utah... 2
Devils Lake, N. D. 1	Saskatoon, Sask... 1
Duluth, Minn.... 7	Sioux City, Iowa... 5
Edmonton, Alta... 1	Sioux Falls, S. D. 2
Fargo, N. D..... 7	Springfield, Ill... 2
Grafton, N. D.... 5	Staples, Minn.... 1
Grand Forks, N. D. 8	Thief River Falls,
Grand Island, Neb. 1	Minn. .... 3
Great Falls, Mont. 3	Valley City, N. D. 1
Helena, Mont.... 3	Vancouver, B. C.... 1
Kansas City, Mo... 2	Wahpeton, N. D.... 1
Laramie, Wyo.... 1	Watertown, S. D. 8
Lewiston, Mont... 2	Winnipeg, Man....25
Lincoln, Neb..... 3	Yorkton, Sask.... 1

### The strawberry crop of the United States and Distribution of strawberries from the Northwest.

The following statistics show the number of carloads of strawberries shipped from every state in the Union where strawberries are grown in quantity. It must be borne in mind that the number of cars in some states, as reported, includes less-than-carload ship-

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ments, and in other states the number of cars sold does not include less-than-carload shipments, local distribution and home consumption. However, the figures give an approximate idea of the total number of strawberries produced in each state. Strawberries are grown in quantity in twenty-eight states in the Union, a little over half. The total quantity of strawberries produced in the United States is approximately 13,189 cars. The figures are compiled by the Department of Agriculture, in the Office of Markets, Rural Organization. About one-half of the states produce more than Oregon and Washington. The statistics in this article were compiled on the 1915 crop:

<i>Cars</i>	<i>Cars</i>
Alabama ..... 251	Missouri .....645
Arkansas ..... 715	New Hampshire... 1
California ..... 418	New Jersey..... 516
Colorado ..... 9	New York ..... 196
Connecticut ..... 38	North Carolina... 837
Delaware ..... 1469	Ohio ..... 34
Florida ..... 508	Oregon (Hood R.) 193
Illinois ..... 262	Pennsylvania... 81
Indiana ..... 171	South Carolina... 81
Iowa ..... 52	South Dakota... 1
Kansas ..... 16	Tennessee ..... 1459
Kentucky ..... 193	Texas ..... 285
Louisiana ..... 1400	Utah ..... 4
Maryland ..... 1912	Virginia ..... 640
Massachusetts... 100	Washington ..... 112
Michigan ..... 317	Wisconsin ..... 41
Mississippi ..... 169	
	Total.....13,189

ITS ALL IN THE WRINKLE

ITS ALL IN THE WRINKLE

*Corrugated Paper Products*

have a uniform degree of moisture. If during this "conditioning" any pieces of the products are found to be too moist, they should be returned to the trays and dried further. When in condition, the products may be packed permanently in tight paper bags, insect-proof paper boxes or cartons, or glass or tin containers.

#### RECIPES

##### Spinach and Parsley

Spinach that is in prime condition for greens should be prepared by careful washing and removing the leaves from the roots. Spread the leaves on trays to dry thoroughly. They will dry much more promptly if sliced or chopped.

##### Garden Beets, Onions, Carrots, Turnips, Parsnips, Cabbage

**Beets:** Select young, quickly grown, tender beets, which should be washed, peeled, sliced about an eighth of an inch thick and dried.

**Turnips** should be treated in the same way as beets.

**Carrots** should be well grown, but varieties having a large woody core should be avoided. Wash, peel and slice crosswise into pieces about an eighth of an inch thick.

**Parsnips** should be treated in the same way as carrots.

**Onions:** Remove the outside papery covering. Cut off tops and roots. Slice into one-eighth-inch pieces and dry.

**Cabbage:** Select well developed heads of cabbage and remove all loose outside leaves. Split the cabbage, remove the hard, woody core, and slice the remainder of the head with a kraut cutter, or other hand-slicing machine.

All the products under this heading should be "conditioned" as described above.

##### Beet Tops, Swiss Chard, Celery and Rhubarb

**Beet tops:** Tops of young beets in suitable condition for greens should be selected and washed carefully. Both the leaf stalk and blade should be cut into sections about one-fourth inch long and spread on screens and dried.

**Swiss chard** and **celery** should be prepared in the same way as beet tops.

**Rhubarb:** Choose young and succulent growth. Prepare as for stewing by skinning the stalks and cutting into pieces about one-fourth inch to one-half inch in length and dry on trays.

All the products under this heading should be "conditioned" as described.

##### Raspberries

Sort out imperfect berries, spread select berries on trays, and dry. Do not dry so long that they become hard enough to rattle. The drying should be stopped as soon as the berries fail to stain the hand when pressed. Pack and "condition."

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Writs Now Perfection Currents Writs Now

## Home Drying of Vegetables and Fruit

U. S. Department of Agriculture

**D**RY vegetables and fruits for winter use if tin cans and glass jars for canning are scarce or expensive. This is the advice of specialists of the U. S. Department of Agriculture, who recently have studied the possibilities of conserving food to meet war needs in spite of any difficulties that may be experienced in obtaining canning containers. Drying was a well recognized and successful way of preserving certain foods before canning came into general use, the specialists point out, and modern methods make it still more practicable than formerly, either in the home or by community groups.

Three methods of drying have been found by the Department specialists to give satisfactory results. These are sun drying, drying by artificial heat, and drying with air blasts, as before an electric fan. Trays for drying by any one of these methods, as well as tray frames for use over stoves or before fans, can be made satisfactorily at home. Frames and trays for use with artificial heat may be purchased complete if desired.

Home-made trays may be made of side and end boards three-fourths of an inch thick and two inches wide, and

bottom boards of lathing spaced one-fourth of an inch. If desired, one-fourth-inch galvanized wire mesh may be tacked to the side and end boards to form the bottoms of the trays. Frames for use before fans may be made of wood of convenient size. Frames for use with artificial heat should be made of non-inflammable material to as great an extent as possible. As many as six trays may be placed one above the other when artificial heat is used. In drying before a fan the number of trays that may be placed one above the other will depend, to a large extent, upon the diameter of the fan. In drying in the sun, trays as described may be used or the products to be dried may be spread on sheets of paper or muslin held in place by weights.

Vegetables and fruits will dry better if sliced. They should be cut into slices one-eighth to one-fourth of an inch thick. If thicker, they may not dry thoroughly. While drying, the products should be turned or stirred from time to time. Dried products should be packed temporarily for three or four days and poured each day from one box to another to bring about thorough mixing, and so that the whole mass will

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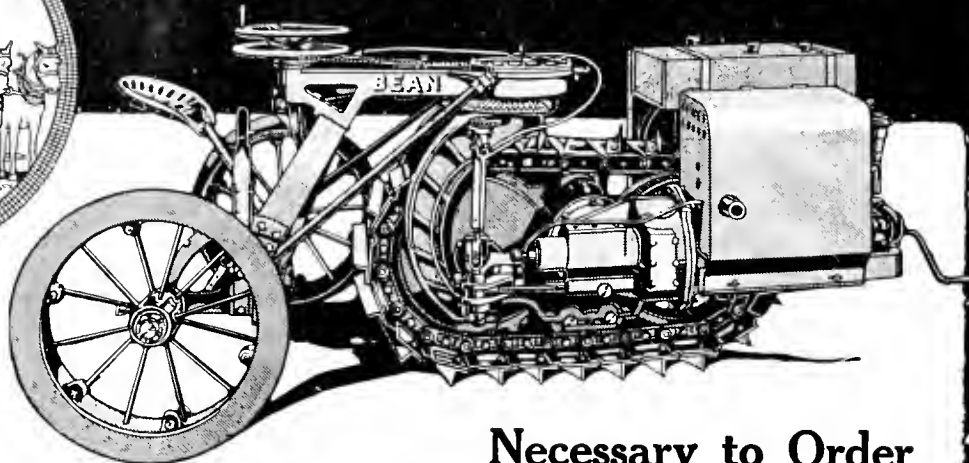
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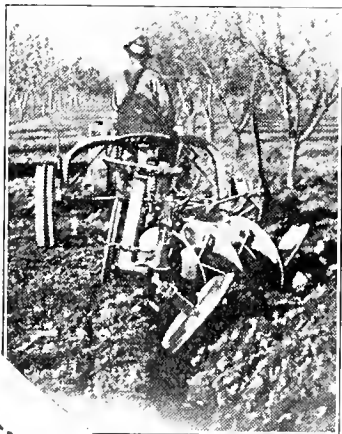
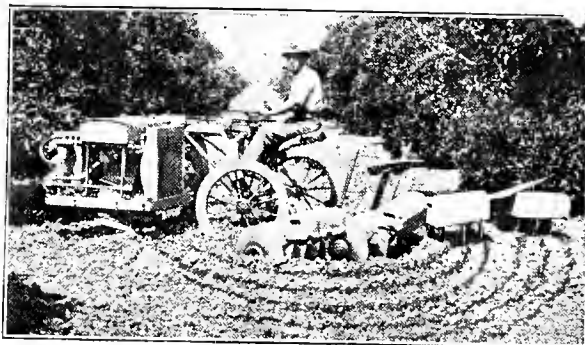
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Portland, Oregon

## Summary of Cherry Culture and Production

By E. Bowles, Prosser, Washington

**P**OLLENIZERS are necessary. The Bing cherry is probably as nearly self-sterile as any fruit tree to be found; and unfortunately neither Anns nor Lamberts will pollinize it. We have only three popular commercial sweet cherries; and when these three are planted together, with no other cherry in the neighborhood, the Lamberts and Anns bear light crops and the Bings almost nothing at all. These varieties, with Governor Woods and seedlings, pollinize well, though some seedlings are worthless for the purpose. I am told that Republicans, Tartarians and most sour cherries will pollinize our high-grade cherries; and if so they are the ones to plant, as they have more market value than Woods. There should be four or five pollenizers to the acre, and set as far apart from each other as possible.

Fertility of the soil must be kept up. I keep from one to two thousand chickens in the orchard and have them distributed to suit the needs of the trees. This gives all the fertilizer the trees can use to advantage. A cherry orchard makes an ideal run for chickens; and chickens, when properly managed, are little hindrance to the crop.

Gummosis is a much-talked-of disease of the cherry. I know nothing of it from the scientist's standpoint, and I am quite skeptical in regard to it. Prac-

tically all cherry trees gum more or less, no matter how healthy they may be; but so far as my observation has gone, excessive gumming is a result and not a cause. Scale is a common cause, but there are scores of others. Any condition which brings death to the tree is likely to cause the tree to gum while it is dying.

Smudging is expensive in labor and money. But in my orchard it is a necessity. Six years ago I lost out, but for five successive years have not lost a crop, and I would not think of risking the fruit without this protection. For light frost, a small area can be protected; but for heavy freezes not less than five or ten acres is practical, the larger the easier.

Spring dropping of the fruit is usually due to one of three causes: 1. Failure to pollinize. In this case the dropping is all at once, at the time the shell should burst. You see scores of little ones with now and then a big one that is alive. 2. Frosted cherries at this stage turn black at once and are easily detected. When frosted later they often appear sound for a week or two and then fall. 3. Lack of food causes enormous loss among cherry trees in general. This often continues for several weeks—almost the entire time from blossom to harvest. And you may see dead cherries of all sizes.

Three pests visit the sweet cherry: 1. Scale is probably the worst one, but it is easily controlled with lime-sulphur if the work is thorough. 2. The slug, like the scale, will also hurry a cherry tree to an untimely death, but it is very easy to control with arsenate of lead. The slug hatches about the middle of cherry picking, and must not be allowed to strip the trees. The best method is to spray with the calyx spray for apples. This will tide over the harvest time and usually kills both June and August broods. 3. The black aphid is hard to control, and I have seen no spray or treatment justify the expense. Yet I do not consider the aphid any great hindrance to the cherry industry. Aphid are very bad with the ground weedy or grassy, or dusty ridge in the tree row, or strawy manure near the tree; also follow with the pruning shears. Aphid are seldom serious with clean, level and frequent cultivation and with ample watering, especially near the tree.

Mahaleb or mazzard, which? Of these two roots neither is entirely satisfactory for sweet cherries. Imagine a white-oak on a jack-oak stump, and you see a Bing on a mahaleb as it sometimes appears. The mahaleb is too small; and the union is often imperfect. The mazzard root with the Bing produces scant crops of blossoms, and an

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occasional tree is untrue both in flavor and form. I have a theory—only a theory, for I don't know—that a Bing grafted on a Bing seedling would be better than either.

Pruning of cherry trees is a disputed question. The witches told our grandmothers it would kill them. Many still believe it. It is true that it is more difficult than to prune apple trees, but it is almost as necessary. For the young tree, head about three feet high; have no center and no double header. Lead out four or five branches as nearly equal and as near the same place as possible. A cherry tree will not split with its load; and if a center is left the outside branches rob it and make a bad mess later on. The second and third years, I do not clip as with the young apple tree. Cut back only the one or two branches which tend to overtop the others. The two-year-old should spread out like a haystack; and it will do this if it has a good boarding place, but if starved it adds only a few shoots on the top—no side shoots—and soon looks like a poplar. In pruning old neglected trees, I prefer to take out a few large branches, doing little or no other cutting. I have never yet injured a tree in this way—get better growth and fruit than to cut out many small limbs. I am not afraid to go to the center of a tree for a fence post. A general clipping over the outside of the tree every year, as we do apples, is not necessary and is questionable. Some clipping is necessary, but not every year, and it should be reduced to a minimum.

To flavor a Bing properly, the general point is to keep the tree in vigorous condition with dense foliage. Smooth and glossy leaves in great abundance above the fruit is almost a guarantee of good flavor. The reverse, then, makes poor flavor. But there are many reasons for poor flavor. We clip the growing concord to improve it; but the same treatment ruins the Bing. Liberal fertilizing improves flavor, but an excess often injures it. A peach wants the sun, a cherry wants the shade. A Bing with rough, crinkly leaves, and on a mazzard, produces fruit incurably bad. Fruit that is dry is leathery and strong.

Overloaded trees produce a weak flavor. The water necessary for the heaviest tonnage and largest size of fruit sometimes weakens flavor and requires three or four days without any water before picking.

Cultivation or grass? Again I find myself across the public highway. I cannot get results by leaving the ground in alfalfa or clover year after year; have gotten excellent results by sowing clover in June, then plow under the green crop the next May and cultivate for the following two or three years. I depend mainly upon the plow, and run close against the tree trunks.

## Solving the Southern Idaho Fruit Problem

Kenyon Green, Twin Falls, Idaho

WITH the arrival of the four years of low apple prices, 1912, 1914, 1915, and followed by the freeze of 1916, the fruit industry of Southern Idaho, and the Twin Falls country in particular, was dealt a crushing blow in its very infancy. With the majority of orchards just coming into bearing, with no nation-wide reputation for its fruit, and with no well-established marketing system worked out, prospects for the fruitgrowers of this district looked very black indeed.

Immediate action was undertaken, however, along several lines, and today there is a universal feeling of optimism which may be noted among orchard men all over the tract. First, those who were not really interested in the

growing of high-grade fruit, who had set out their orchards merely because it was the popular thing pulled their orchards. Approximately twenty-five hundred acres of apple trees in the Twin Falls country have been pulled to the mutual advantage of the owners and the remaining orchard men.

Second, those who retained their orchards, determined to see the thing through, forgot their dreams of thousand-dollar-an-acre profit, reorganized their apple acreage as a part of a general farming scheme, weeding out all poor varieties, and weak, low-vitality trees.

Realizing that the opening years of the twentieth century saw farm specialization pushed to its extreme, these men have studied out the best methods of diversification, which is the opposite of specialization. To them fruit growing, which is the most noted of the specialized crops of the Northwest, became only one part of farming and was treated as such.

Believing that a few years hence the finest and highest priced general farm will be the one with a well-cared-for small orchard several head of good stock, and a variety of general crops, these men have continued pruning and spraying with as great care as though their apples were their most profitable product. Departing also from the old clean cultivation, these fruitgrower farmers have worked out a line of inter-crops that are exceedingly profitable. From his twenty-acre apple



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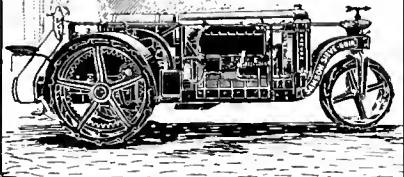
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orchard two and one-half miles from town, a Twin Falls dentist last fall took off eleven bushels of white clover seed to the acre, which at the prices prevailing at that time brought in nearly \$4,000.

Following up this plan of a well-balanced general farm, other growers are taking five tons of first-grade alfalfa hay from every acre of orchard, a paying crop when the prices throughout the winter never fall below ten dollars per ton.

The newest problem with which these clover-orchard and alfalfa-orchard men are being confronted is how to grow fancy, brightly-colored apples without the clean cultivation. This is a puzzle which the men in the Twin Falls country are attacking with the same energy as they have shown in meeting their other troubles, and many are already working out a system of plowing up the clover so that it will reseed itself and finish up the fruit in first-class shape every other year, while the alfalfa men will try discing in the third cutting of hay when it is about six inches high, to make a green mulch and hasten the ripening and coloring of the fruit.

## Home Canning by One-Period Cold-Pack Method

Canning fruits and vegetables in the home by the one-period cold-pack method is a relatively simple process and can be done with ordinary kitchen equipment and with comparatively little labor. Much of the surplus of the home garden can be saved for winter use by this canning method which is fully described in a special bulletin just issued by the United States Department of Agriculture, Farmers' Bulletin 839, "Home Canning by the One-Period Cold-Pack Method." This bulletin is of special interest and value to all housewives, canning clubs, societies or persons interested in conserving the food supply of the nation. It may be had on application to the United States Department of Agriculture. The bulletin contains very explicit directions for canning practically all of the common garden vegetables, including tomatoes, peppers, sweet peppers, pumpkin, squash, sweet corn, field corn, beans, peas and root vegetables, also various combinations of vegetables. It also includes canning directions for soft fruits and berries, hard fruits as apples, pears, quinces. Directions for the canning of camp rations, meats and soups are given in detail. Each step in the canning process by the one-period cold-pack method is carefully outlined from the preparation of the equipment and the raw materials to the storing of the canned products. A special time table showing how long fruits, vegetables, soups and meats should be scalded, blanched or sterilized is of particular value to the housewife. Various types of home-made and commercial canning outfits are described.

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HOOD RIVER, OREGON

Official Organ of The Northwest Fruit Growers' Association  
A Monthly Illustrated Magazine Published in the  
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All Communications Should Be Addressed and Remittances  
Made Payable to

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Postoffice at Hood River, Oregon, under Act

of Congress of March 3, 1879.

**Direct to the Consumer.**—The July issue of BETTER FRUIT contained some interesting figures and statistics in connection with direct shipments in carlots of apples from the Northwest, showing that out of 35,085 cities only 611, or 1 7/10 per cent, have been sold. Fruit growers who have not received the July edition should subscribe and request their subscription to include the July number, as a few copies still remain. In the article in July that was one point not brought out with sufficient prominence, that is, the extra handling. Whenever a carload of apples is shipped to some city and jobbed out in the surrounding territory, please bear in mind that the car has to be unloaded, the apples hauled from the depot to the fruit dealer, and from the fruit dealer's place of business back to the railroad and reshipment by rail, making three extra unnecessary handlings, all of which means more or less bruising. In addition to this there is the unnecessary cost, consisting of the cartage from the railroad to the dealer's place of business, 2 or 3 cents; back to the railroad, 2 or 3 cents; extra freight to the local town, 5 or 10 cents, maybe more, and the dealer's extra profit in addition—all of which means 20 to 40 cents, according to conditions, unnecessary expense, so that when the retailer adds his profit on to this extra expense it makes the apples cost the consumer possibly 75 cents per box more than they should.

**Spraying for Codling Moth.**—Observation in connection with the first brood of codling moth seems to indicate that the brood extended over rather a longer period than usual. In addition, indications also are that the codling moth pest is rather prevalent this year, somewhat more extensive than in past seasons. For these two reasons the fruit grower should study his condition very carefully, and there is no doubt

that in many cases it would be advisable for the fruit grower during the balance of the season to make two applications of arsenate of lead instead of one, putting on one early in August and the other late in August or early in September. It should be borne in mind this is a suggestion made applicable in accordance with conditions. Every grower should use judgment. A little later he will be able to decide intelligently whether it is necessary to apply one or two sprays. There is no question about the advisability of urging the grower to do everything he possibly can and spare no reasonable expense to keep his crop free from codling moth.

**Diversity.**—A short but very interesting article on Southern Idaho gives some practical information in reference to diversity that is worthy of attention of all fruit growers. Southern Idaho, as nearly everyone knows, lost practically all of its fruit by frost in 1916. If it had not been for the fact that fruit growers turned immediately to diversity lines they would hardly have been able to exist during the year. We do not know what the future has in store. Some calamity may hit a fruit district in some form or other in the most unexpected way, so it seems wise to suggest to all fruit growers that, where possible, they should engage in diversity, at least to a sufficient extent to pay running expenses during the year.

This issue contains illustrations on distribution, giving the cities of over 3,000 population in the States of Minnesota, Ohio and Louisiana, showing how great is the number of towns that have not been sold apples in carlots in comparison with the number of towns that have been sold direct in carlots. There is no question that with sufficient selling force to cover the territory thoroughly that the distribution of the Northwestern apple crop can be greatly increased and a great many towns sold in 1917 that have not been sold in the past. The important fact in connection with this statement is that in so doing the selling concerns will reduce the quantity going into the big cities, thereby avoiding congestion, consequently maintaining a higher level of prices, and in maintaining a higher level of prices in the cities it must be borne in mind that by so doing there is no question that a higher level of prices will be maintained in all of the smaller towns and cities.

**Not Overproduction but Lack of Distribution.**—The article appearing in the July edition of BETTER FRUIT, by the editor, has created more comment than any other article we have published. A number of people have personally informed the editor they had no idea that so few towns had been sold direct, and a number of others, courteous and thoughtful, are commending BETTER FRUIT for its excellent work by letter. It is emphatically apparent that the fruit growers of the Northwest in the favorable reception they have given this article realize greater distribution

is the keynote to better prices, and furthermore they are all anxious to see the selling concerns adopt a system this year that will distribute the 1917 crop to more cities than have been sold direct in the past.

**Buying Now.**—The constantly and continuous increasing prices on all kinds of commodities are sufficient justification for every fruit grower purchasing all articles required in his business at the earliest possible moment. It is advisable to do so for another reason—on account of the shortage of labor and raw materials. In many lines there is a possibility of the grower postponing purchasing too long. He may not be able to purchase in sufficient quantity to meet his requirements. Therefore, the editor of BETTER FRUIT does not hesitate to suggest that every fruit grower should purchase his supply of boxes, ladders, buckets, grading machines, nailing presses, paper, and all other equipment and supplies that he may need in harvesting this year's crop. He should not only make his purchases immediately, but he should haul them out to his packing house just as fast as he can get them there.

**Bruised Apples.**—A short article by Mr. L. F. Dumas on this subject is worthy of the attention of every fruit grower. When a man has put in a year's labor and expense in producing a crop of apples it is nothing short of insanity to half spoil the crop by bruising in the last thirty days during the harvesting season. Fruit growers, as a rule, do not realize how undesirable a box of bruised apples is unless they have visited some of the cities and gone into the grocery stores and looked into the boxes of apples where it is not an unusual occurrence to see apples so badly bruised that they are almost unfit for use, with at least 25 per cent loss from decay resulting from bruising.

**Box Strapping.**—The serious loss that is reported every year on export shipments on account of the broken packages is sufficient evidence that something should be done if possible to avoid this loss. While some people have suggested that export fruit should be shipped in heavier boxes, the suggestion is not very practical, for the reason the shipping concerns do not always know when the fruit is packed what boxes will be exported. Box strapping is used for many other commodities, and if used on export boxes of apples there is no question but what it would save the growers very heavy losses each year.

**Conservation of Food.**—Every fruit grower's wife should consider it her duty to conserve as much fruit and vegetables as possible for winter use by canning and evaporating. By putting up a good liberal supply for home use expenses can be greatly reduced. Putting up your own supply of fruits and vegetables will reduce the quantity of other kinds of foods to be purchased, leaving that much more for others who are not able to do their own canning or drying.

## The Sun Fruit Drier

will save your surplus corn for winter use. Why let any fruits or vegetables waste?

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Wouldn't You **Pay** a little more for a box of apples if you knew that it **Would Keep Longer**.

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**Minimum Carloads.**—The serious condition resulting in 1916, and continued in 1917, from the car shortage makes it imperative that the fruit industry should co-operate with the railroads in every way possible in using cars. Arrangements should be such so there will be no delay in loading cars when spotted. Great care should be used by shippers and receivers to see that cars are unloaded immediately at destination, so as to be returnable without delay. Increasing the minimum capacity of cars is equally important. A resolution adopted by a conference of shippers at North Yakima in July was as follows: "Shippers are willing to accept a minimum of 26,000 pounds on cars of soft fruits, peaches, pears and plums, this being 2,000 pounds over the old minimum. They agreed to 31,185 pounds on apples shipped before November 15th. The old minimum was 630 boxes. This was increased seventy boxes on winter varieties, making the minimum carload 700 boxes."

### Bruised Apple Losing Proposition

By L. F. Dumas, Dayton, Washington

#### THE GROWER LOSES

1. Because it has cost just as much to grow that bruised apple as it has to grow the one that is handled carefully.
2. Because it costs more to sort bruised fruit.
3. Because a bruised apple in a packed box many times ruins its sale and always hurts it.

#### THE PICKER, THE PACKER, THE SORTER, THE NAILER, AND THE TRUCKER LOSE

1. Because the apple "bruiser" generally gets caught sooner or later and loses his (or her) job.
2. Because the careful person gets better consideration from his employer than does the careless one.
3. Because the grower gets more for perfect apples and therefore can pay more for putting them up.
4. Because the careless person loses his self-respect.
5. Because the careless person loses his reputation for being a good worker, a reputation which directly governs the swell or lumpiness of his pocket book.

#### BOTH THE GROWER AND THE EMPLOYEE LOSE

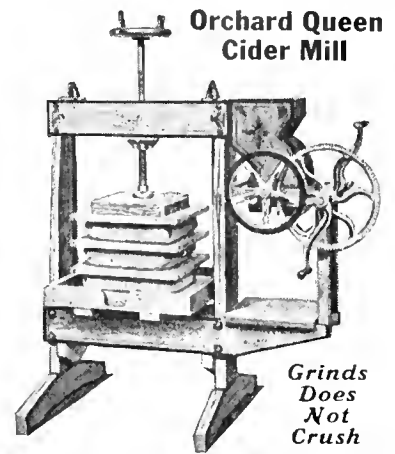
Because lack of harmony between the grower and employe caused by careless work causes a distinct loss to both in the results obtained.

#### THE SELLING ORGANIZATION LOSES

Because it can "get the business" only when it has a superior product.

#### THE FRUIT BUYER LOSES

1. Because when he invests in bruised apples he is speculating in "damaged goods" and is bound to lose.
2. Because bruised fruit rots in storage, one rotten apple in a box will in time infect others, rotten apples are not saleable.



**Orchard Queen Cider Mill**  
*Grinds Does Not Crush*

## MAKE CIDER This New Way

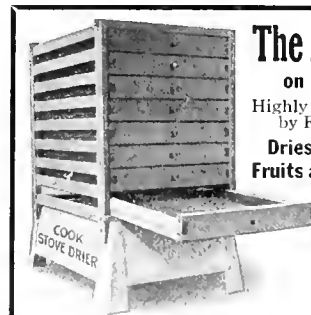
Get Every Bit of Juice by Clean, Sanitary Methods

Orchard Queen grates or grinds apples into fine pomace—breaks fruit cells open—allows all the juice to be easily extracted in pressing—insures greatest quantity and highest quality of cider, as juice is extracted in sanitary cloth-lined forms. (An ordinary crushing mills only half the juice is extracted and in a mussy, dirty condition.) Operates easily by hand or power. Write today for information of this marvelously efficient mill and how it turns your usual orchard losses into unusual profits.

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**Dries All Kinds of Fruits and Vegetables**

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**The Evaporator Company**

Price \$6.00 (Plus Express) 55 Liberty St., New York

### THE ULTIMATE CONSUMER LOSES

Because he does not get what he pays his money for—good apples. He loses his faith in the apple and will buy some substitute, a thing which will injure grower, worker, seller, buyer, and sometimes the consumer himself.

So let's be careful; let's handle the apples as if they were so many eggs. Remember, rough handling is the unpardonable sin in the preparation of fruit for market; the grower who tolerates it is not injuring himself alone, he is promoting an all-around losing proposition. So let's be careful.

The Washington State Fair will be held at North Yakima, September 17th to 22nd, inclusive. Being in one of the great fruit-growing valleys, and horticulture standing out pre-eminently, it is the duty of every fruit grower to make an exhibit if possible.



**The Orchard Ladder of Quality** must bear the name "**Northwest.**" Thousands are sold on their merits. Ask your dealer to let you see our Ladder.

If your dealer does not carry our ladder in stock, write us direct for prices.

No crushed fruit if you use the **Barnett Fruit Picking Pail.**

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## Bitter Pit; It's Cause and Control

By Professor D. McAlpine in the Fruit World, Department of Agriculture, Melbourne, Australia

[EDITOR'S NOTE.—The disease Bitter Pit, so called in Australia, is generally known throughout the Northwest as Core Rot, being the same trouble. Very little has been done in the Northwest to get at the cause of this trouble, and not much in the way of investigation for control. The Australian Government, in connection with the fruit districts of Australia, appropriated £10,000, or \$50,000, for ten years' research work. The work was extended another year at an additional cost. This has been published in four large volumes. The research work done in Australia has been the most complete, the most thorough and efficient of any campaign waged for the solution and cause of any disease or pest. The Editor of BETTER FRUIT has been in constant correspondence with Professor D. McAlpine and has received one of each of his four Progress Reports. Conditions under which the trouble occurs in the Northwest are seemingly very similar, and the suggestions of control as outlined by Mr. McAlpine, where practiced in the Northwest, in the opinion of the Editor have been effective in reducing Bitter Pit or Core Rot to a minimum. This article is of course a brief summary of the principal features in the cause and control, as worked out by Professor McAlpine and his assistants, and as before stated is the most thorough campaign ever put up for the solution of any pest and its control. Therefore the Editor believes every fruit grower in the Northwest who is troubled with Bitter Pit or Core Rot will find this article not only very instructive but very valuable.]

**W**HEREVER apples are grown on a commercial scale this disease is more or less prevalent. In Australia there are some valuable export varieties, such as Cleopatra, which are so susceptible that they have been cut down and replaced by other varieties. In the United States of America the Baldwin variety is so subject to attack that the disease is actually known as "Baldwin spot." In a recent American publication it is stated that, "Unless a remedy for this trouble is to be found, the indications are that Baldwins will sooner or later need to be replaced by some other variety of the same season and quality which is not affected by the spot." There is consequently a keen desire on the part of growers to know the cause of the disease, in order, if possible, to devise measures for its prevention or mitigation. By this means alone may certain valuable varieties be retained under cultivation.

In my previous report I have offered alternative views as to the cause of bitter pit, viz.: (a) Concentration of cell sap in the tissues of the apple and

consequent local death of the parts. (b) Over-pressure of water in the tissues, leading to local rupture and subsequent death of the parts.

The first explanation was indicated by certain of my observations. The brown flecks of the pit, when examined, always contained less water than the surrounding healthy tissue, and it appeared possible that the concentration of the cell sap involved in loss of water might have reached a point where the acids, tannins and other constituents acted injuriously upon the living protoplasm, causing its death. The sap concentration theory of the disease also received support from its point of occurrence on the apple pit generally appears in the first instance on the upper half of the fruit and toward the "eye" end. As the openings in the skin of the fruit are much more numerous toward the "eye" end than on the basal portions, the larger number of openings at the "eye" end would obviously allow more active transpiration, and consequently might render easier an undue concentration of the cell sap, leading to development of the pit.

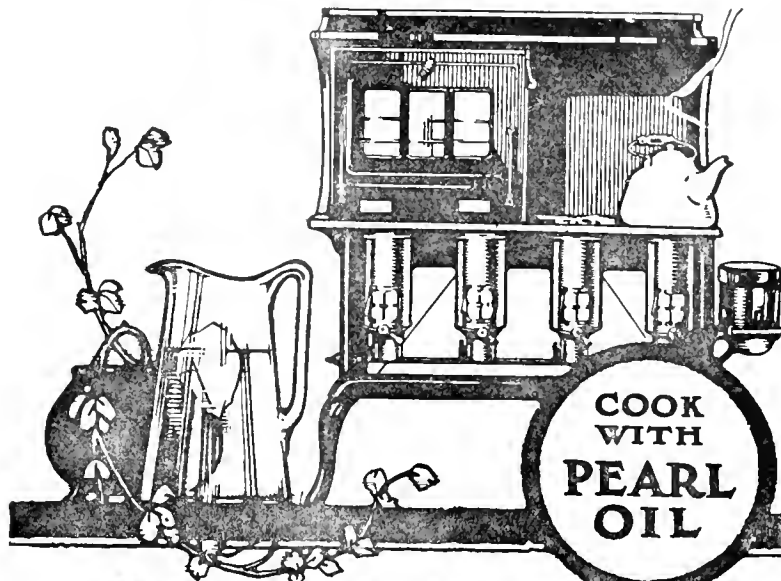
The further investigations which I have subsequently been able to make into the occurrence of pit lead me to abandon an undue concentration of the cell sap as the probable cause of the disease. I am of opinion that over-pressure of water in the tissues, leading to local rupture and subsequent death of the parts, furnishes the most probable explanation of bitter pit. Histological examination of the tissues of the apple, and the results of field experiments, pruning tests and climatological observations concur in supporting the view that over-pressure of water is the real cause. The diminished supply of water in the flecks of bitter pit is the result of cell rupture and death of the parts—not its cause.

The following observations support this view: (1) When the apple fruit is mostly confined to the main upright branches and produced on fruit-spurs, the bitter pit is usually increased. Under these conditions the strong flow of

sap might reasonably be supposed to burst the thin walls of the pulp cells and produce the effect. (2) In a young and vigorous growing tree, bearing only a few apples of rank growth, all the fruit is often pitted. The rank growth will cause rapid tension of the cell wall, and this may reach the breaking point when the pressure is distributed only through a few apples. (3) When a tree in full bearing, has only a light crop, and the apples are comparatively large, then the tendency to bitter pit is greater. The fewer apples in this instance would get a larger proportion of sap, as evidenced by their larger size. Instances have already been given where Cleopatra trees only showed bitter pit in the clusters of fruit at the tips of the branches, and the larger apple in the center of the cluster was invariably the worst. Superabundance of sap is associated with the overgrown apple and the development of pit. (4) When the fruit of a susceptible variety is picked and graded, it is found, as a rule, that the larger the fruit the more liable it is to pit. Thus, in the produce of 39 Cleopatra trees, while apples two inches in diameter had only one per cent of pit, those three and one-quarter inches in diameter had 61 per cent of pit. The greater growth in the larger apple relatively to the smaller would tend to distend the pulp cells and ultimately burst them. (5) When the strong flow of sap is checked by cincturing it is found that the pit is reduced. This favors the view that the over-pressure of the sap in a variety unable to withstand the strain may be exciting the cause. Root pruning is a well-known means of checking the growth and inducing fruitfulness, but owing to the danger in our variable climate of root-pruned trees suffering from a diminished water supply at a critical period of their growth, no satisfactory experiments were carried out. (6) Irrigation experiments bear out the view that over-watering is a sure means of producing pit. When apple trees are heavily watered, and particularly late in the season when the fruit is ap-

proaching its full development, there is a much higher percentage of pit than when light watering is adopted. (7) When the fruit is produced on laterals where every apple, as a rule, has room to develop properly and there is no strong flow of sap as in the upright branches, the amount of pit is appreciably lessened. (8) As shown in a previous report, wherever bitter pit occurs the vascular network at the boundary between the pulp cells and the skin is ruptured. The pressure exerted will also be sufficient to burst the adjoining pulp cells, and thus there is a strong presumptive evidence that the bursting of the network by over-pressure of the water, more particularly toward the apex or eye end of the apple, is accompanied by the rupture of the pulp cells.

This is approximately called a constitutional disease, since the root of the trouble really lies in the artificial nature of our modern apple. It has been derived from the small, sour and hardy wild crab, and the large size, the succulence, and the sweetness have been obtained at the expense of the hardy nature of its ancestor. The fibre is now soft and flabby to render the flesh as juicy as possible, and this weakening of the fibre has practically



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**MAKES**

## Whiter, Lighter Bread

thrown the whole burden of the skeleton upon the pulp cells. This burden was formerly shared by the vascular bundles, but now the distended pulp cells, like so many little balloons (filled with sap instead of gas), have to prevent the structure from collapsing. That it does collapse here and there, producing the brown flecks in the flesh, is not to be wondered at, and the problem of bitter pit, like that of modern civilization, is to strengthen the constitution against the forces which tend to weaken it.

I submitted a summary, giving the results of my work on the cause of bitter pit to Professor Lanong, of America, the distinguished author of "The Living Plant." He gave it his careful attention and replied: "Your conclusions certainly look to me very reasonable and probable, and as far as I can tell, seem wholly consistent with our knowledge of osmotic and sap-pressure phenomena. I would have to give, however, a great deal more study to the subject than is practicable to make any suggestion, after the exhaustive work which you have done upon the subject."

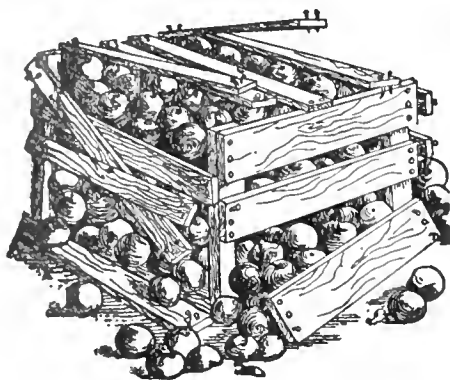
The various factors which increase or diminish bitter pit react upon the

vascular system of the apple, which has been fully described in previous reports. The pit originates beneath the skin, where the symmetrically formed network of vessels surround the outer layer of pulp cells and forming the boundary between skin and pulp is situated. Wherever bitter pit occurs this network is ruptured, owing to the pressure exerted by the too-rapid growth. The pulp cells at first disclosed by the ruptured meshes of the net, are likewise burst and death ensues. It is this wonderful network of vessels beneath the skin, forming distributing channels to regulate the pressure of the sap, that explains the occurrence of pit in spots or patches. Hence the rupture of the vascular network here and there, and of the adjoining pulp cells in localized spots, due to over-pressure of the sap, is the exciting cause of bitter pit, and the oxidizing enzyme in the presence of tannin causes the group burst cells to become brown.

[Continued next month]

The Oregon State Fair will be held at Salem, Oregon, September 24th to 29th, inclusive. Horticulture is one of the prominent features of the fair.





BEFORE using Cement Coated Nails

## Western Cement Coated Nails for Western Growers

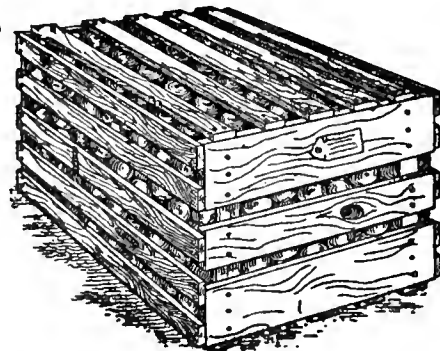
Our Cement Coated Nails are always of uniform length, gauge, head and count. Especially adapted to the manufacture of fruit boxes and crates. In brief, they are the Best on the Market.

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Pacific Coast Sales Offices  
Portland, Spokane, San Francisco  
Los Angeles

AFTER use of C. F. & I. Co.'s  
Cement Coated Nails

## Grape Culture

By W. Obermeyer, Emmett, Idaho

**I**N this article on grape culture I shall confine myself to a talk on the native varieties suited to the climate of Southern Idaho. I have some of the European varieties of bearing age, but they have not proven satisfactory, and I do not recommend them for Southern Idaho. Our climate is too severe for them as a commercial crop.

In planting a vineyard, about the first thing to consider is the matter of location; experience has proven that the best fruit is grown on hill slopes, and sandy ground is preferred to any other. If the soil is not naturally fertile enough, it should be made so by the plowing under of any legume crop, or the addition of barnyard manure. Next in order is to determine the variety to grow. The Concord is the best flavored and the best seller, yet this variety requires a rather long season to mature its fruit, and if you have any doubt at all as to your length of season, plant the Moore's Early, or the Worden, both of which are excellent grapes and almost equal to the Concord in hardiness and flavor. Moore's Early is very early, ripening here in the Payette Valley almost a month ahead of the Concord; the Worden is midway between. These three varieties are black grapes, and good sellers. For commercial varieties confine your planting to these three.

Having determined the variety best suited to your locality, get one-year-old No. 1 vines from a reliable nursery, or grow the plants from cuttings. Set the plants 10 by 10 feet apart, and give the best of care. Irrigate when necessary. It is usually best to grow some cultivated crop between the rows the first two years, and the care that will make a big crop of potatoes or melons is just the care the young vines require. If your young vines have had the right care they are ready, after the second season, to be trellised. It is the common practice to furnish two sizes (No. 9 or No. 10) black wire strung on posts 30 feet apart. The first wire 2½ feet from the ground, and the other 5 feet high. The end post should be set three feet in the ground and be well

braced, so as to be able to withstand the strain of a heavy crop. Probably the pruning hasn't bothered you much as yet. The first year's growth was not heavy, and you have pruned to a single cane, and cut that back to a few buds; the second season's growth was better, and you will leave one long cane to be tied to the top wire, and perhaps two short canes to be run out along the lower wire. The vines will bear a fair crop the third season and make a good wood growth. The next spring you may leave four canes for fruiting. Keep, as a permanent trunk, the vine that you led to the top wire the previous season, cutting off your surplus wood as close to the permanent stalk as possible. Thus you always have a neat, clean vine, easy to prune. Tie the canes out along the wire, fastening them securely so the wind won't whip them around. Do not make a tie so tight that your

vine will choke when it begins to enlarge; leave room for expansion. I will conclude with a few general remarks. The Knieffen system of pruning is probably the easiest system and is very satisfactory. On sloping, sandy ground grape vines can stand a lot of irrigation and profit by it. On valley bottoms, especially where the water table is near the surface, great care should be used in watering. It is safe, however, to keep the ground reasonably moist. Cultivation can usually be stopped in midsummer so as to allow the canes to ripen. All of that part of the current season's growth that has not matured will winter kill.

Probably barnyard manure will supply all the requirements of the vines as to fertilization. Crimson clover could be sowed, after cultivation ceases, and plowed under the succeeding spring. I have tried this, and it is a success. Many growers use rye as a cover crop. A vineyard properly cared for will last practically forever.

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### Tillamook County Beaches

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Low Round Trip Fares.

### Newport,

with its agate beaches and surf bathing  
will always be popular.

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Portland, Oregon

## Southern Pacific Lines

**Farm Labor Organization Plans**

U. S. Department of Agriculture

UNDER the government plan for the organization of farm labor, the details of which were announced by the U. S. Department of Agriculture recently, provision is made for nation-wide co-operation in the solution of the farm help problem. The work of organization already has been started in about forty states, and it is expected that eventually every community in the United States will be reached. It is believed that the resultant utilization of emergency labor will begin to have an appreciable effect on the farm labor situation before the season has far advanced. Meanwhile, the immediate and acute problem of supplying labor for the harvests, now beginning in the Southwest, is being handled, so far as the United States government's services are concerned, through the existing employment service of the U. S. Department of Labor, which will continue to handle such problems of mass mobilization under the new plan as it has in the past.

Federal and state co-operation is based on close co-operation on the part of the U. S. Department of Agriculture and the U. S. Department of Labor with state committees on national defense charged with labor matters, with the state agricultural colleges, with the county agents, and with county and local or township labor committees or representatives to be established in every locality. The Department of Agriculture will represent the federal authorities in determining farm labor needs and in assisting in organizing all available farm labor in the rural districts. The U. S. Department of Labor will devote its attention to organizing labor in urban communities and industrial regions, and will co-operate with the farm labor forces where necessary by obtaining extra labor from the population centers.

The plan provides for strictly local handling of all labor problems that can be adjusted locally. The fundamental unit of the organization is the "community man" who, with the assistance of such committees as he may appoint, canvasses his own neighborhood, finds out what farmers need help, and what men are available for supplying the local need, and effects such adjustments as can be made locally. If, after all local adjustments have been made, there remains either a deficit or a surplus of labor, he reports to the "county man," whose business it is to effect adjustments between the several communities in his county. The county man, in turn, reports any deficit or surplus to the "state man," who canvasses the situation for the state as a whole and reports to the Department of Agriculture, which, in close co-operation with the Department of Labor, is charged with the distribution of mobile labor for the country as a whole.

Thus each unit in the system acts as a clearing house for its own territory, reporting to the units higher up only when it needs help or has help to offer. The plan provides that supplemental

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*Our Lithographed Labels will advertise your brand and help the dealer sell your apples.*

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No hot boxes—no lost time—even with big loads, when you use Mica Axle Grease. The powdered mica forms a slippery, wear-resisting film, twice as effective as ordinary grease.

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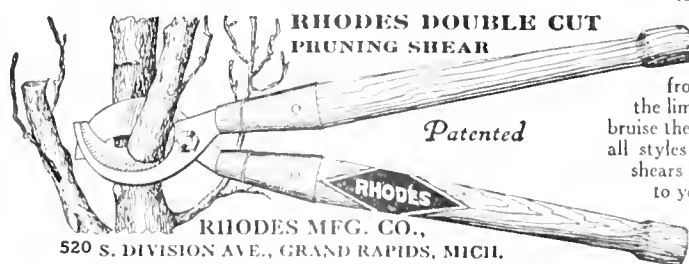
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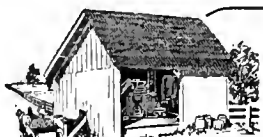
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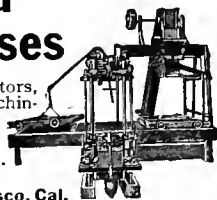
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- 1.—We Specialize in Apples
- 2.—All Consignments Receive our Personal Attention
- 3.—The Fruit is Sold by Private Treaty

CABLE ADDRESS: BOTANIZING, LONDON

reports shall be submitted by each community man whenever changes in the local labor situation make desirable further adjustments that cannot be met with the material at hand, or when a surplus of labor develops which he cannot use.

A great many retired farmers, of whom there are 700,000 in the country, may be available for emergency service under this plan of farm labor mobilization. The plans contemplate also the drawing of emergency labor from the cities under the immediate direction of the Department of Labor, the effective utilization of college students and school boys, and, if necessary, the assignment of volunteer women and girls to rural tasks connected particularly with feeding and caring for harvest hands or other extra labor, or with farm canning or drying of surplus perishable products. In other words, the plan contemplates supplying assistance not merely for field operations but to farm women during their season of heaviest domestic duties.

### The Wastefulness of Swarming

U. S. Department of Agriculture

**T**HE old-time beekeeper boasted of the number of swarms which issued from his hives, but the modern beekeeper knows that swarming is one of his worst obstacles to producing a large crop. The modern beekeeper knows from experience that after he has given all his energy to getting every colony as strong as possible at the beginning of the honey-flow, he must not permit the bees then to spoil it all by dividing their forces.

Of course, it is impossible to do anything toward controlling swarming when the bees are in a box or "gum," and this is the chief reason why bees in a movable-frame hive are more profitable. It is also unfortunately true that in spite of the beekeeper's most strenuous efforts, colonies will sometimes swarm. In that event the beekeeper makes the most of a bad situation by keeping the forces together in another way.

### Standard Sprays of the World



If swarming occurs when honey is coming in, the hive should be at once removed to a new place and a new hive placed in the old location, the bee specialists of the U. S. Department of Agriculture advise. The swarm is now hived in this new hive and, because it is in the old location, all returning field bees from the colony join the swarm and the population is kept up. Later on there are various ways of reducing the parent colony still more, for by this means the issuing of worthless after-swarms is prevented.

The beekeeper who desires to get the greatest possible crop does not permit even one swarm to issue if he can help it. When swarming time arrives, he examines every colony once a week. If he finds queen cells with eggs or small larvae in them, he cuts every one out and thus makes it necessary for the bees to build other cells, if they still persist in their efforts to swarm. If, however, he finds larger cells with old larvae he knows that the impulse to swarm has developed too far, so he must satisfy it in some way. He may make an artificial swarm—at his convenience and not at that of the bees—or if he is a producer of comb-honey he may cut out all the queen cells and cage the queen for ten days until they get over their "swarming fever."

The skill of the beekeeper can usually be measured by the results of his work in curbing swarming. The poetry which others see in issuing swarms is entirely lost on a good beekeeper. The methods of swarm control are given in Farmers' Bulletin 503, "Comb Honey," which may be obtained on request from the United States Department of Agriculture.

**High Cost of Food Necessitates  
Judicious Management.**

Purchasing food supplies and planning and preparing three meals a day has always been a problem, but with the increase in food prices the problem is becoming more difficult every day. The abnormal price of certain foods leads the careful housewife to seek substitutes, but if she does not know the

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of the Northwest**

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Our own warehouses at all shipping points in all districts.

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SOLD SO FAR THIS SEASON

Everybody is shipping fruits and vegetables in our bushel shipping baskets, simply because they are the best and cheapest package on the market.

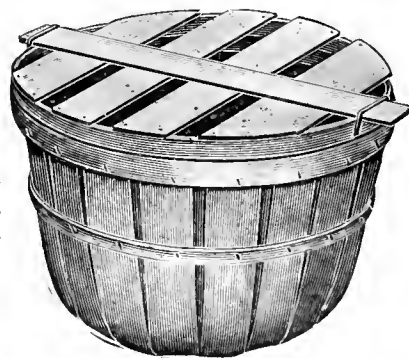
The demand for these baskets promises to exceed the production this year.

Therefore order now for quick shipment before the advance in freight rates.

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## Steel Box Strapping




Used in connection with metal seals consists of encircling a package with a metal strap, drawing the strap very tight and interlocking the overlapping strap-ends within a metal sleeve (**SIGNODE**) in such a manner that the joint has a greater tensile strength than the strap itself. Nails, rivets and buckles, with their attendant objections, are entirely eliminated.

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Acme Strapping packed in bbls. of about 500 lbs. or larger pkgs.  
Metal Seals packed in cartons containing 2,000-2,500 seals.

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(California)

relative values of the different foods she cannot make her substitution intelligently. A knowledge of the part that each of the different classes of foods performs in the body upkeep is essential. Without this knowledge serious mistakes may be made. Miss Bah Bell of the Missouri College of Agriculture makes a few suggestions relative to decreasing the cost of living. (1) Make a thorough study of the different classes of foods and the function of each in the body. (2) Plan meals carefully, so that foods are not duplicated. For instance, do not serve Irish and sweet potatoes in the same meal; cheese and meat; rice and potatoes; spinach and lettuce; navy beans and meat. (3) Substitute, in part, corn starch for eggs; rice for potatoes; meat substitutes for meat; some good oil for olive oil; some product for butter, especially in cooking; cornmeal for wheat flour. Milk is one of the best foods and consequently can be substituted for higher priced foods. Skim milk has a high protein value.

The cost of living may be reduced by (1) Purchasing food supplies in large quantities when a good storeroom is available, and by purchasing foods in season. (2) Preparing the exact amount of food needed. Some foods cannot be warmed or made over. (3) Planning meals to utilize all "left overs" and thus reducing the waste which ordinarily goes to the garbage can. (4) Training children, and adults as well, not to waste foods at the table by leaving quantities on their plates. (5) Doing your own marketing, if possible. (6) Growing vegetables on every foot of ground available and by canning fruits and vegetables; storing eggs, butter and other products to be used during winter.

#### A Late O. A. C. Appointment

Frank H. Lathrop, who has had special training and extended experience in the habits, injury and control of apple plant lice in the eastern, central and southern parts of the United States, has been appointed research assistant in entomology at the Oregon Agricultural College Experi-

# Sebastopol Gravensteins

The crop of famous Sebastopol Gravenstein Apples is now moving. Season closes August 26th. The best apples from over 200 of our best orchards. Community packing houses insure uniform pack.

See our representative or wire us.

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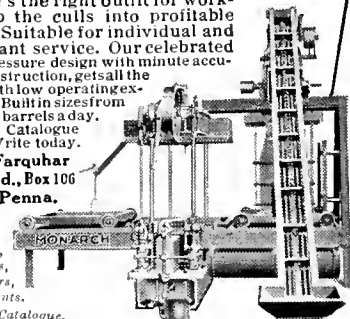
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ment Station. He will conduct laboratory and field work in entomology, first specializing in aphids with a view to more effective control of this pest in Oregon orchards. He was graduated from the Clemson, South Carolina, Agricultural College, took the Master's Degree at Ohio State University, where he was graduate assistant and research fellow in entomology and zoology. He was also research assistant in these subjects at the South Carolina Station and later at the New York Experiment Station.

### Valuable Bulletins

Gardeners, poultrymen, housewives, and all who are "doing their bit" in the nation-wide food production campaign, will find it possible to largely increase their efficiency by securing and studying some of the bulletins prepared by the Oregon Agricultural College, Corvallis, Oregon, contained in the following list. They are carefully compiled and the instruction and information contained in them is dependable.

118. Ammonification and Nitrification Studies of Certain Types of Oregon Soils.
119. A Report of the Experimental and Demonstration Work on the Substation Farms at Moro, Burns, Redmond and Metolius.
140. Economical Use of Irrigation Water.
142. The Culture of Small Fruits on Irrigated Sandy Land.
5. Incubating and Brooding Chickens.
83. Principles of Breadmaking.
91. Insect Pests of Truck and Garden Crops.
99. Fowl Tuberculosis.
106. Farm Butter Making.
107. Care of Milk and Cream.
- 110-111. Food for the Family.
126. How to Conduct a Fly Campaign.
127. Breeds of Chickens.
146. Strawberry.
147. Oregon Station Trap Nest.
157. Feeding for Eggs.
158. Trapping Moles for Market.
159. Housing of Chickens.
165. Loganberry.
167. Programs and Suggestions for Study Clubs in Home Economics.
183. Home Co-operators' Demonstration Project.
184. Potato Growing in Oregon.
185. Improvement of Seed Potato.
186. Potato Diseases.
190. Preserving Eggs.
192. Brambles.
218. Methods of Cleaning.
222. The School Luncheon.
201. Oregon Rural Credits.
207. Field Bean.
203. Clover Insects.
- Emergency Circulars:
  - Cold Pack Method of Canning.
  - Foods—Preparedness.
  - Home Vegetable Garden.
  - The Hen in Town.

### Are You Proud of Your Front Yard?

The improvement of rural highways and the building of good roads lay a new responsibility upon every farmer. It means that there will be a greatly increased amount of traffic passing by his homestead; it will bring him more closely in touch with the outside world, including citizens from the immediate neighborhood, from the surrounding counties and indeed from many parts of other states. The farmer and his

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home life are now brought more directly to the attention of the general public. Under these circumstances, H. F. Major of the Missouri College of Agriculture suggests that he take more pride in the development of his home grounds. "A man is known by the company he keeps," so the character of a man is judged by his home life and the atmosphere with which he surrounds himself. The improvement of the home grounds does not necessarily imply spending great sums or building an extensive "Show Place" decorated with architectural furnishings and formal gardens. It means treating the yard as an out-of-door living room; as a part of the house. It means, keeping it clean and neat and comfortable and cheerful. It should be decorated with fine trees, beautiful flowering shrubs, and with annual and perennial flowers that fill the soul with gladness and make home a lovable spot surrounded by endearing associations that tug at the heart-strings and give the full meaning of "Home, Sweet Home."

**Members Fruit Growers' Agency**

The following comprises a list of the selling concerns and associations that are members of the Fruit Growers' Agency for 1917, making the Fruit Growers' Agency the strongest and largest organization of its kind in America, making the Fruit Growers' Agency for the first time strong enough to be effective in carrying on the excellent work started in the year 1916, with which the growers are familiar through the various articles of information relative to the Fruit Growers' Agency that have appeared in BETTER FRUIT and other publications. If there is any association or selling concern that has not joined they should do so without delay:

- Cashmere Fruit Growers' Union, Cashmere, Washington.
- Indian Cache Ranch, Lewiston, Idaho.
- Methow Pateros Unit, Pateros, Washington.
- Brewster District Unit, Brewster, Washington.
- C. E. Berry, College Place-Rlalock Growers' Association, R. F. D. No. 2, Walla Walla, Washington.
- Yakima Valley Fruit Growers' Association, North Yakima, Washington.

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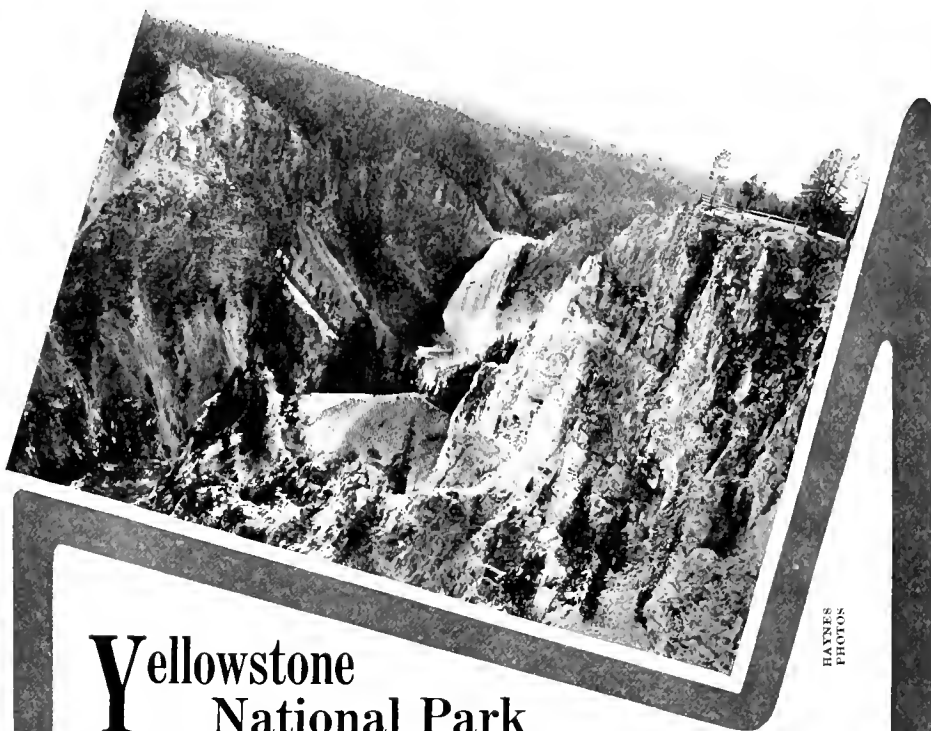
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HAYNES PHOTOS

**Yellowstone National Park**

is best known because of its geysers.

Yellowstone is more than "Geyserland." It is destined to become famous as the "Nation's Supreme Vacationland." Write WM. McMURRAY, General Passenger Agent, O.W. R. R. & N. Co., Portland, for a folder describing the great recreative value of Yellowstone.

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- Mosier Fruit Growers' Association, Mosier, Oregon.
- Northwestern Fruit Exchange, Stuart Building, Seattle, Washington.
- Idaho-Oregon Fruit Growers' Association, Payette, Idaho.
- Okanogan Growers' Union, Okanogan, Washington.
- North Pacific Fruit Distributors, Spokane, Washington.
- Rogue River Fruit and Produce Association, Medford, Oregon.
- Wenatchee North Central Fruit Distributors, Wenatchee, Washington.
- Wenatchee Apple Land Co., Paulsen Building, Spokane, Washington.
- White Bros. & Cium, North Yakima, Washington.
- Blalock Fruit and Produce Co., Walla, Walla, Washington.
- Wenatchee Produce Company, Wenatchee, Washington.
- Northern Fruit Company, Wenatchee, Washington.
- E. Wagner & Son, Wenatchee, Washington.
- Clarke-Oliver Apple Company, Wenatchee, Washington.
- Wenatchee Growers' Exchange, Wenatchee, Washington.
- Sunnyslope Fruit Exchange, Wenatchee, Washington.
- Richey & Gilbert Company, Toppenish, Washington.
- Hood River Fruit Company, Hood River, Oregon.
- Cashmere Apple Company, Cashmere, Washington.
- Earl Fruit Company of the Northwest, Mohawk Building, Spokane, Washington.
- White Salmon Valley Growers' Association, White Salmon, Washington.
- Dennis, Kimball & Pope, Inc., Medford, Oregon (E. M. McKeany).
- Omak Fruit Growers, Inc., Omak, Washington.
- Yakima Commercial Club Association, North Yakima, Washington.
- Willamette Valley Fruit Exchange, Alvadore, Oregon.
- Peshastin Fruit Growers' Association, Peshastin, Washington.
- Growers' Service Company, North Yakima, Washington.
- Dufur Orchard Co-Owners' Company, The Dalles, Oregon.
- Montana Fruit Distributors, Hamilton, Montana.
- Baker-Langdon Orchard Company, Walla Walla, Washington.
- Skookum Packers' Association, Leavenworth, Washington.
- Apple Growers' Association, Hood River, Oregon.

**These Suggestions Will Help in the Fly Campaign.**

The Missouri College of Agriculture has received many requests for suggestions in conducting fly campaigns. Observation of the following steps will bring effective results: (1) Kill as many flies as possible when they appear in spring. These first flies are the parents of the millions of germ-laden flies that will make life miserable throughout the summer. One fly killed early in the spring is equal to millions killed in August or September. (2) Endeavor to prevent flies from breeding or feeding on the premises. Some flies will escape,

**ORCHARD YARN**

Listen, Orchardists: Now is the time to tie your fruit trees. All limbs can be readily seen; the spurs are less easily broken off than later; the saving of time is considerable and yarn is probably as cheap as it will be this season. **Orchard Yarn** is the correct method of supporting trees and the saving of a few trees is worth the cost of the yarn for an entire orchard.

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**A** good many people are looking into what makes men change over to W-B CUT and stick to it so. Tobacco is tobacco, but all chewing, isn't all tobacco. You don't have gummy excess sweetening to chew out of W-B CUT, before you get down to satisfaction. The shreds are tobacco, through and through—and the richest, sappiest tobacco that grows. You notice the difference at once—W-B CUT goes twice as far as ordinary plug.

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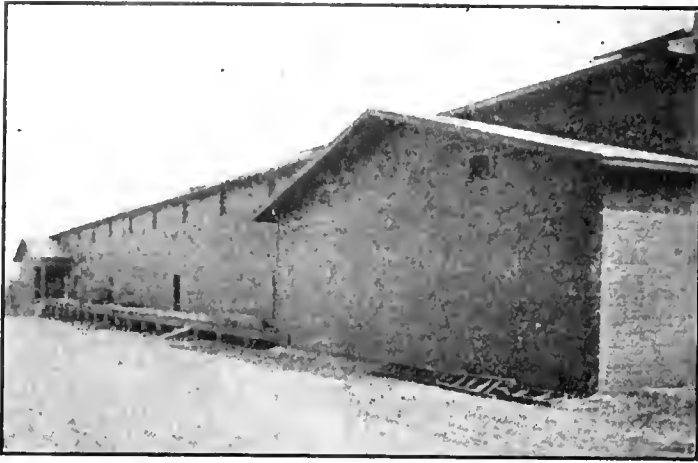
Dealers everywhere and at our service stations.

**STANDARD OIL COMPANY**  
(California)

For tractors, Zerolene Heavy-Duty is especially recommended.







This Hood River Apple Storage House  
IS INSULATED WITH

## Cabot's Insulating "Quilt"

at the lowest cost and with the greatest efficiency and permanence. Quilt is made of eel-grass, the fiber that will not rot, will not burn, will not harbor insects or vermin. It make a thick cushion of dead air spaces that keeps out heat better than other insulators that cost much more and that are not permanent, sanitary or safe. One layer of Quilt is equal in insulating power (by actual test) to forty or fifty layers of common building paper. It is easy to apply, low priced and never goes to pieces in the work.

Send for sample of Quilt, with catalog and prices, to

**SAMUEL CABOT, Inc.**, Manufacturing Chemists, Boston, Mass.  
or to the Northwest Distributors:

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**TIMMS, CRESS & CO.**, Portland

Conservo Wood Preservative—preserves posts, planks and all other timbers.  
Cabot's Creosote Stains—for shingles, siding and other outside finish.

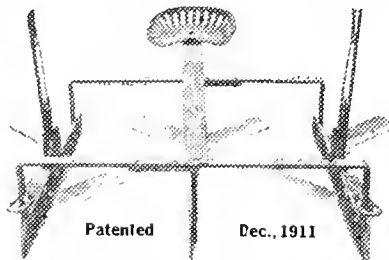
United States Government Bureau of Standards tests show Cabot's Quilt more efficient than any other insulator, including cork board.

## Golden Gate Weed Cutter and Mulcher

Farmers, order early if you want the Golden Gate Weed Cutter and Mulcher, as the demand this year will be great, as it not only cuts weeds, but kills them, and leaves finely pulverized top soil. Cuts any depth. Prevents evaporation by working under the soil without disturbing soil on top. Write for circular.

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PORTLAND, OREGON

because they will breed in decaying vegetable matter or in the droppings of animals in the pastures. However, these will be almost negligible. (3) Fly traps are essential. They catch the flies coming from breeding places and thus prevent their migrating to the house. (4) Enlist the co-operation of all dealers in food supplies. Show them the danger from flies and what may result from unsanitary surroundings of their premises. If necessary, patronize only those dealers who keep their premises and their products properly screened. They will soon clean their premises and eliminate flies if the campaign is brought to them in this financial light. (5) Endeavor to obtain community co-operation in the fly campaign. Do not be discouraged if a few people cannot be induced to clean up their premises. As soon as they see that the campaign is effective they will readily co-operate.

### Garden Plan Saves Labor.

A little time spent in planning a garden will save a great deal of subsequent labor. C. G. Carpenter of the Missouri College of Agriculture suggests that the rows of vegetables run north and south, so that one side will receive sunlight in the morning and the other in the afternoon. This is the best arrangement wherever it is possible. The slope of the garden, if it is on a hillside, may prevent running the rows north and south. It is also advisable to space the rows so that horse-drawn implements can be used. Sometimes it pays to arrange even such small plants as lettuce and radishes so that they may be cultivated with labor-saving implements. In general, planting should be begun on one side of the garden and continued to the other. This will enable the gardener to keep the weeds down on the unplanted area with minimum labor. Vegetables planted at the same time and requiring similar cultivation should be grouped in adjacent rows. However, the time of planting is more important than the kind of cultivation required. Rhubarb, horseradish, asparagus, winter onions and other plants which occupy the ground longer than a year should be set apart. Parsnips, salsify and similar crops should be placed near the perennials. Vegetables which require only a short growing season, such as onions, cabbage, lettuce, radishes, peas and beets, and second plantings of these crops may follow in order as planting proceeds across the garden.

## Attention, Fruit and Vegetable Growers

CAN your Fruits, Vegetables, Meats and Fish in Sanitary Cans, with the H. & A. Steam Pressure Canning Outfits, built in Family, Orchard and Commercial size; seal the cans with the H. & A. Hand or Belt Power Double Seamer; they will save your perishable fruits and vegetables at ripening time when nothing else will. Write for descriptive matter.

**Henninger & Ayes Mfg. Co.**  
47 S. First St., Portland, Ore.

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**SIMPLICITY, ECONOMY AND EFFICIENCY  
ABSOLUTELY NO BRUISING**

Two men, one an **experienced machinest**, the other an **experienced cabinet maker**, with many years' practical experience in the fruit industry in Hood River, combined their **mechanical skill** and practical knowledge of fruit handling in perfecting a **grading machine**—a **model of simplicity, economy and efficiency**.

There is no machinery—Nothing to get out of order or be fixed connected with the Ideal Fruit Grader. It is practically all wood.

The operation is simple, consisting of a belt for a conveyor, operated by electricity or gasoline engine, and short elastic belts, which move each apple in the proper bin from the belt conveyor.

The Ideal Fruit Grader divides the crop into Extra Fancy, Fancy and C-grade, all at one time. The Extra Fancy being divided into seven bins on one side, the Fancy into seven bins on the other side and the C-grade going into six bins at the end of the grader.

Built for four sorters, the grader is 28 feet long and 9 feet wide built for eight sorters, 32 feet long.

In 1916 we packed 9,000 boxes with the Ideal Fruit Grader with two packers without the machine ever stopping once for repairs of any kind. Further detailed information, illustrated circulars and prices will be furnished upon request.

**IDEAL FRUIT AND NURSERY CO.**  
HOOD RIVER, OREGON

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**United States Steel  
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**PEARSON**  
**E**CONOMY in buying is getting the best value for the money, not always in getting the lowest prices. PEARSON prices are right.  
**A**DHESIVENESS or holding power is the reason for PEARSON nails. For twenty years they have been making boxes strong. Now, more than ever.  
**R**ELIABILITY behind the goods is added value. You can rely on our record of fulfillment of every contract and fair adjustment of every claim.  
**S**ATISFACTION is assured by our long experience in making nails to suit our customers' needs. We know what you want; we guarantee satisfaction.  
**O**RIGINALITY plus experience always excels imitation. Imitation's highest hope is, to sometime (not now) equal Pearson—meantime you play safe.  
**NAILS**

**TRUE-TO-NAME**  
**Free From Pests**

That's what you want when you plant fruit trees. That's what you get when you order the

**O. & F. Unxld Brand**

Get our prices before planting this spring.

Largest stock in the Northwest.

All grown on virgin soil.

Everything in fruit trees and a full line of

**Flowering Shrubs  
Roses, Shade and  
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MOST IMPORTANT FACTOR  
IN THE DISTRIBUTION OF  
THE COUNTRY'S FANCY  
APPLES  
AND OTHER FRUITS

OUR MARKET-  
THE WORLD

# BETTER FRUIT

VOLUME XII

SEPTEMBER, 1917

NUMBER 3

## SPECIAL FEATURES

Apple Packing Instructions.

Distribution—Showing all the cities under 3,000 population sold in carlots direct from Northwest.

Government Statistics on the Apple Crop of United States.

Northwestern Apple Crop Estimates.

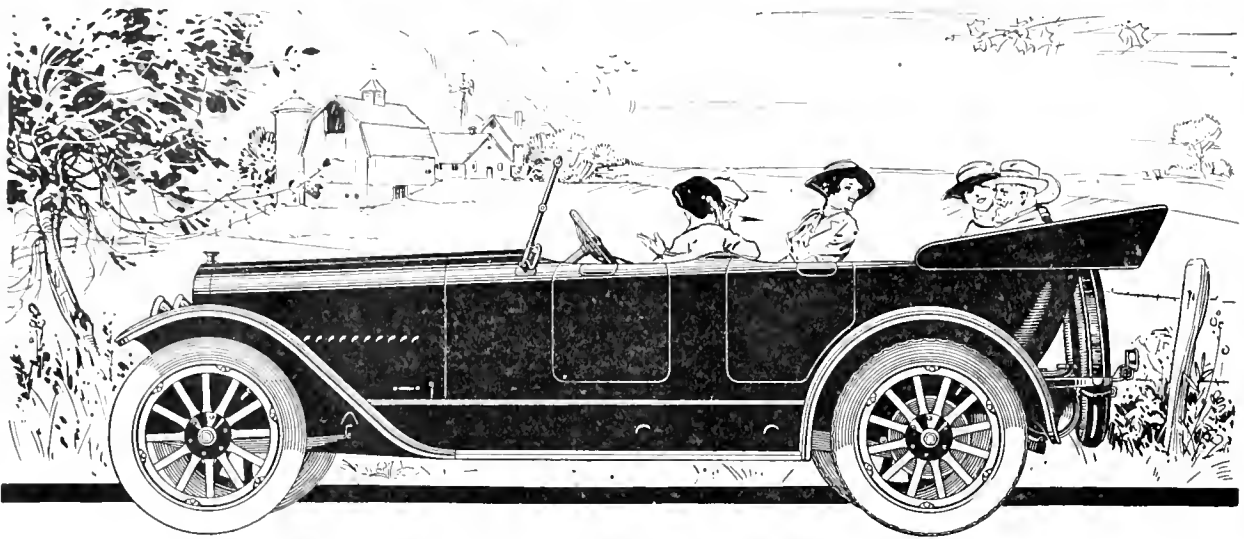
Government Prices on Farm Products, Showing Increased Prices from 1909 to date.

Bitter Pit, or Core Rot—Continued.

BETTER FRUIT PUBLISHING COMPANY, PUBLISHERS, HOOD RIVER, OREGON

Subscription \$1.00 per Year in the United States; Canada and Foreign, Including Postage, \$1.50.

Single Copy 10 Cents



# On Country Roads

## We Claim a Car Needs 100% Over-Strength

Up to three years ago our margins of safety were 50 per cent in the Mitchell. And that was considered excessive. The chief trend then was toward exceeding lightness.

But we had watched 70,000 Mitchells under all road conditions. They showed wonderful endurance. Still we saw that some conditions called for stronger cars.

So we started to double our margins of safety. We adopted the standard of 100 per cent over-strength. And we still maintain it, despite advancing steel costs.

Our safety parts are vastly oversize. Over 440 parts are made of toughened steel. And we use much Chrome-Vanadium.

### Some Sample Results

Two Mitchell cars have been run over 200,000 miles each. That is 40 years of ordinary service. So we know that Mitchells as now built can give lifetime service.

Not one Mitchell rear spring has broken since this standard was adopted. That is an amazing record.

The demand for Mitchells has multiplied, especially in hard-road sections. The export demand has grown enormously, to countries like South America. And scores of America's leading engineers have chosen Mitchells for their personal cars.

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In the latest Mitchells you will find 31 features which nearly all cars omit. You will find vast added luxury—about 25 per cent. You will find a heat-fixed finish which stays new.

You will find at least 20 per cent extra value as compared with other cars in this class. All paid for by factory economics due to Bate efficiency methods.

See these superlative cars. If you don't know our nearest dealer, ask us for his name.

MITCHELL MOTORS COMPANY, Inc.  
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**Mitchell** —a roomy 7-passenger Six, with 127-inch wheelbase and a highly developed 48 horsepower motor.

**\$1525**

Four-Passenger Roadster, \$1560.  
Sedan, \$2240. Cabriolet, \$1960.  
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Also Town Car and Limousine.

*Mitchell*  
Sixes

**TWO SIZES**

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—a 5-passenger Six on similar lines, with 120-inch wheelbase and a 40-horsepower motor, 1/4-inch smaller bore.

**\$1250**

All prices f. o. b. Racine

# FIELD BOXES FROM WAGON TO STORAGE—BY GRAVITY



## Piling Field Boxes Into Storage at Rate of Sixteen per Minute

Illustrating how the College Heights Orange & Lemon Association, Clarimont, California, have speeded up work throughout their plant by an installation of Mathews Gravity Conveyers.

### Portable Roller Conveyor Units

Above is shown a typical Portable Gravity Conveyor. Rollers are spaced to suit sizes of packages to be handled. Diameter of rollers, 2 1/4 inches, cut from cold-drawn, seamless steel tubing, fitted with case hardened, detachable ball bearings and full-length axles. Lock bars hold all rollers rigidly in place, eliminating use of nuts. Frame rails are of flat bar steel, rigidly braced crosswise and lengthwise. Whole unit construction is strong, neat, compact, and capable of giving almost unlimited service.

### Reversible Curves

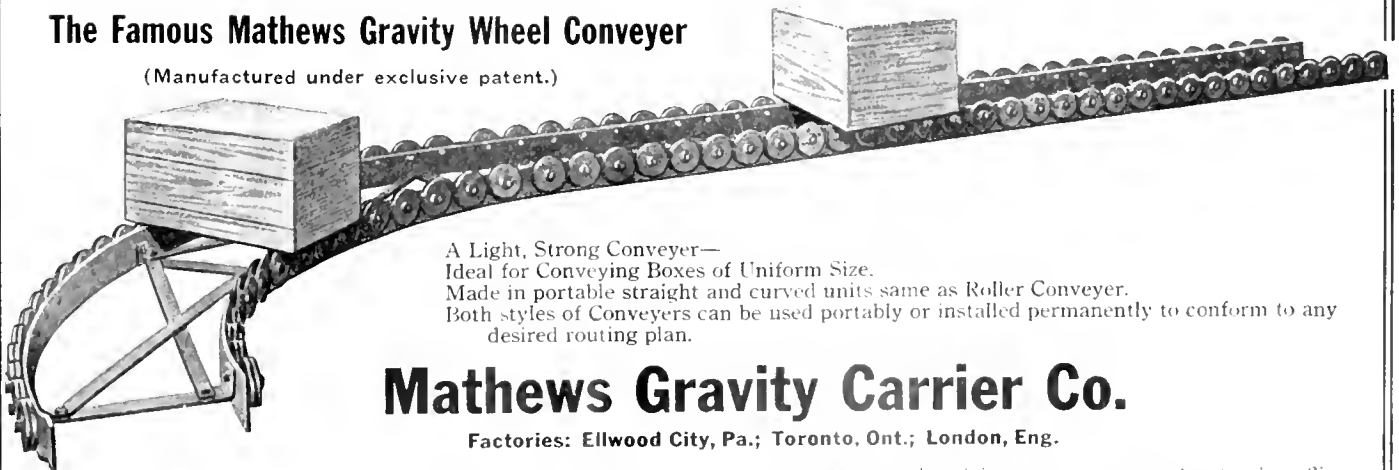
General construction same as straight units. Curves can be made to direct conveyer lines in any desired direction to fit special conditions or requirements.

### Automatic Straight-Lift Elevator — Automatic Inclined Elevator — Gravity Roller Spiral — Spiral Chutes, Etc.

These are useful in providing continuous routing of packages between floors, designed to connect up with gravity conveyer lines.

## The Famous Mathews Gravity Wheel Conveyor

(Manufactured under exclusive patent.)



A Light, Strong Conveyor—  
Ideal for Conveying Boxes of Uniform Size.  
Made in portable straight and curved units same as Roller Conveyor.  
Both styles of Conveyers can be used portably or installed permanently to conform to any desired routing plan.

## Mathews Gravity Carrier Co.

Factories: Ellwood City, Pa.; Toronto, Ont.; London, Eng.

**Important Notice** Expert advice and personal service can be had on short notice, by addressing one of our nearest Coast agents. This service is free and without obligation. We are also prepared to ship all orders for standard roller and wheel conveyor units promptly.

Address all inquiries to our nearest Coast sales office.  
Spokane—Hofius Steel & Equipment Co.  
Wenatchee—Wells & Wade.  
Seattle—W. R. Hendrey Co., 313 Hoge Bldg.  
San Francisco—Mailler Searles, Monadnock Bldg.  
Los Angeles—John F. Willard, 315 Broadway.



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Our Specialties Are

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*America's Greatest Orchard Project*

The home of the big "A" brand of apples.

Winner of first prize at the National Apple Show, 1916,  
in shippers' contest.

Only 22 miles from Spokane, Washington  
Gravity Irrigation. Healthful Climate  
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Tracts sold on easy monthly payments.  
Send for free booklet.

### Arcadia Orchards Company

DEER PARK, WASHINGTON

# BETTER FRUIT

AN ILLUSTRATED MAGAZINE PUBLISHED MONTHLY IN THE INTEREST OF MODERN, PROGRESSIVE FRUIT GROWING AND MARKETING

## Packing Apple Ammunition

By O. H. Barnhill, Ashland, Oregon

**T**HE writer desires to present to the apple growers of the United States a preparedness program to be used in the impending war with fruit consumers in this and other countries. The great war has proven the importance of plenty of ammunition, rightly prepared. Battles are not decided so much by the number of men engaged as by the projectiles which the attacking army is able to throw into the ranks of the enemy.

So it will be in the impending fruit fight. The army of growers which is best prepared with projectiles in the shape of Baldwins, Jonathans, Greenings—and, of course, Spies—will be the first to cause consumers to capitulate and pay a handsome tribute in the coin of the realm. The most effective work is done by the big guns: those which land on the eating public with three and four-tier fruit balls. It is well nigh useless to shoot little five-tier culls and crabs at the consumer.

It is a debatable question whether these luscious balls should be encased in barrels or boxes. It is an undeniable fact, however, that the apple-growers' army of the Northwest has succeeded in exacting the highest tribute from consumers in previous wars, and with them the bushel-box cartridge is a prime favorite. Other armies have emulated their example in a small way, generally with excellent results. More would prepare the same kind of ammunition if they knew how. Skilled packers are hard to get and demand high wages.

This message from a private in the ranks is addressed to other soldiers of the soil and gives away all the secrets of the apple-box trade. The first thing needful is a factory for filling fruit shells, or boxes, with apple ammunition. A cheap building will suffice, but it should be roomy and well lighted with windows on the south side. It need not be more than eight feet to the eaves, as it is unprofitable to pile boxes more than six high. A long building is best, because it affords plenty of room for packers and graders along the south side. Sixteen by forty-eight feet is about right for a thousand-box crop. Large growers have picking and packing crews working at the same time, the fruit being delivered from the orchard at one side of the building and the packed product taken away to the warehouse from the other side.

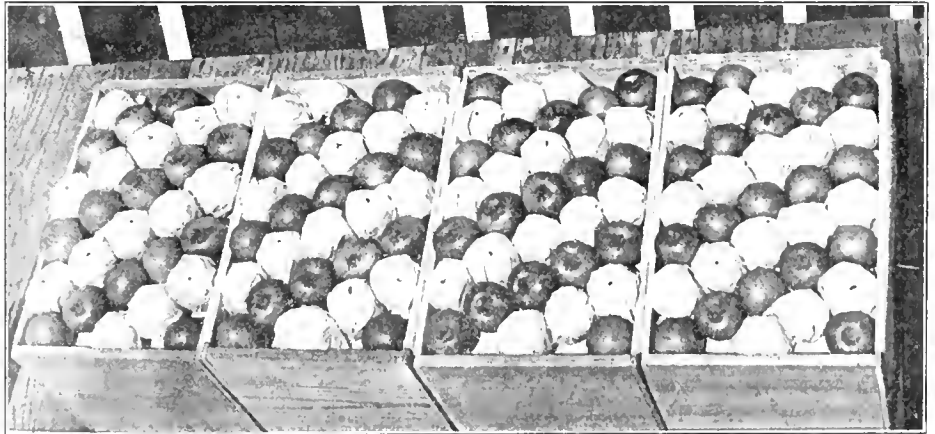
It is a common practice to pack from a table consisting of a square frame with burlap or canvas stretched across the top, upon which the apples are poured. The apples are more or less bruised by this method, especially the

odd specimens, which are apt to be picked up and thrown down again a number of times. A better plan is to pack direct from the boxes, using the same table on which the fruit is being graded. This table is made of two twelve-inch boards running along the south wall and supported by cross strips underneath four feet apart, from which legs extend to the floor. To get the right height, set a box crosswise on the table and have a workman of medium height stand in front of this box, which should be high enough so the tips of the fingers will touch the bottom when the arms are extended. The table should slope upward toward the wall so the end of the box farthest from the packer will be about six inches higher than the near end. A half-inch strip or a row of cleats nailed along the lower side of the table prevents the boxes from sliding off.

Grading machines are a great convenience, but they are quite costly and only separate the fruit into sizes, leaving the quality grading to be done by the packers. The latter are not apt to

do a good job of grading, since they are paid by the box and haven't time to inspect each apple. If the apples must be given a separate sorting in order to grade for quality they might as well be divided into sizes at the same time, as this will take little extra work. It isn't necessary to have all the apples in a box of exactly the same size. In fact it is easier to pack from a box in which some of the apples are slightly larger than others, as it is sometimes necessary to use a little larger apples in the middle of the box to make the bulge or crown.

All the four-tier sizes—96 to 125—of one grade may be put into one box and the four and one-half-tier sizes—138 to 175—into another. Those smaller than 175 go into one box and those larger than 96 into another, making four boxes into which the apples are separated. The packers subdivide the four-tier fruit into four sizes: 96, 104, 112 and 125; the four and one-half tiers into an equal number: 138, 150, 163 and 175. The number of sizes into which the little and big apples are divided de-



Top View of Three-tier Pack. 138, 150, 163 and 175 Apples. By O. H. Barnhill, Ashland, Oregon



Top View of Three-tier and Two-tier Packs. 125, 112, 96 and 88 Apples. By O. H. Barnhill, Ashland, Oregon

pends upon how small are the former and how large the latter.

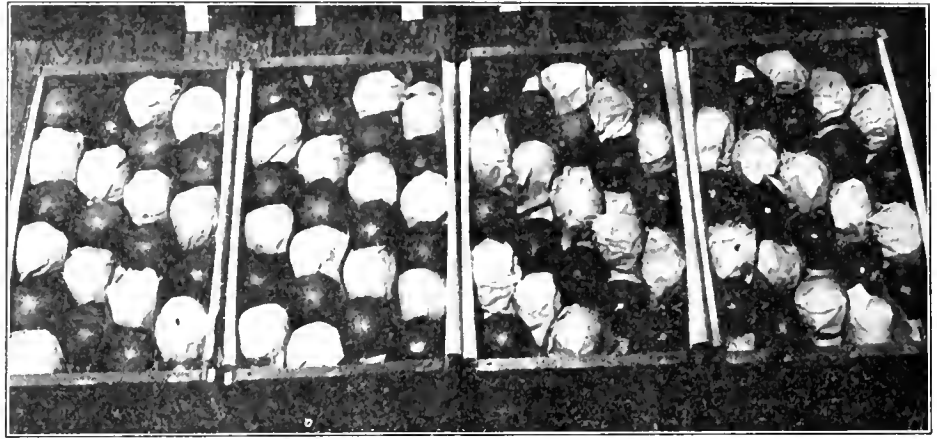
Sample apples are a great aid in size grading. Select specimens of the largest and smallest sizes which go into each box and keep them in front of their respective receptacles. These guide apples should be of characteristic shape, as unusually long or flat apples are apt to mislead.

Here in the Northwest there are three standard grades: Extra Fancy, Fancy and Choice. These grades have been found very unsatisfactory and growers elsewhere are not advised to follow them. In the first place, the names are misleading, because the word "choice" conveys an idea of quality equal to "fancy" in the mind of the eating public. Furthermore, it is impracticable to divide fruit into more than two merchantable grades. Fancy and Extra Fancy are practically the same, no material blemishes or defects being allowed in either, so why take all the trouble of keeping them separate? The difference is more in name than in fact, or would be if the grading rules were followed to the letter.

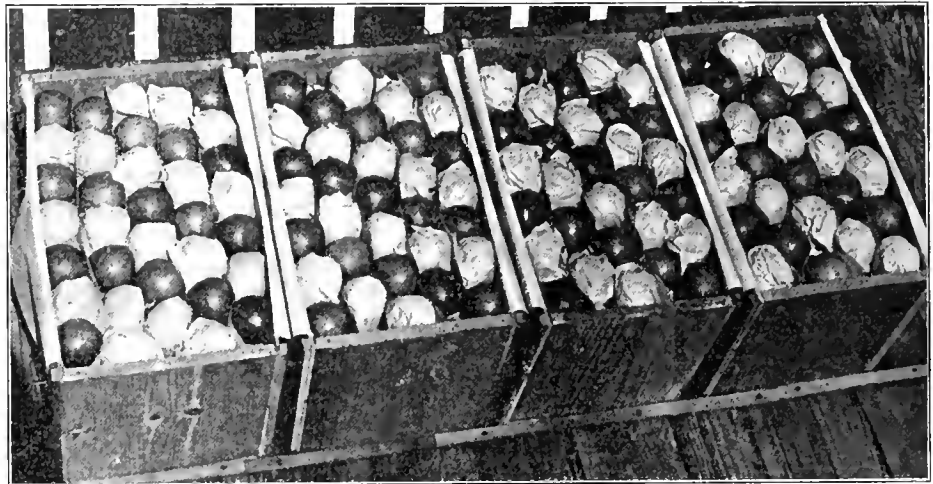
As a matter of fact each man is a law unto himself when it comes to grading fruit. No two persons will interpret a set of grading rules in exactly the same way, any more than they will a collection of rules for conduct, such as the Ten Commandments. Furthermore, a consideration for one's own interests or the interests of one's employer, real or fancied, will influence one's judgment, consciously or subconsciously, no matter how conscientious one may be. To these peculiarities of the human mind is due the differences in individual brands of fruit, as much as to the quality of the product produced.

Regardless of grade names, most fruit is considered as either first or second quality and may—in fact should be—considered as such. Just where to draw the dividing line between firsts and seconds is a debatable point and one upon which no hard-and-fast rules can be laid down. It is well enough to say that "all red varieties shall be at least seventy per cent good red color," but what constitutes "good red color"? Moreover, some varieties are a good deal redder than others and it would be an obvious mistake to insist that a Ben Davis should have as much color as an Arkansas Black, or even a Gano. So let us say that red varieties shall be well colored to admit them to the first grade, and let it go at that.

First-class apples must also be well shaped, which is another place where one's judgment is permitted considerable play. Both first and second-grade apples must be in good condition—not shriveled—free from worms, scale or other insect pests, and the first should be practically free from scab, stings, soft or dry rot, bruises, watercore, limb rubs, skin breaks, missing stems, russet spots and any other injuries or imperfections. In the interpretation of this rule care should be taken to distinguish between picking and other bruises, since the former may be admitted if not too large or numerous. Small and inconspicuous russet spots and frost



Side View of Three-two and Two-two Packs. 125, 112, 96 and 88 Apples.  
By O. H. Barnhill, Ashland, Oregon



Side View of Three-two and 1½-tier Packs. 138, 150, 163 and 175 Apples.  
By O. H. Barnhill, Ashland, Oregon

marks may be passed. It is hard to draw the line here, because some varieties, such as the Newtown, naturally have a good deal of russeting around the stem. So it is with stings, scab and limb rubs, which are often concealed near the calyx or hidden by russeting, being of such microscopic dimensions that only the closest scrutiny will reveal them. And yet, if a grader be instructed to admit even the very tiniest of blemishes he is apt to overlook some that are quite large. The old saying, "Give a man an inch and he will take a mile" applies with peculiar force to fruit grading. The most stringent rules are the safest for the average workman.

Second-grade apples should be in good condition and free from insects. They may be somewhat misshapen, but should not be "crooked up" by aphids. Neither should they be too badly "stung up," although a few blemishes of this kind may be omitted, care being taken to distinguish between a sting and a worm hole. When in doubt, throw it out. The rule for scab is to pass a spot as large as a dime, or a number of spots whose combined size is no larger than a dime. The same rule might apply to limb rubs. Bruises and rotten spots should, of course, be excluded.

The four boxes into which the four sizes of first-class apples are graded should be placed on one side of the box from which the apples are being sorted, with four boxes to receive the seconds

on the other side. Culls are thrown into a box beneath the table. As the boxes are filled they are stacked away for packing, each size and grade being piled separately.

Girls make better packers and graders than men, because they are more careful and teachable. On the other hand, they are not strong enough to handle a box of apples, so it is necessary to furnish male help to carry the fruit to and away from them. The usual price paid for packing is five cents a box and for grading two cents, the latter for boxes level full. One cent a box is paid for nailing up boxes, a nailing press being needed for this work. The same price is paid for making boxes, for which a table is provided with two sets of thin boards fixed in an upright position to hold the end pieces. Five-penny box nails are used, four for each cleat and side board. If the cleats split they should be soaked in water.

Apple paper generally comes in two sizes, 10x10 and 9x9, the former for four-tier sizes and larger, the latter for four-and-one-half tier and smaller. Cardboard is no longer used between the layers, but one sheet is placed in the bottom of the box and one on top, inside the lining paper. Two sheets of the latter are folded over the sides of the box, the edges lapping over the crack in the bottom. The wrapping paper is held in a shallow tray fast-

Continued on page 25

# Monthly Crop Report, Dept. of Agriculture

# Turn Apple Waste to PROFIT



**Cider Making**  
 Will Pay Someone in Your Section Handsomely  
**WILL IT BE YOU?**  
 Start a paying business that grows almost without effort. Thousands are making **Big Money** turning apple waste into profits for their neighbors by making **Good Marketable Cider** from wind-falls, culls, undergrades, etc., on

## Mount Gilead Hydraulic Cider Presses

Sizes 10 to 400 lbs. daily. We also make cider evaporators, apple butter cookers, vinegar generators, filters, etc. All machinery is fully guaranteed. All power presses have steel beams and sills. Write today for catalog.

**HYDRAULIC PRESS MFG. CO.**  
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**The Berger & Carter Co.**  
 San Francisco, Los Angeles, Portland, Seattle

All farm products have shown a steady increase in price, with very few exceptions, from 1910 to 1917. The following table is not only very interesting but very instructive. Attention is called to a few of the important products and the increases shown: Hogs, \$8.15 to \$13.35; beef, \$4.84 to \$8.30; sheep, \$5.47 to \$9.32; wool, 19.0 to 54.3; milch cows, \$42.86 to \$72.81. Horses are an exception, showing a decrease from \$148 to \$135, probably due to automobiles and auto tractors. Cabbage, \$2.27 to \$3.23; onions, \$1.04 to \$2.01; beans, \$2.34 to \$8.07 (nearly 400% increase, possibly due to the large demand for beans for army requirements); wheat 90.4 to 228.9; corn, 78.1 to 196.6; oats, 49.8 to 73.7; barley, 57.1 to 114.5; potatoes, 83.6 to 170.8; hay, \$9.28 to \$13.42; cotton, 10.3 to 24.3; butter, 22.4 to 34.0; eggs, 19.2 to 29.8.

the exception of apples, which is not shown, is all the way from 50 to 300 per cent. It does certainly seem that with every product increasing in price, as given in the above scale of percentages, that the United States, the richest nation of the world, possessing over one-third of all the gold in existence, having a banking capital reported equal to all the other nations combined; in connection with the immense export trade to the warring nations, which are largely dependent upon the United States for supplies; with business more prosperous than it has been in the history of the country; with everybody at work at splendid wages, the opportunity for getting good prices on apples is certainly very hopeful, and so far as we can see there is no reason why, if the apple crop is properly handled and properly distributed, growers should not get splendid prices—prices that will afford them a good living, pay them well for their labor and a reasonable amount on the investment.

There is no comparison on apples, as the prices given are for the 1916 crop. The increase in every commodity with

MONTHLY CROP REPORT DEPARTMENT OF AGRICULTURE—ESTIMATED CROP CONDITIONS AUGUST 1, 1917, WITH COMPARISONS

STATE	APPLES						PEACHES					PEARS					GRAPES		
	Condition August 1		Forecast 1917 from Condition			December Estimate 1916		Condition August 1		Forecast 1917 from Condition			Condition August 1		Forecast 1917 from Condition			1917	Ten-Year Average
	1917	Ten-Year Average	Total August 1	Total July 1	Commercial August 1	Total	Commercial	1917	Ten-Year Average	August 1	July 1	December Estimate, 1916	1917	Nine-Year Average	August 1	July 1	December Estimate, 1916		
Maine	62	64	4,630	4,905	848	5,040	941	76	63	47	48	24	60	73	26	34	38	..	..
New Hampshire	42	63	1,350	1,335	203	1,596	250	76	63	47	48	24	60	73	19	23	25	..	..
Vermont	58	63	2,061	2,331	275	3,312	497	90	57	145	129	66	65	74	83	97	111	83	85
Massachusetts	60	67	2,623	3,084	401	3,450	517	90	57	145	129	66	65	74	83	97	111	83	85
Rhode Island	63	67	263	311	13	261	13	83	60	27	29	11	59	76	9	12	14	85	84
Connecticut	56	68	1,512	1,886	126	1,830	153	81	65	281	310	131	66	75	37	40	46	86	85
New York	49	59	22,186	26,168	3,697	37,800	6,930	80	52	2,216	2,161	1,238	61	63	1,629	1,658	1,675	86	80
New Jersey	55	61	1,977	2,325	363	2,250	413	65	63	858	1,040	689	53	63	563	639	687	85	86
Pennsylvania	53	58	14,310	16,158	1,731	18,621	1,862	60	52	1,110	1,135	1,069	57	64	447	502	509	83	77
Delaware	73	59	436	128	139	219	37	86	52	671	650	346	68	50	266	254	164	82	83
Maryland	62	60	2,610	2,652	365	2,541	297	77	56	962	1,000	666	65	59	486	508	378	82	80
Virginia	55	58	10,725	10,725	1,572	13,299	1,995	53	50	848	848	660	49	51	173	118	122	82	80
West Virginia	41	54	5,861	5,591	781	10,032	1,271	60	47	810	596	520	34	16	40	36	42	80	74
North Carolina	65	58	6,669	6,464	489	7,074	637	65	57	1,495	1,333	897	58	52	145	130	75	83	82
South Carolina	83	56	859	844	5	588	4	86	59	1,124	1,029	545	74	58	96	94	56	86	78
Georgia	71	58	1,687	1,687	185	1,623	157	67	63	1,319	4,251	3,510	48	59	122	131	135	82	80
Florida	..	..	..	..	..	..	..	40	64	103	101	119	27	57	40	40	54	..	..
Ohio	45	48	8,724	9,305	872	8,601	860	21	46	651	698	1,350	41	55	330	362	376	81	78
Indiana	58	49	6,076	6,744	546	3,921	261	35	45	648	725	888	51	53	375	404	351	79	79
Illinois	65	41	8,233	8,075	961	4,818	566	17	41	412	485	780	58	46	429	427	354	81	76
Michigan	46	56	8,803	9,893	1,115	12,180	1,414	26	55	806	822	2,010	61	63	737	804	836	82	77
Wisconsin	72	59	3,305	3,435	153	2,631	105	..	..	..	..	..	85	69	..	..	26	90	81
Minnesota	72	62	1,426	1,474	18	1,266	42	..	..	..	..	..	..	..	..	..	..	85	79
Iowa	60	18	6,169	6,397	205	1,725	110	5	26	39	72	64	48	42	75	90	63	50	76
Missouri	54	46	11,886	12,352	1,110	8,100	675	15	37	900	1,110	1,080	18	41	216	229	164	72	72
North Dakota	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
South Dakota	80	60	367	360	5	348	5	..	..	..	..	..	..	..	..	..	..	94	75
Nebraska	65	50	2,436	2,697	162	1,701	142	..	29	..	..	30	50	50	11	16	10	25	71
Kansas	42	45	2,957	3,656	417	3,120	208	10	37	290	339	150	48	50	87	116	77	50	66
Kentucky	65	53	8,619	8,163	231	6,411	215	52	48	1,114	1,187	880	44	50	183	184	160	78	76
Tennessee	50	52	5,018	5,319	201	5,316	177	36	50	1,080	1,213	1,080	30	45	72	78	59	73	73
Alabama	66	51	1,200	1,252	21	1,140	19	58	55	1,769	1,355	1,110	45	53	95	93	90	80	75
Mississippi	53	50	374	360	6	348	6	63	56	1,134	940	975	50	55	96	101	90	76	73
Louisiana	50	56	..	..	..	..	..	55	55	151	105	567	60	63	42	38	19	73	78
Texas	58	59	114	396	11	468	20	45	54	2,205	2,254	2,860	60	60	251	254	322	65	72
Oklahoma	63	57	1,495	1,632	19	825	27	11	19	1,012	1,022	230	45	48	35	11	11	56	67
Arkansas	66	56	4,140	3,859	758	3,051	611	10	60	1,920	2,975	2,340	60	52	82	75	68	75	71
Montana	67	75	925	1,253	139	768	102	..	..	..	..	..	50	72	9	14	6	..	..
Wyoming	73	66	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Colorado	80	57	1,013	4,195	670	2,205	365	86	45	1,178	1,315	105	80	57	195	207	99	87	71
New Mexico	59	64	646	766	129	357	59	35	54	60	51	10	55	65	45	15	36	70	73
Arizona	65	76	129	151	16	138	17	80	72	60	56	60	82	78	21	21	18	90	89
Utah	94	66	846	852	111	99	3	95	60	128	128	81	86	63	56	54	12	90	80
Nevada	80	51	216	192	2	48	..	55	54	6	5	1	76	61	6	6	2	100	75
Idaho	90	74	2,025	2,153	238	441	15	85	60	170	150	25	75	71	71	81	50	88	82
Washington	81	78	8,505	8,041	1,985	9,675	1,935	80	68	552	552	415	78	79	566	584	551	83	86
Oregon	67	77	3,329	4,173	388	3,855	514	68	69	220	320	276	70	75	560	640	555	83	87
California	82	79	5,545	5,646	1,196	5,754	1,247	90	70	10,050	10,050	8,808	90	79	1,989	2,037	1,784	95	90
United States	55.4	54.3	187,743	200,341	22,644	202,245	25,695	52.9	54.0	12,691	13,522	36,939	61.9	61.0	10,847	11,368	10,377	89.3	84.3

\* Thousands; 000 omitted.

AVERAGE OF PRICES RECEIVED BY PRODUCERS OF THE UNITED STATES.

Prices of articles quoted below as first of month are averages of reports of county crop reporters, weighted according to relative importance of county and state; fifteenth of month prices are averages of returns from a list of about 7,000 country buyers; state averages are weighted according to their relative importance to obtain the United States averages, prices in same units as in table by states above.

	1908, Aug. 1	1909, Aug. 1	1910, Aug. 1	1911, Aug. 1	1912, Aug. 1	1913, Aug. 1	1914, Aug. 1	1915, Aug. 1	1916, Aug. 1	1916, Sept. 1	1916, Oct. 1	1916, Nov. 1	1916, Dec. 1	1917, Jan. 1	1917, Feb. 1	1917, Mar. 1	1917, Apr. 1	1917, May 1	1917, June 1	1917, July 1	1917, Aug. 1
Wheat	90.4	107.1	98.9	82.7	89.7	77.1	76.5	106.5	107.1	131.2	136.3	158.4	160.3	150.3	161.8	164.1	180.0	245.9	248.5	220.1	228.9
Corn	78.1	75.2	67.2	65.8	79.3	65.4	76.8	78.9	79.4	83.6	82.3	85.0	88.9	90.0	95.8	100.9	113.4	150.6	160.1	164.6	196.6
Oats	19.8	50.0	41.7	40.2	44.3	37.6	36.7	45.4	40.1	43.1	44.5	49.0	52.4	51.4	55.2	56.9	61.5	71.0	69.9	68.9	73.7
Barley	57.1	61.2	54.7	69.3	66.8	50.8	45.1	56.7	59.3	72.9	76.5	83.2	88.2	87.1	92.7	96.9	102.3	120.1	119.3	106.6	114.5
Rye	71.2	78.5	74.4	75.5	77.9	60.7	61.0	89.0	83.4	99.7	101.1	115.3	122.1	118.5	123.5	126.0	135.6	164.1	183.0	177.1	178.1
Buckwheat	80.1	82.9	74.8	76.0	83.6	72.4	81.2	89.2	89.0	86.4	90.4	102.9	112.9	117.2	114.6	121.8	128.3	150.6	183.7	209.2	189.3
Potatoes	83.6	85.1	64.9	136.0	86.5	69.2	87.1	56.3	95.4	109.3	112.0	135.7	146.1	147.3	172.4	240.7	234.7	279.6	274.0	247.9	170.8
Sweet Potatoes							97.5	85.8	87.1	89.9	83.7	80.6	84.8	90.1	95.8	110.7	124.0	141.3	149.4	140.5	129.3
Flaxseed	107.1	137.0	209.7	199.2	175.2	118.6	150.7	144.6	178.1	190.2	199.2	234.7	248.1	250.7	253.7	266.1	300.6	298.8	278.0	271.6	271.6
Hay	9.28	9.74	11.29	14.67	12.98	11.16	11.52	11.02	10.68	10.42	10.36	10.68	11.21	11.49	11.96	12.14	13.05	11.44	15.25	14.56	13.42
Apples		10.3	11.3	13.2	12.0	11.5	12.4	8.1	12.6	14.6	15.5	18.0	19.6	17.1	16.8	15.9	18.0	18.9	20.2	24.7	24.3
Cotton																					
Butter																					
Eggs																					
Chickens																					

AVERAGE OF PRICES RECEIVED BY PRODUCERS OF THE UNITED STATES

	1910, July 15	1911, July 15	1912, July 15	1913, July 15	1914, July 15	1915, July 15	1916, July 15	1916, Aug. 15	1916, Sept. 15	1916, Oct. 15	1916, Nov. 15	1916, Dec. 15	1917, Jan. 15	1917, Feb. 15	1917, Mar. 15	1917, Apr. 15	1917, May 15	1917, June 15	1917, July 15	
Hogs	8.15	5.92	6.64	7.81	7.72	6.84	8.40	8.61	9.22	8.67	8.74	8.76	9.16	10.33	12.32	13.61	13.72	13.50	13.35	
Beef cattle	4.81	4.28	5.17	5.98	6.38	6.07	6.78	6.51	6.55	6.37	6.44	6.56	6.86	7.36	7.91	8.57	8.70	8.65	8.30	
Veal calves	6.37	5.74	6.33	7.46	7.80	7.87	8.54	8.59	8.77	8.59	8.60	8.79	9.15	9.88	9.94	10.49	10.48	10.60	10.77	
Sheep	5.47	4.19	4.21	4.20	4.75	5.35	6.33	6.22	6.25	6.20	6.41	6.77	7.33	8.17	9.21	9.69	10.15	9.84	9.32	
Lambs	6.71	5.42	5.74	6.05	6.55	7.21	8.16	8.15	8.22	8.02	8.41	8.72	9.59	10.51	11.46	12.03	12.51	12.64	11.19	
Wool	19.6	15.4	18.9	15.9	18.5	24.2	28.6	29.0	28.4	28.7	29.4	30.8	31.8	32.7	36.7	38.4	43.7	49.8	54.3	
Milk (wholesale)	21.0	20.9	22.2	20.7	20.2	20.5	21.2	21.2	21.2	22.2	23.0	23.6	23.6	24.0	23.8	24.4	25.2	24.8	24.6	
Milk cows	42.86	42.44	45.41	54.80	59.67	60.31	62.04	61.32	61.41	62.19	62.67	63.18	63.92	65.93	68.46	72.09	72.78	72.87	72.81	
Horses	148	139	142	143	137	134	133	131	131	130	129	129	129	131	133	136	138	137	135	
Cabbage	2.27	2.93	2.29	2.64	2.66	1.95	2.15	2.26	2.17	2.40	2.61	3.04	3.05	5.65	6.77	7.61	7.53	5.10	3.23	
Onions	1.04	1.22	1.14	1.02	1.70	.93	1.47	1.34	1.23	1.31	1.51	1.76	2.08	3.58	4.76	4.96	3.98	3.08	2.01	
Beans	2.34	2.23	2.47	2.22	2.22	2.75	5.09	4.59	4.60	4.47	5.53	5.77	5.71	6.07	6.49	7.37	8.94	8.99	8.07	
Hay—																				
Timothy					13.06	13.43	12.97	11.74	11.57	11.54	12.03	12.29	12.61	12.91	13.20	14.26	15.31	15.76	14.68	
Clover					11.85	11.65	10.84	9.93	10.01	10.08	10.46	10.86	11.38	11.65	11.90	13.06	13.94	14.22	12.95	
Alfalfa					8.65	8.28	9.87	9.80	10.06	10.25	11.37	12.31	12.79	13.63	14.68	17.68	17.92	16.77	14.13	
Timothy seed		5.48	5.96	1.94	2.32	2.57	3.08	2.36	2.22	2.27	2.25	2.31	2.44	2.46	2.70	2.76	3.09	3.09	3.40	
Clover seed		7.17	8.83	10.64	9.78	8.12	7.96	9.15	9.12	8.65	8.54	9.20	9.40	9.60	9.87	10.32	10.41	10.40	10.50	
Alfalfa seed					8.32	8.20	8.51	10.30	9.33	9.27	8.61	8.30	8.56	7.97	7.75	8.53	9.03	8.85	8.71	
Cotton seed		22.70	19.04	21.37	22.78	20.05	36.66	35.22	41.13	47.19	55.82	56.35	52.53	51.13	53.18	55.94	55.61	57.19	56.90	
Broom corn	180	68	85	57	88	79	103	120	129	168	173	172	184	201	227	252	232	223	194	
Cowpeas							1.35	1.41	1.42	1.48	1.62	1.77	1.92	2.10	2.32	2.53	2.93	3.09	3.03	
Kafir corn							0.63	.72	.84	.81	1.02	1.02	1.19	1.29	1.47	1.52	1.88	2.06	2.14	
Bran	25.22	25.80	28.41	24.65	26.36	27.17	25.81	26.53	27.50	28.48	31.54	32.49	32.76	34.87	38.33	42.07	44.19	40.83	40.40	
Cottonseed meal	32.38	31.17	31.82	31.56	32.62	31.36	34.93	35.05	36.17	37.80	41.52	42.96	42.95	43.33	43.67	44.73	45.62	45.14	46.45	
Peanuts	5.2	5.0	4.9	5.1	5.2	4.7	4.6	4.6	4.4	4.4	4.4	4.7	4.9	5.3	5.5	6.2	7.2	7.7	7.6	
Hops		25.8	28.9	14.8	14.7	10.5	10.1		16.1	21.0	21.5	18.2	17.8							
Cottonseed hulls						9.05	15.43	14.90	14.44	14.41	17.28	17.70	17.93	18.49	18.39	19.09	19.65	19.46	19.72	
Peaches			1.51	1.12	1.30	1.20	1.00	1.09	1.15	1.18	1.12							1.70	1.45	

# Bitter Pit—It's Cause and Control

[Continued from August number]

The control of bitter pit in the fruit, both while growing on the tree and in oversea shipments, was the final object of this investigation, and a study of the cause was a necessary preliminary. It has been proved experimentally that when fruit is picked on the green side or just when it is beginning to reach the ripening stage, and kept in cold storage at a temperature of 30-32 degrees Fahrenheit, the development of bitter pit is retarded and the ripening process arrested. From the very nature of the disease it is hardly possible to prevent it altogether while the fruit is still growing on the tree, but it has been found practicable to reduce it to such an extent that the loss is comparatively trifling.

The results of experiments in different states enable us to draw the conclusion that light pruning is associated with a small amount of pit, and severe pruning with a large amount. A special pruning experiment, extending over five years, with Cleopatra trees which were nine years old to start with, and had been so badly affected with pit that the orchardist had cut most of them down,

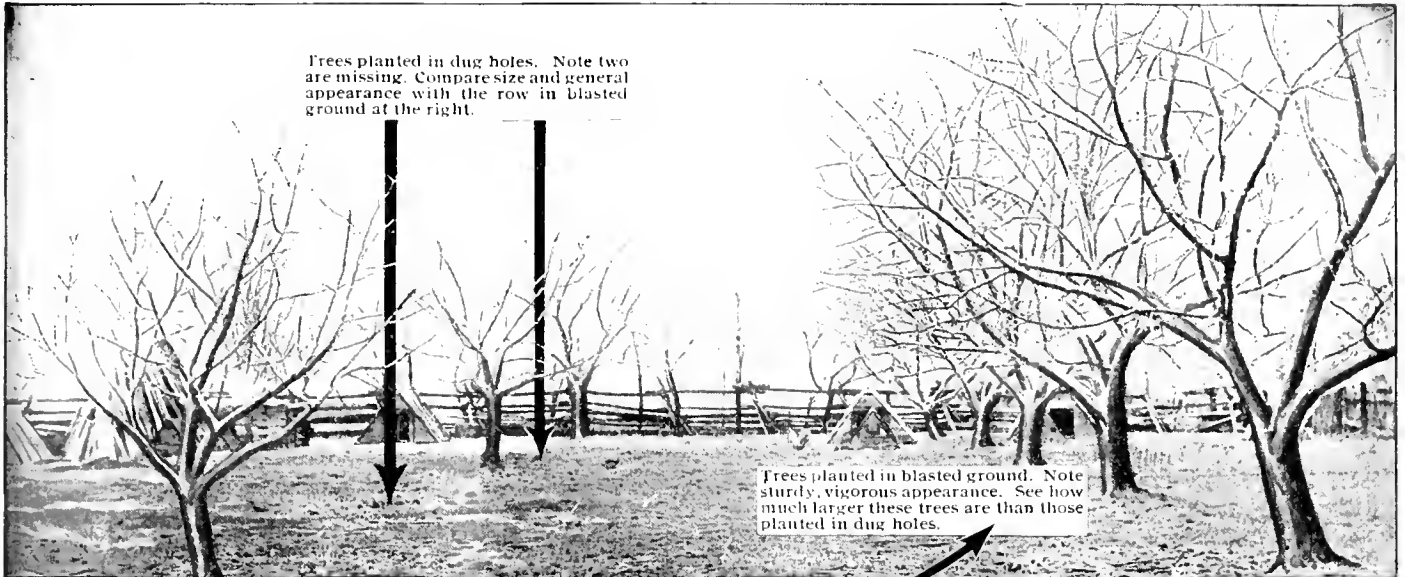
shows the effect of pruning very decidedly. The leader and lightly-pruned trees had the largest crops with from 4 to 6 per cent pitted, while the severely-pruned trees had 22 per cent pitted.

Where irrigation is practiced, a proper use of the water will help to reduce pit. An experiment was conducted with a susceptible variety at the susceptible age of five years. Where the trees were lightly watered throughout the season there was 14 per cent of pit, while in trees with a medium supply of water at first but a heavy watering toward the end of the period, pit was much worse. The heavily-watered trees showed over three times the amount of pit, or 90 per cent.

The application of sulphate of iron, in several instances, gave very promising results, and it is worthy of being tried on a large scale, as well as for a sufficient number of seasons. Experiments on a limited scale show that the yield was increased and the amount of pit considerably reduced when sulphate of iron was applied at the rate of one to two pounds per tree.

There are two series of experiments which were initiated at the commencement of this investigation and which may be found to help considerably in reducing the pit, but from their very nature require a considerable time to yield reliable results. I refer to the experiments with stocks and the pruning experiments, combined with thinning of the fruits. The stock experiments are being conducted at the School of Horticulture, Burnley, and the trees are enclosed in a bird-proof screen, so that the fruit is not interfered with by birds nor small animals. The trees are now coming into bearing, being five years old from planting, and with the crop carefully gathered and the percentage of pit determined for at least five seasons, the effect of the stock on the development of pit will be demonstrated. Through the courtesy of the director of the Royal Gardens, Kew, England, I have received a supply of pips and cuttings of the Wild Crab Apple of Britain, and these will also be tested as stocks with different varieties of marketable apples. There is a possibility that the stock might effect the scion in such a way as to render the





Trees planted in dug holes. Note two are missing. Compare size and general appearance with the row in blasted ground at the right.

Trees planted in blasted ground. Note sturdy, vigorous appearance. See how much larger these trees are than those planted in dug holes.

# Trees set in blasted holes grow faster and yield better

**E**IGHTEEN years ago George W. Brown blasted the beds for ninety out of 100 apple trees that he planted. The trees set in dug-holes average 18 feet high, with a spread of 16 feet and a trunk girth of 27 inches. The other trees, in blasted beds, average 25 feet high, more than 25 feet in spread, and have a trunk girth of 42 inches. Plant *your* fruit trees in beds blasted with

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and *you* will find, as experiment stations have found, that "trees planted in blasted holes develop deeper and stronger root systems than trees planted in spade-dug holes," and will bear earlier and yield larger crops.

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Every fruit grower will find valuable information in our illustrated book, "Better Orchard Tillage." It contains a complete analysis of how and why blasting soils increases growth and yields. It also tells how to do the blasting. We'll send you a copy free—mark and mail the coupon. Other books, on stump blasting, boulder blasting, subsoiling and ditching, also free on request.



Trunk of tree planted in blasted bed. Hardpan broken up, giving roots ample room for development.



Trunk of tree planted in same soil, without blasting. Note how hardpan has forced roots to surface and observe effect of lack of food.

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packed. Second grade fruit should not go into barrels or boxes. If it cannot be marketed in bulk in nearby consuming centers, then it should be worked up into by-products along with the culls.

There has been a gratifying improvement in apple marketing the past two or three years. Western apples are boxed to strictly honest standards by the great co-operative growers' organizations in Washington, Oregon, California, Idaho and Colorado. The Eastern barrel apple has also been wonderfully improved in New York and other states. Because apples are honestly packed and give the best possible value for the money, there is an increase in the consumer demand. Retail merchants who were formerly almost afraid to buy apples in barrels, because they were not sure of getting marketable values for their money, are now buying freely and in confidence. This good work makes it possible for the government to go further and encourage the use of apples as a war-time food measure.

Because the bulk of the crop will be picked by volunteer workers this year, and put into common storage until the grower can find time to grade and pack, there will be an opportunity to give closer personal attention to the grading and packing than might be the case if the crop were handled as in peace times. For the grower who desires instructions in apple packing the Department of Agriculture at Washington has information in bulletin form. These bulletins can be secured free by writing to the department. Growers will do well to obtain a few copies for their pickers and packers.

## Make This Year's Apple Crop Fit the Market

Third Article in Growers' Campaign to Meet the Apple Situation

UNCLE SAM takes the keenest interest in this year's apple crop. For the fruit must be used to help save wheat and meats for our allies. The Food Administration is planning a consumer campaign of publicity throughout the country.

This year's apple crop calls for intelligent handling. The latest government reports indicate a crop of about 190,000,000 bushels. That is a little below normal. Good prices are assured for all honestly packed first quality apples and also for honestly packed selected second grades, which government experts say can be put into storage. When the crop is big it does not pay to store second grades, but this year, despite the fact that we cannot ship our usual 2,000,000 barrels of apples abroad, because shipping space is precious, we should be able to get fair prices for all good apples at home.

Careless packing of poor quality fruit has always been one of the chief causes of market instability and unsatisfactory prices to the growers. This year the whole apple industry is co-operating to remove this market handicap. There

has never been an apple year such as this one is going to be. Growers have never been able to get together and engage and finance a national educational campaign among consumers to increase apple consumption. This year the situation makes it necessary for the United States government, through the Food Administration, to conduct a consumer's campaign of publicity on behalf of the apple. This campaign will begin while the crop is being sent to market and will probably continue till the last apple is eaten up late next spring. So the grower has three great incentives for grading, packing and storing this crop with especial care. (1) It is a good crop and calls for care. (2) The government will encourage apple eating and apple storage and will discourage apple speculation that raises the price abnormally. (3) We must eat up at home more than two million barrels of apples which would ordinarily be exported.

To get the best of the crop to the market in prime condition it must be picked carefully at the time of maturity and promptly cooled in temporary storage, and then skillfully graded and

# MYERS GLASS SEAT PUMPS

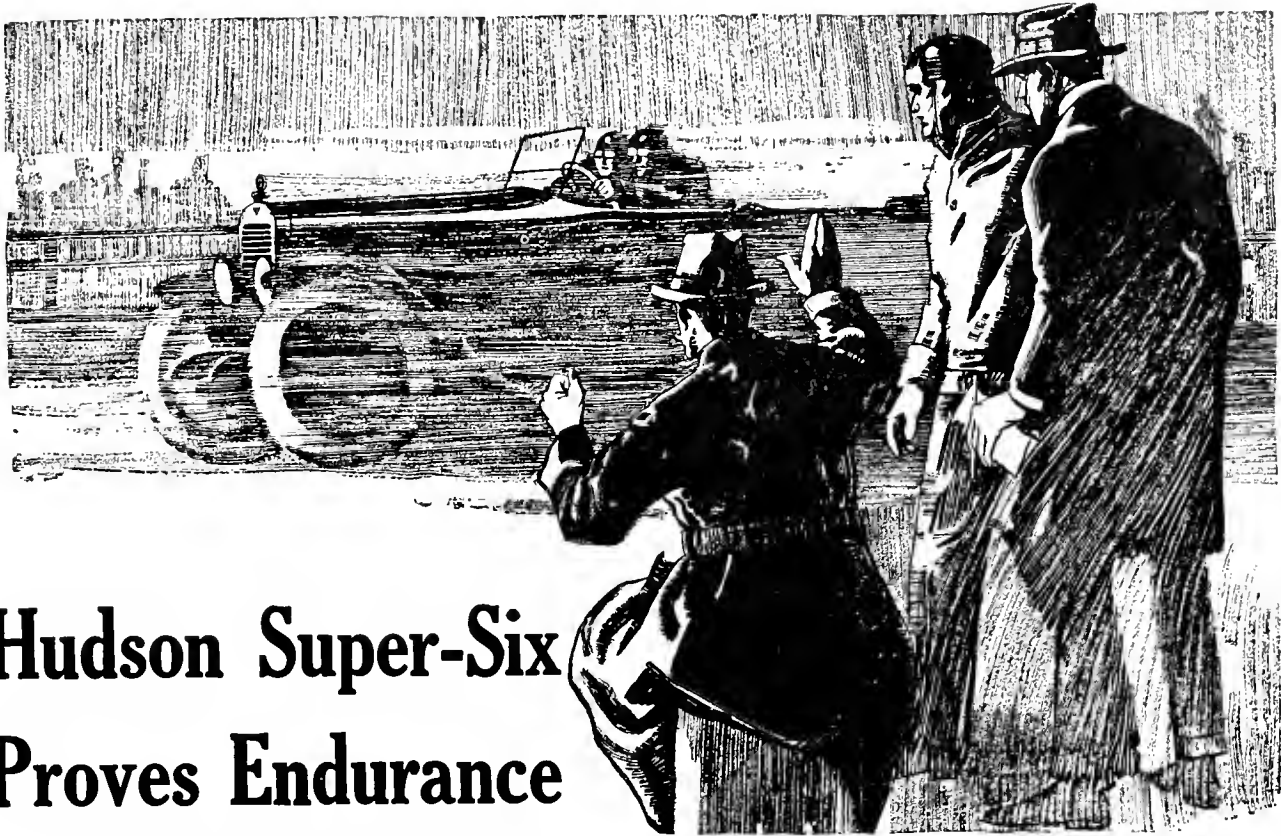
When you are ready for a new pump, look deeper than the paint, for paint soon wears off and has nothing whatever to do with pumping water.

Ask your dealer to show you a MYERS PUMP with Cog Gear Handle and Non-Corrosive Glass Valve Seat and have him explain why it pumps 33 1/3% easier than the ordinary kind, and why Myers Leathers stay soft and pliable and last longer than others. He will be glad to tell you about these and the many other Myers features that make Myers Pumps better.

Ask him, or write us. Attractive booklets on request.

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## Hudson Super-Six Proves Endurance

*A Test That Never Fails to Reveal Every Weakness and Prove Every Strength of a Motor Car*

Stock Hudson Super-Six cars are deliberately sent through tests more trying, more destructive, than any the average driver could imagine.

For one hour, a fully equipped phaeton with top and windshield up and carrying five passengers, was sent at top speed. It averaged 70.74 miles an hour and established the best time for such a performance with a stock car. The test, officially observed by the American Automobile Association, was one of the many similar tests to prove endurance.

It was not a preconceived campaign of tests that we set out to make. Each test was thought sufficient in itself. But just as the giant is surprised as he realizes the ease with which he accomplishes each feat that he had felt would try his strength, so the Super-Six has so easily met every test that more trying and abusive trials have been devised.

We were sure that in the 24-hour test a stock chassis would break all previous records. But no one thought it would go 347 miles farther than any other car had ever gone in 24 hours. The Super-Six covered 1819 miles. It broke all records for a traveling machine.

So, too, when a seven-passenger Super-Six set out from San Francisco for New York it was with confidence that it would lower the time of all other transcontinental runs. It did so by 14 hours and 59 minutes. Then because the run had been made so easily and without special planning, the car was turned around and raced back to San Francisco.

In the return trip it also did better than any other automobile had ever done in crossing the continent in either direction. Hudson's round trip required 10 days and 21 hours.

There is hardly any quality of a car that is so important to the buyer as that of endurance. Safety, comfort, reliability, low maintenance cost are all dependent upon endurance.

Every quality of motor car satisfaction is dependent upon power acceleration, speed and endurance. And every Hudson test proves that in these respects there is no car that equals it.

Convincing as the official records are, there is still further proof that no other car has to offer equal advantages. These proofs are furnished by 37,000 Hudson Super-Six owners. They have added their experiences to the official tests.

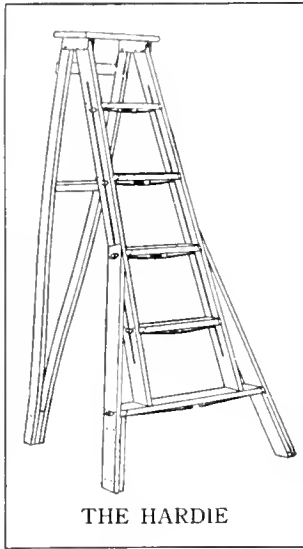
### *Others Have Increased Their Prices—Not Hudson*

Other makers are now announcing price increases which bring the former \$1,200 and \$1,300 cars into the Hudson class. Until present material supplies are exhausted Hudson prices remain unchanged. So you can get for a limited time a Super-Six at a price not influenced by present high material costs. When the present allotment is exhausted then Hudson, too, must go up in price.

There are eight body types. The 7-passenger phaeton sells at \$1,650 at Detroit.

**HUDSON MOTOR CAR COMPANY, DETROIT, MICHIGAN**

“EVERYWHERE IN THE NORTHWEST”



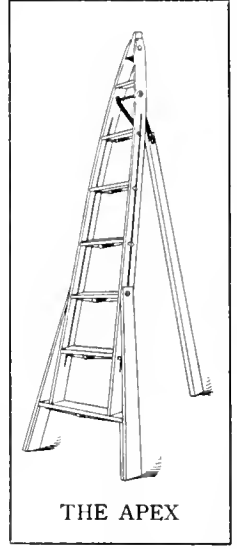
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You will find an army of orchardists gathering their fruit  
crops on

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**The Design Increases His Working Range**



THE APEX

In these days of increasing wages the Hardie Ladders will aid greatly in keeping picking costs at the old figure through giving you a “Bigger Day’s Work” from your picker.

**Stock Sizes Range from 4 to 14 feet.**

**Price per foot 40c**

**THE HARDIE MFG. CO.**

**49 North Front Street**

**PORTLAND, OREGON**

## Not Overproduction of Apples, But Lack of Distribution

By E. H. Shepard, Editor of Better Fruit

THE subscribers of BETTER FRUIT will recall the article entitled “Not Overproduction of Apples but Lack of Distribution” that appeared in the July edition of BETTER FRUIT, giving the number of cars of apples sold in 1916 in towns of 3,000 to 5,000; the number of towns sold and not sold with a population of 5,000 to 10,000; the number of towns sold and not sold of 10,000 to 20,000; the number of towns sold and not sold of 20,000 to 50,000; the number of towns sold and not sold of 50,000 and over in each state. In addition to this the article contained statistics showing the names of the towns over 3,000 and the population of each in each state in the United States sold during 1916.

In the August edition of BETTER FRUIT we published another article entitled “More Information on Fruit Distribution,” giving names of the towns over 3,000 in Minnesota, Louisiana and Ohio that have not been sold. Attention is called to the fact that Ohio has 117 towns of over 3,000 population, of which ten have been sold and 107 not sold. In every state in the Union the number of towns of over 3,000 that are sold is comparatively small to the towns of over 3,000 unsold. It must be admitted, of course, that every town in the United States of over 3,000 population cannot be sold. The states that produce apples in large quantities do not afford so

great an opportunity as the states where apples are not grown commercially. It must be borne in mind, of course, that some Northwestern States, like Minnesota, the Dakotas and Wyoming; the Southwestern States, like Texas and Arizona, do not grow apples in a commercial way. In fact, very few apples are grown in the states mentioned. The Southeastern States are small producers of apples, although a few are grown in the mountainous regions of Georgia, North Carolina, some in Tennessee and Kentucky, but comparatively none are grown in South Carolina, Alabama, Florida, Louisiana and Mississippi, consequently all of these states should be large purchasers of apples. Towns under 3,000 population deserve special attention. The editor has taken the list of towns reported sold during 1916 through the Fruit Growers’ Agency and of the Northwestern Fruit Exchange from the time they commenced doing business up to December 31, 1916, giving the name of each town in each state under 3,000 that has been sold, with the population. A careful study of the list will not only give some wonderful surprises but some pretty big “jolts” in showing the possibilities of the small towns. The population as stated is taken from the Produce Reporter Credit Book, 1917, copyrighted, and in some cases are probably approximate esti-

mates. The surprising feature in looking over the population of towns sold is that even towns of only 200 population have been sold, a greater number of 300 to 400 have been sold and a large number of towns sold around 1,000 to 2,000. One is led to believe that a town of this population is an excellent prospect for carlot shipments. The natural inference would be that a town of 300 to 400 would not buy carlots, but it should be borne in mind that such towns sometimes have a very large business tributary to them containing some very large general merchandise stores, handling fruits such as oranges, bananas and apples.

There are over 33,000 towns in the United States under 3,000 population, of which only about 311 have been sold. I desire to impress upon everybody connected with the fruit industry the importance of selling Northwestern apples direct. The reasons for direct business are twofold. When a small or medium town is sold direct instead of through some big city, two extra cartages are saved and one extra freight bill and one intermediate profit, which may vary all the way from 20 to 40 cents. Three extra handlings are avoided, two cartages and one railway shipment, which means the apples can be delivered to the consumer in better condition. Another important reason is

that supplying towns under 3,000 direct the pressure will be relieved in the big cities, consequently a better level of prices maintained, which would also be a factor in maintaining a higher level of prices in the smaller cities. The average individual does not realize what it means to crowd the market. I will cite as an illustration the report on Bartlett pears during one week in New York City, as given in the Monthly Bulletin published by the State Commissioner of Horticulture, Sacramento, in an article, "The Scientific Distribution of Fruit," by Harris Weinstock, Director State Commission Market, San Francisco, probably for the year 1916:

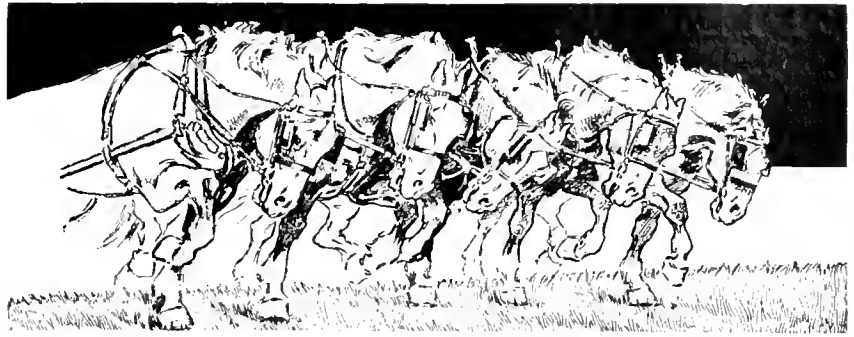
CHART SHOWING MOVEMENT OF BARTLETT PEARS FOR ONE WEEK IN THE CITY OF NEW YORK

Date	Cars	Boxes	Average
Monday ..... July 24	52	27,100	\$2.04
Tuesday ..... July 25	27	10,045	2.21
Wednesday ..... July 26	23	11,765	2.48
Thursday ..... July 27	28	14,550	2.28
Friday ..... July 28	31	16,195	2.57

It will be seen the price varied largely in accordance with the quantity offered. With 27,100 boxes on the market the price was \$2.04, evidently an oversupply, breaking the market, because on Wednesday, with 11,765 boxes, the average price was \$2.48, or 44 cents difference; 44 cents less than when the market was crowded. Undoubtedly similar differences will prevail in any market when glutted with an oversupply of apples just the same as any other kind of fruit or any other commodity. This of course would apply more to fruit because it is perishable, than to a non-perishable product.

I hope that every fruit grower, every director in any marketing concern and all of the salesmen and salesmen of the Northwest will read the July and August editions of BETTER FRUIT, as well as the others that will follow, believing they can get some valuable information and statistics, which if taken advantage of will be very helpful in spreading out the crop of the Northwest and selling a greater number of towns that have not been sold, in this way maintaining a much higher level of prices. I believe it is the duty of everyone connected with the fruit industry to make the fullest effort possible to market the crop in the most effective way, so as to get sufficiently satisfactory remunerative prices for growing apples, because fruit growers must receive better prices for their apples than they have been receiving the last few years to pay them a satisfactory profit for their labor and on the capital invested. In fact we need better prices than we have been getting in order to make a decent living. Every state where apples are not grown extensively should be combed thoroughly by a well organized sales force. There is no reason why apple shippers and selling concerns should not have just as thorough a distribution as manufacturers or jobbers of any other line of business. If a sufficient number of salesmen are put on the job to cover the territory where business can be secured in a thorough manner and a business-like way, the crop will be widely distributed, no mar-

Continued on page 17



## Powerful as Five Horses Costs Less than Four Horses

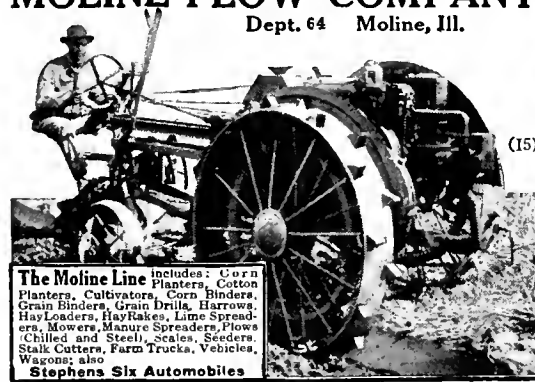
Here is the kind of a tractor you've been looking for—one that not only plows, but does ALL farm work that horses can do, besides supplying power for belt work. Not a big, heavy, cumbersome tractor, that plows while your horses loaf and eat, then leaves the rest of the work for your horses to finish; but a tractor that does EVERY job a horse can do—does it better—faster—easier and cheaper.

It costs less than four horses, yet plows 4 to 12 acres a day; pulls a two plow gang harrows, discs, plants and CULTIVATES corn or other hill and row crops—16 to 20 acres a day. Is as easy to drive as a team—a REAL ONE-MAN TRACTOR.

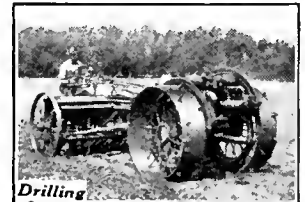
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Note the big advantage of its two-wheel construction—ALL ITS WEIGHT IS TRACTION WEIGHT. ALL its weight goes into the PULL. That's why we can build it lighter; why we eliminate almost a ton of excess dead weight necessary on tractors of the three and four-wheel types. Notice how you operate both tractor and implement from the implement seat. All your work is plainly in view. No craning or straining of your neck looking back to watch the farm tools—no extra man needed. Easy to back up with tool attached; easy to make quick and short turns; to work close to fences; to do all work as well and as easy as with a team. Write for our free catalog-folder today.

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HOOD RIVER, OREGON

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ADVERTISING RATES ON APPLICATION

Entered as second-class matter December 27, 1906, at the  
Postoffice at Hood River, Oregon, under Act  
of Congress of March 3, 1879.

**More Cars for Apples.**—The orange crop of Southern California, on account of drouth, has suffered very severely, and orange growers are entitled to the sympathy of the fruit growers throughout the country. It is stated the orange crop will be about 50 per cent of a normal crop. The average crop of oranges is 50,000 cars per year, consequently there will be 25,000 cars less of oranges to be shipped this year than ordinarily. As the total crop of apples of the Northwest will not exceed 20,000 cars there is every reason why urgent steps should be taken to have these fruit-express cars placed, as far as necessary, at the service of the Northwestern apple growers. Mr. J. Curtis Robinson, chairman of the Transportation and Storage Committee of the Fruit Growers' Agency, has taken this matter very ably in hand and is conferring with the committee on car service of the National Board of Defense, the Agricultural Department of Transportation Service, and through Senator Wesley L. Jones the matter will be called to the attention of the president and secretary of agriculture.


**Hogs.**—Three or four years ago the editor of BETTER FRUIT ascertained, through information compiled by the Union Meat Company, that immense quantities of hogs were being shipped from Kansas. Prices of hogs locally, so long as this condition continued, was the price of hogs in Kansas, plus freight to the Northwest. The Union Meat Company carried on a propaganda educational campaign for the purpose of stimulating the raising of hogs in the Northwest with splendid results. The increased quantity of hogs has created an extra income for the farmer and fruit grower. The regrettable part of the hog situation at the present time is that, on account of the extremely high prices of hogs (20 cents last quotation),

a great many farmers and fruit growers cannot resist the temptation and are even selling their brood sows; the consequence will be the supply of hogs in the Northwest will go down, so it seems wise not only to suggest but to advise every farmer and fruit grower in the Northwest, who can possibly take care of a few hogs, to get a few brood sows and go into the business, so far as he can without interfering with other farming and orchard work. This can easily be done by fruit growers, as a great many fruit growers sow alfalfa in the orchard for cover crops, for the reason cover crops are found very beneficial in producing the necessary supply of humus and nitrogen at practically no cost. Alfalfa makes excellent feed for hogs. Through the campaign and propaganda put up by the O-W. R. R. & N. Co. a great deal of corn has been produced in the Northwest. It has been ascertained that corn can be grown successfully in many sections of the Northwest, consequently this suggestion in connection with hogs comes in appropriate for the reason that corn can be grown successfully, and corn is one of the best feeds in the world for hogs.

The Washington State Fair will be held September 17 to 22 at North Yakima, the center of fruit growing in the State of Washington. The shipments from this valley amount to many thousands of cars a year, making the horticultural department of the Washington Fair a most prominent feature. The exhibits of fruit are always extensive and at the same time magnificent. Fruit growers attend the Washington State Fair in large numbers, affording every fruit grower an opportunity by personal contact with other fruit growers to learn many new methods and improved ways of producing and handling his crop. Yakima people are very hospitable and the fair is made a great annual event, assuring everybody in attendance a splendid time.

**Farm Implements.**—Farm implements, which naturally includes orchard implements as well, to a greater or less extent, have been estimated to increase the farmer's productive ability eighty times. This is a surprising statement and one that very few have any conception of without having given the matter thought and study. A shortage of implements among the farmers or fruit growers naturally will affect the food shortage, and as the farming industry of the life of the United States, everything should be done in the government propaganda being carried on to see that implement manufacturers can turn out sufficient implements for operating the farms. It would seem that the implement manufacturers are entitled to priority, because no matter how much ammunition we have if we do not feed the army and the nation we cannot succeed in ending successfully at an early date the immense war that the United States is engaged in at the present time.

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PERFECTION IN  
FRUIT  
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**SIMPSON & DOELLER Co.**  
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PORTLAND, OREGON.

E. SHELLEY MORGAN  
NORTHWESTERN MANAGER

WE CARRY—AND CAN SHIP IN 24  
HOURS—STOCK LABELS FOR PEARS,  
APPLES, CHERRIES & STRAWBERRIES.

**Distribution of Apples.**—This issue contains an article by the editor on the "Distribution and Sale of the Apple Crop," with some statistics, showing all of the small towns in the United States under 3,000 population that have been sold direct in carloads. The surprising part of this investigation is that many towns under 1,000, some as low as 400 and even as low as 200, have been sold apples in carload lots. When you take into consideration that there are over 30,000 small towns in the United States, of which only about 300 have been sold, it seems reasonable to assume that if the Northwestern selling concerns would put salesmen in the states where the opportunity is best, covering the country thoroughly, that a great many more towns could be sold direct. By increasing distribution and increasing consumption a higher level of prices will be maintained. The editor, however, wishes to state distinctly in connection with the articles that have appeared in BETTER FRUIT and the editorials that it is a fact well known by apple shippers and the editor himself, that there are many small towns near jobbing centers which are supplied regularly and probably more satisfactorily in small lots than they could be supplied in carloads. But the editor wishes to impress upon the apple growers of the Northwest and those interested in the industry that wherever small towns are not properly supplied by the jobbing trade or are too remote to be supplied to the best advantage where a carlot can be sold direct that it is the advisable policy.



Government Statistics of the Northwestern Crop.—The following table gives the government estimate of August 1st of the total crop in bushels and the estimate of the commercial crop. By that is meant the crop that is packed and shipped in barrels or boxes. Converted into carloads, standard, 600 boxes to a car, gives Montana 695 cars, Colorado 3,350 cars, New Mexico 645 cars, Utah 705 cars, Idaho 1,190 cars, Washington 9,925 cars, Oregon 1,940 cars, California 5,980 cars, making a total estimate of the above box-apple states of 24,430 cars:

INDICATED YIELD—GOVERNMENT REPORTS

	Thousands (000) omitted.		Final 1916	
	August 1, 1917	Com- mercial	Total	Com- mercial
	Bushels	Barrels	Bushels	Barrels
Montana .....	925	139	768	102
Colorado .....	4,013	670	2,205	367
New Mexico ..	648	129	357	59
Arizona .....	129	16	138	17
Utah .....	846	141	99	3
Nevada .....	216	2	48	..
Idaho .....	2,025	238	441	15
Washington ..	8,505	1,985	9,675	1,935
Oregon .....	3,329	388	3,855	514
California ..	5,515	1,196	5,754	1,247
Total .....	26,151	4,904	23,340	4,259

This is somewhat at variance with the estimates of those who have investigated and are fairly well posted. Washington is credited, on July 1st, with 16,955 cars, Oregon 2,500 cars, Idaho 2,000 cars, Montana 500 cars, making an estimate for the four Northwestern States—Washington, Idaho, Oregon and Montana—of 21,955 cars. A more conservative estimate is given in the August edition of BETTER FRUIT, and conditions have not changed much in that time, stating the Northwest would probably have somewhere in the neighborhood of 18,000 cars. However, it must be admitted that many things may happen, from pests or disease, to reduce this quantity of first-class commercial shipping apples between now and harvest time.

The International Apple Shippers' Association met in New York City August 15-16-17. A few Northwestern managers present showed much interest in the proceedings and the good work accomplished. One of the important matters before the convention is an educational campaign by the members of the International Apple Shippers' Association to increase the popularity and consumption of apples. Plans for the campaign were worked out quite thoroughly at the convention, which will co-operate with Mr. Herbert Hoover, the government food administrator, and good results, a greater consumption of apples and a better demand is hoped for and expected.

The Oregon State Fair will be held at Salem, September 24 to 29, inclusive. Horticulture is one of the main industries of the state, consequently fruit growers should endeavor to make this department a success to the fullest possible extent with exhibits—the best they can show in fresh fruits, also canned and evaporated. Fruit growers should attend this fair for its educational value; to meet with the neigh-

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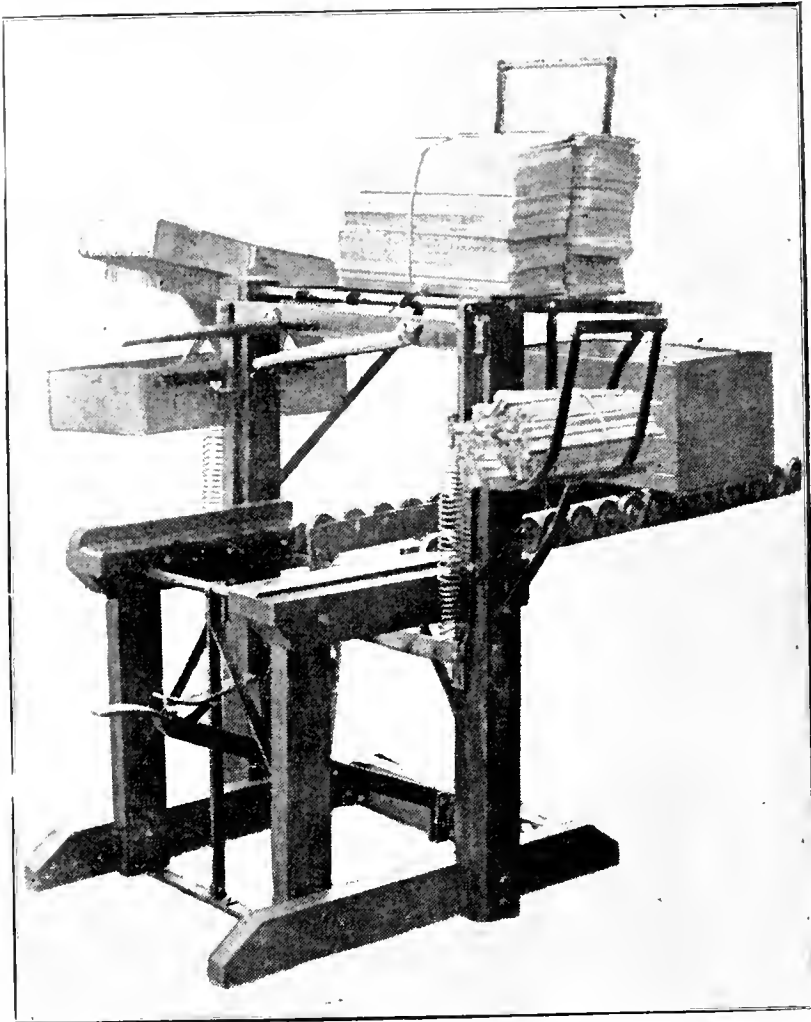
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WENATCHEE, WASHINGTON

bors and discuss their problems, and to learn what the other fellow is doing and how he does it. Nearly every manufacturer of equipment for the fruit grower and farmer doing business in this state will have an exhibit of machinery that will be well worth seeing. Fruit growers and farmers, in order to get the fullest amount possible out of their crop, must be able to grow it and harvest it at a minimum expense. The Oregon State Fair provides camping ground and facilities for those who desire to camp out, which enables one to make a visit to the Oregon State Fair at very small expense.

**Clearing Land.**—There is a critical shortage of all food supplies, largely due to the war, which will continue

even after the war, as undoubtedly it will take the European countries several years to get back to their natural producing capacity. Consequently the government is urging increased productivity in every way possible. It is doubtful if the present amount of land under cultivation can be increased sufficiently in yield, so it seems advisable to suggest to every fruit grower and farmer that if he has any uncleared land that it would be a paying proposition to clear it this winter so as to get it producing at the earliest possible moment. There is no question but what it will pay well. Blasting powder is used extensively for this purpose. There are many different blasting powders, some being especially adapted to clearing land. The blasting powder

manufacturers are endeavoring to assist the farmer who has land to clear with instructive booklets and circulars, which are very helpful. These can be obtained free upon request.

**Walnuts.**—The increase in price on all food commodities is undoubtedly due to the increased demand and the supply being somewhat short. The increased demand is probably due to the fact that so many people ordinarily engaged in producing foodstuffs are either at the front or making ammunition. Inasmuch as it will be some time after the war is over,—and no one knows when that will be,—before the warring nations get back to productivity, every fruit grower and farmer should give special attention to increasing his crops in producing as much food as possible, particularly of non-perishable nature. Nuts are considered very nutritious and at the same time an excellent food, consequently it seems the following suggestion is well worthy of consideration. Every fruit grower and farmer should plant a few walnut trees to help create food for the family, and whatever surplus a farmer can produce he can sell to excellent advantage, as walnuts have been remunerative for several years in the past.

The Monthly Crop Report of August 1st evidently believes that apples have increased in value, as indicated by the estimates under "Important Products" of July 15th, giving the following figures: Apples, per bushel, estimated value July 15, 1916, \$6½c; July, 1917, \$1.25; apples, per barrel, 1916, \$2.60; 1917, \$3.14.



**Orchard Queen  
Cider Mill**

*Grinds  
Does  
Not  
Crush*

## MAKE CIDER

### This New Way

**Gets Every Bit of Juice by Clean, Sanitary Methods**

Orchard Queen grates or grinds apples into fine pomace—breaks fruit cells open—allows all the juice to be easily extracted in pressing—insures greatest quantity and highest quality of cider, as juice is extracted in sanitary cloth-lined forms. (In ordinary crushing mills only half the juice is extracted and in a mussy, dirty condition.) Operates easily by hand or power. Write today for information of this marvelously efficient mill and how it turns your usual orchard losses into unusual profits.

**Puffer-Hubbard Mfg. Co.**  
3222 26th St., East      MINNEAPOLIS, MINN.



The Orchard Ladder of Quality must bear the name "Northwest." Thousands are sold on their merits. Ask your dealer to let you see our Ladder. If your dealer does not carry our ladder in stock, write us direct for prices.

No crushed fruit if you use the **Barnett Fruit Picking Pail.**  
**PRICE \$2.00**

Information on our Orchard Supplies will be gladly given on request.



**N. W. Fence & Supply Co.**

Station A

Portland, Oregon

**Not Overproduction, Etc.**

Continued from page 13

kets will be glutted, and from that time on there will be no more talk about overproduction or low prices. There are many towns properly taken care of by the jobbers in their territory which are regularly supplied. It is much better where a town cannot buy by the carload and sell it out in a reasonably short time for such towns to purchase from the jobbers in the nearest wholesale territory as required, keeping fresh stock on hand.

NUMBER OF TOWNS IN EACH STATE, HAVING A POPULATION OF LESS THAN 3,000, THAT HAVE BEEN SOLD APPLES IN CARLOTS DIRECT

<i>California</i>	Pop.	<i>Kansas</i>	Pop.
Dunsmuir	1,719	Ness City	950
Montague	600	Oakley	750
Weed		Olpe	
<i>Colorado</i>		Osborne	1,606
Haxtum	520	Phillipsburg	1,285
La Mar	2,200	Protection	800
Brush	1,500	Scott City	900
Fort Morgan		Sterling	2,013
<i>Iowa</i>		Wakefield	725
Cumberland	552	Long Island	200
Dike	286	McDonald	
Malvern	1,154	Norton	1,700
Strawberry Pnt.	1,052	Norfolk	
Wolcott	416	Simpson	400
<i>Idaho</i>		St. Francis	675
American Falls	1,250	Traer	
Arimo		Vulcan	
Arco	500	Whitewater	585
Blackfoot	3,000	Woodruff	
Buhl	1,000	<i>Louisiana</i>	
Emmett	1,400	De Redder	2,000
Genesee	1,200	<i>Maine</i>	
Gooding	1,600	Ft. Fairfield	1,620
Hazelton		<i>Montana</i>	
Minidoka	150	Bainville	425
Middletown		Baker	400
McCannon	500	Big Sandy	178
Montpelier	2,500	Bonner	
Malad	1,200	Bryan	
Payette	1,948	Buffalo	
Purcell		Cascade	600
Parma	750	Conrad	1,200
Picabo		Cutbank	500
Rupert	1,000	Fairview	200
Rexburg	1,600	Gilford	
St. Anthony	2,000	Glendive	1,725
Smiths Ferry		Glasgow	1,275
Shoshone	1,500	Hinsdale	
Weiser	3,500	Homestead	
Wendell	850	Medicine Lake	350
<i>Kansas</i>		Plentywood	1,200
Almena	800	Poplar	230
Arlington	650	Sidney	600
Altamont	610	Westby	
Anthony	2,450	Whitehall	450
Brownwell	300	Winifred	
Clinton	700	Wold Point	
Condon		Brady	150
Eureka	2,412	Bridger	650
Ellsworth		Belgrade	875
Wainfield	350	Bowman	
Gorham	175	Browning	225
Herndon	350	Chinook	1,200
Hoisington	1,414	Coffee Creek	
Hoxie	430	Deer Lodge	1,650
Jamestown	900	Dillon	1,835
Kingsley	1,700	Drummond	
Luray	350	Forsythe	1,100
Marion	1,802	Franklin	
Morganville	500	Geraldine	
Morgan	700	Laurel	1,100

<i>Montana</i>	Pop.	<i>North Dakota</i>	Pop.
Malta	800	Hamlet	
Miles City		Hampden	425
Norris	250	Keane	
Pony	437	Leeds	1,025
Rosebud		Lignite	350
Stanford	450	Lisbon	2,000
Sweetwater		Medina	500
Townsend	800	Noonan	600
White Fish	2,000	Porta	900
Wolfcreek		Portal	
<i>Missouri</i>		Powers Lake	550
Hall	700	Rock Lake	
<i>North Dakota</i>		Rugby	2,000
Alexander		Stanley	700
Antler	700	Tioga	625
Anamoose	750	Towner	1,125
Arnegard		White Earth	350
Arthur	225	Wildrice	100
Beach	1,450	Wolford	400
Berthold	700	New Rockford	1,800
Bowbells	875	Bowman	
Carrington	1,500	Braddock	400
Charbonneau		Chamberlain	
Crosby	850	Cando	1,500
Drake	550	Edison	
Finley	700	Flasher	450

<i>North Dakota</i>	Pop.	<i>Minnesota</i>	Pop.
Ft. Clark		Breckenridge	2,000
Goodrich	750	Dilworth	800
Higmore		Glenwood	2,300
Hazleton		Graceville	1,100
Hallinger		Henning	1,000
Hebron	800	North Redwood	
Kildeer		Redwood Falls	1,806
Kenmore	2,000	Wadena	
Langdon	1,400	Avon	
Lakota	1,250	Black Duck	1,424
Leith		Brewster	300
New Salem	1,025	Cass Lake	1,300
Newberg	375	Dalton	
Oakes	1,875	Detroit	2,500
Paishall		Eagle Bend	600
Ragan		Horton	
St. Thomas	650	Lake Park	1,000
Sterling	200	Minnesota Transfer	
Starkweather	475	Morris	2,003
Sheldon	500	Red Lake Falls	1,797
Turtle Lake	800	Twin Valley	750
Werner		Raymond	450
Wahpeton	2,425	Wheaton	1,500
West Hope	1,100	<i>Pennsylvania</i>	
York	475	Biglerville	350
		De Bois	

**ERNEST M. MERRICK**  
 WHOLESALE  
 Fruit and Vegetable Commission Merchant  
**Apples and Oranges**  
 A SPECIALTY  
 937-939 B St. N. W., Washington, D. C.

**1 plus 1** →

High-grade grease plus powdered mica makes Mica Axle Grease go twice as far as ordinary grease, and results in far better lubrication.

STANDARD OIL COMPANY (California)

**MICA AXLE GREASE**

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

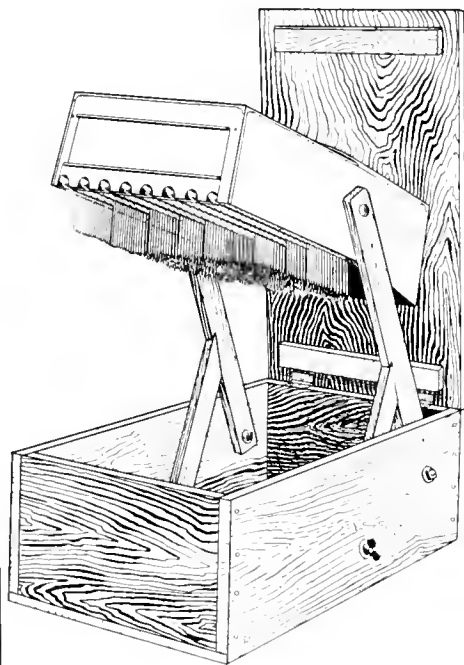
# J. & H. GOODWIN, LTD.

**Apple Exporters and  
Commission Merchants**

**Offices:**

**London, Liverpool, Manchester and Hull, England  
New York, Boston; also Maine, Virginia and California  
Address Correspondence: 60 State St., Boston, Mass.**

Nebraska	Pop.	South Dakota	Pop.
Danbury	550	Turton	350
Gothenberg	1,700	Timber Lake	300
Giltner	550	Vernillion	2,147
Gering	800	Webster	1,775
Lester	300	White Lake	950
Moorefield	450	Wolsey	700
Riverton	450	<i>Texas</i>	
Scottsbluff	1,746	Llano	1,600
Upland	650	Bowie	2,500
Watertown		Comanche	2,410
<i>Oregon</i>		Cisco	2,070
Enterprise	1,242	Lockdale	2,945
Bend	2,500	Lockhart	2,393
Klamath Falls	2,325	Mexia	3,000
North Bend	1,650	Plainview	2,515
Niagara		Rockdale	1,250
<i>Oklahoma</i>		San Augustine	1,250
Clinton	2,781	Dalhart	
Ojima		Waurika	
Purcell	2,552	<i>Washington</i>	
Woodward	2,018	Sumner	892
Comanche	1,410	Krupp	250
Herrington		<i>Wisconsin</i>	
<i>South Dakota</i>		Naron	1,074
Browning	1,100	Boscobel	1,900
Gettysburg	350	Osceola	925
Kodoka	350	Broadhead	1,875
Claremont	375	<i>Wyoming</i>	
Corona	350	Gillette	448
Eureka	1,000	Hanna	1,500
Groton	1,275	Pine Bluffs	246
Gregory	1,216	Upton	244
Hill City	250	Basin	763
Java		Cody	1,132
Lemmon	1,255	Douglas	2,246
Mott		Guernsey	274
Parker	1,450	Thermopolis	1,524



## The Hardie Nail Stripper

Made of heavily coated tin, this stripper is built for hard continuous service.

Its use means a cutting of packing house costs.

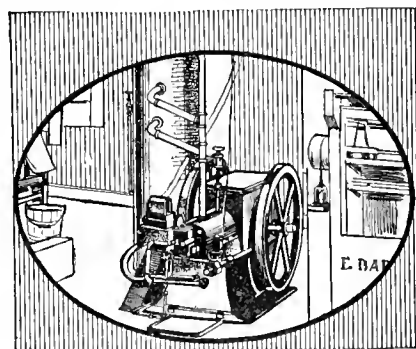
It is but one of many practical orchard and packing house devices described in our free circular. Send for it.

**The Hardie Mfg. Co.**

49 North Front Street  
Portland, Oregon

### 23-Year Engine Record

Witte's new catalog, the finest by the way, in the whole engine business of America, shows his complete up-to-date line of styles and sizes, from 2 to 22 horsepower—stationary, skidded, portable and special saw-rigs, and quotes



WITTE Engine used for more than 23 years by McBeth & Dallas, Garden City, Kan.

his present remarkably low prices. All sold under a binding five-year guarantee, and subject to full 90 days' free trial. To get a new catalog and full information, with latest prices, write Ed H. Witte, Witte Engine Works, 1880 Oakland Ave., Kansas City, Mo.—Adv.

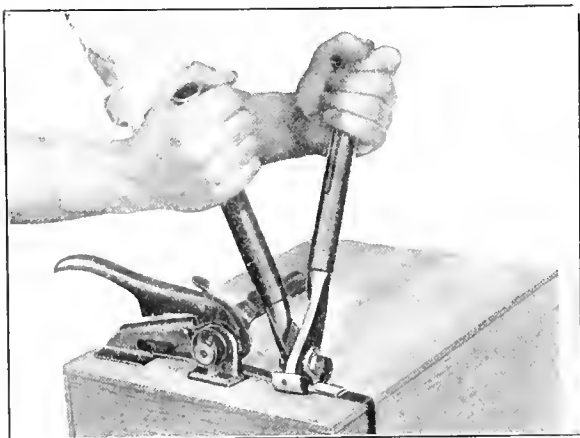
### Boiling Points Real Test of Gasoline, Says Expert

"To start easily, accelerate quickly and smoothly, and have plenty of dependable power with economical mileage, you must use a gasoline having its boiling points in a continuous, unbroken, gradually rising series," is a statement made recently by a prominent Standard Oil man.

"Boiling points are what determine good gasoline, not gravity. And it is well to bear in mind that mixtures or blends cannot have the proper continuous chain of boiling points. There are so many connecting fractions in the chain that no mixture could be made to contain even approximately the correct number or character of links. Straight-distilled refinery gasoline is the only motor-fuel containing the correct chain of boiling points."—Adv.



## Steel Box Strapping



Used in connection with metal seals consists of encircling a package with a metal strap, drawing the strap very tight and interlocking the overlapping strap-ends within a metal steeve (**SIGNODE**) in such a manner that the joint has a greater tensile strength than the strap itself. Nails, rivets and buckles, with their attendant objections, are entirely eliminated.

Write for  
Catalog

Acme Strapping packed in bbls. of about 500 lbs. or larger pkgs.  
Metal Seals packed in cartons containing 2,000-2,500 seals.

**ACME STEEL GOODS CO. MFRS.**

Factory: 2840 Archer Ave., Chicago

311 California St., San Francisco

# THE STATE AND NATION

UNITE IN SUPPORT OF THE

# Oregon Agricultural College

CORVALLIS, OREGON

Where trained specialists with modern laboratories and adequate equipment give instruction leading to collegiate degrees in the following schools:

**AGRICULTURE**, with fifteen departments.

**COMMERCE**, with four departments.

**ENGINEERING**, with six departments, including Civil, Electrical, Highway, Industrial Arts, Irrigation and Mechanical Engineering.

**FORESTRY**, including Logging Engineering.

**HOME ECONOMICS**, with four major departments, including training in the Practice House.

**MINING**, with three departments, including Chemical Engineering.

**PHARMACY**.

**INDUSTRIAL EDUCATION** a specialty.

**VOCATIONAL COURSES** offered in all Schools.

**THE SCHOOL OF MUSIC** offers instruction in the principal departments of vocal and instrumental music.

**THE MILITARY DEPARTMENT**, established in 1872, enrolled 1085 cadets in 1916-17, and won recommendation for O. A. C. from the Western Department of the U. S. War Department as one of the fifteen "distinguished institutions" of higher learning in the country. All cadets will be furnished complete uniforms by the U. S. Government, and the junior and senior cadets, enrolled in the R. O. T. C., will be given commutation for subsistence, as well as all transportation and subsistence at the six weeks' Summer Camp.

**Registration Begins October 8, 1917**

INFORMATION ON REQUEST.

ADDRESS REGISTRAR, OREGON AGRICULTURAL COLLEGE, CORVALLIS, OREGON

## Pollination by Bees

By A. Bowman

THE necessity of bees in orchards as an aid to pollination has passed the experimental stage, and this phase of the question permits of no argument. It is interesting to know that in the large apple-growing districts what seems to be fabulous prices are paid to beekeepers for the use of bees for pollination purposes alone. In many instances five dollars per colony is willingly paid by orchardists, and this just for the use of the flying bees in the critical season of blossoming; and to such an extent is this practiced that frequently the demand exceeds the supply. If the apple growers of New Jersey and other sections can afford to pay a price that is nearly equivalent to the price of the colony alone, and which is virtually a temporary purchase, we in our districts may be overlooking some of the kinks that might be helpful to us locally in securing better pollination and a crop of better fruit.

Experiments of late years seem to indicate that the prune and cherry drop so prevalent some seasons may be largely due to insufficient or weak pollination, and more frequently blamed to bad weather conditions prevailing at the critical time when the blossom is receptive. This may be more or less true; but with bees on hand, even a few hours without rainfall permit their rapid flight, and the receptive blossoms

awaiting the visitation of insect life are thoroughly pollinated and fertilized by the visitors, who in their turn are more or less recompensed for their labor with the small amount of honey gathered; and unless weather conditions are very unfavorable a single bee will visit hundreds of blossoms before she gets

enough of a load with which to start homeward bound.

Our conditions in the Northwest are somewhat different from those in the Eastern sections. Bees are not as numerous and the distances between apiaries are much greater. This being the case, thousands of trees are never visited by the blessed bees by whose agency man would be greatly benefited if these visitations could be assured. The past season being backward and



### ECONOMIC AND MILITARY PREPAREDNESS

## THE UNIVERSITY OF OREGON

In addition to complete courses in general and scientific education, offers full opportunities in

### **MILITARY DRILL, DOMESTIC SCIENCE ARTS AND COMMERCE**

Plan for effective future service. Your country needs it. Send for free illustrated booklets, "Train the Brain for Peace or War" and "The Woman and the University." Address Registrar,

UNIVERSITY OF OREGON, Eugene, Oregon

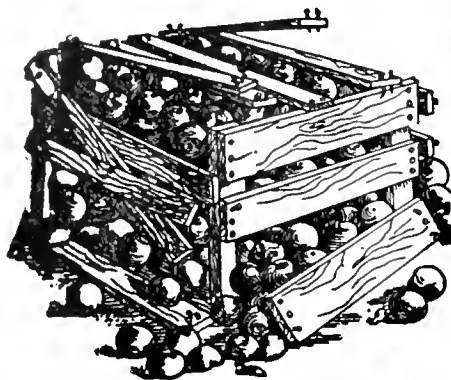
## We Carry a Full Line of Nursery Stock

### Capital City Nursery Company

AGENTS WANTED

Address 1030 Chemeketa St., SALEM, OREGON





BEFORE using Cement Coated Nails

### Western Cement Coated Nails for Western Growers

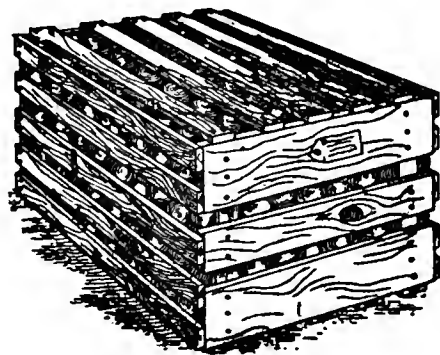
Our Cement Coated Nails are always of uniform length, gauge, head and count. Especially adapted to the manufacture of fruit boxes and crates. In brief, they are the Best on the Market.

Write for Growers' testimonials.

### Colorado Fuel & Iron Co.

DENVER, COLORADO

Pacific Coast Sales Offices  
Portland, Spokane, San Francisco  
Los Angeles



AFTER use of C. F. & I. Co.'s Cement Coated Nails

cold found the average orchardist totally unprepared to take advantage of bee insurance; and the same backward season kept the bees from breeding as rapidly as they otherwise would, it was impossible to secure big, strong, rousing colonies, and hundreds of dollars were returned to the would-be purchasers who, as usual, sent in their orders just as the blossoms were due to appear, without foresight as to conditions, and of course demanded immediate shipment.

It is to the orchardist and for his benefit these lines are written. Really, not only disappointment but serious losses are his unless he plans in advance and carries out his plans as a practical orchardist should. In the first place, while it is possible to ship or

transport bees at any and all seasons of the year it is neither best nor practical to do so. Better by far to get the bees now, or this fall, and have them ready for business on the spot before next season's blossoming time. Winter losses need not be severe if they are properly cared for; and the investment is so trifling compared to benefits assured that to beekeepers it seems incomprehensible that of all those who undoubtedly would be greatly benefited by the investment of a few dollars, still annually postpone or procrastinate until too late for prompt service.

We would suggest a community co-partnership affair that all might be assessed and all reap benefits. No stock other than bees will keep themselves and store a surplus for their owner, who merely furnishes them a house. No sweets are as healthy or wholesome as honey, the very source of which must appeal to all interested in flowers, and to be able to eat in quantities the very juice or extract of flowers is something to be devoutly wished for. Then consider the greatly increased crops of fancy fruit, all to be gained by getting and keeping a few colonies of bees. And to all orchardists we urge, get bees, and keep bees, and they will help keep you.

#### Fruit Crop Conditions of U. S.

New England: The apple crop is reported comparatively light this year.

New York: This is an off year for Baldwins, consequently the crop is very light. However, it is rather surprising, as this is the heavy year for Greenings, to find that the crop of Greenings is also lighter than normal. Western New York, a heavy producing section, is light, but the Hudson River Valley is pretty fair.

New Jersey: Apple crop lighter than last year; peaches show an increase over last year and over normal. The New Jersey apple crop is mostly early varieties.

Pennsylvania: No detailed report, but a possible increase over last year.

Ohio: The crop is estimated at normal, about 2,500 cars, compared with 2,100 last year. The peaches are unsatisfactory on account of unfavorable weather. Crop less than last year.

Michigan: Good crop expected. Baldwins, however, are light. Pears reported good, peaches light.

Virginia: Crop estimated about the same as last year; however, about one-half normal. York and Ben Davis about 30 per cent of last year. Crop of the state estimated about 5,000 cars, compared with 10,545 last year.

West Virginia: Fifty-five to sixty-five per cent of an apple crop is anticipated; peach crop excellent. Late in July it was estimated West Virginia would ship 3,500 cars of peaches.

Indiana: Apple crop anticipated 55 to 65 per cent of normal crop.

Iowa: Apple crop promises to show about 20 per cent increase over last year.

WITH ALL THE NATION FARMING AND ARMING FOR STRESSFUL TIMES CITY AND COUNTRY ALIKE ARE URGED TO RALLY AROUND THE AGRICULTURAL FAIRS—SEND EXHIBITS—ATTEND WHERE POSSIBLE.

## Oregon State Fair

SALEM

September 24 to 29

### Round Trip Fares to Salem

From Central Oregon and from North Bank Road Points from Fallbridge to Rainier, inclusive, daily September 20 to 29.

### Oregon Trunk Ry.

Central Oregon Line



As it is—

**TRUE**

—that—

**Caro Fibre**

**FRUIT WRAPPERS**

**Prolong the Life**

—OF—

**Apples**

You who Grow Apples with great Expense should Dress them Warm and Attractively.

Use Your Brains to Wrap Your Fruit.

Give Your Apples a Fair Show.

Get the Top Price.

The Apple Buyer knows Caro Fibre— Wouldn't You Pay a little more for a box of apples if you knew that it Would Keep Longer.

If Your Shipper Doesn't Use

**Caro Fibre Fruit Wrappers**

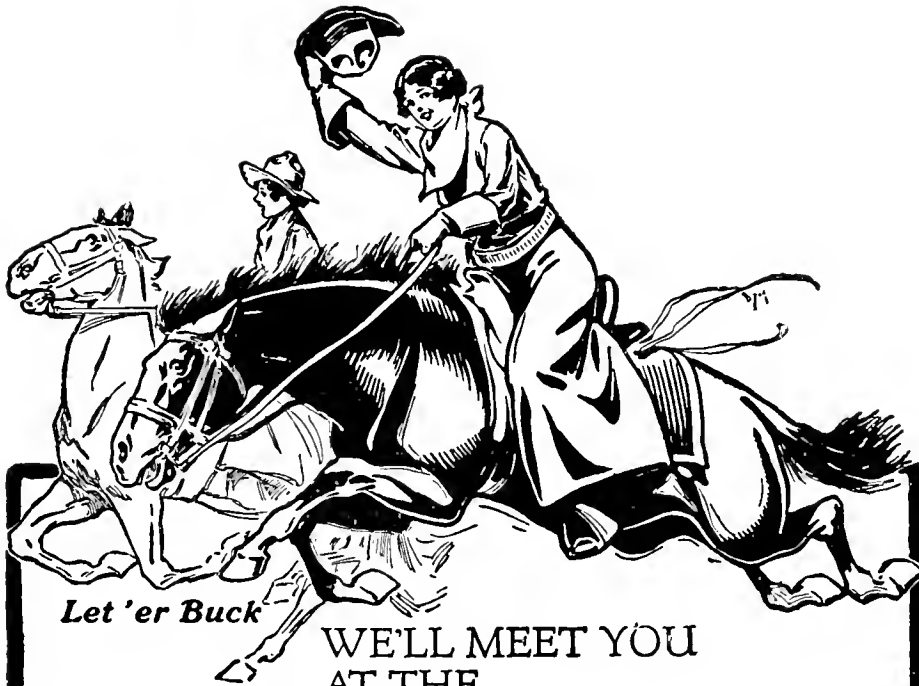
he is not giving your fruit a

Fair Show

**Union Waxed & Parchment Paper Co.**

MANUFACTURERS

F. B. DALLAM, Pacific Coast Representative  
417 Market Street  
San Francisco, California



Let'er Buck

WE'LL MEET YOU  
AT THE

# ROUND-UP

Cowgirls, cowboys, Indians, bronchos, ponies, wild horses and wild cattle and wild men—all will be there—to play and to thrill with their feats of skill and daring. You who know the Round-up we expect to see; you who do not have our most cordial invitation.

*Remember where and when*

## PENDLETON

SEPT. 20-21-22

LOW ROUND-TRIP  
FARES  $\$3$  VIA THE  
O-W R R & N  
UNION PACIFIC SYSTEM

WM. McMURRAY  
General Passenger Agent  
PORTLAND



Missouri: Indications in July that the crop in the Ozarks would be heavy. Peach crop anticipated about 50 per cent of normal.

Arkansas: Early reports indicate increase over last year.

Colorado: In July Palisade, Clifton, Fruita, Grand Junction estimated 2,800 cars of apples, 600 cars pears, 900 cars Elberta peaches, being an increase in pears and peaches. Apples show an increase, estimated at about 1,000 cars

over last year. Jonathan shipments expected about September 15. Delta County expects about 800 cars of peaches, 1,500 cars of apples; Montrose County 500 cars of apples. These estimates on apples amount to 4,300 cars, which is above what is generally conceded to the state, which is conservatively placed at 3,500 cars.

Utah: Probably a normal yield; last year almost an entire failure.

Idaho: Various estimates at from 1,500 to 2,500 cars of apples, against almost an entire failure last year.

California: Estimated around 5,000 cars; Pajaro Valley will ship possibly 4,000 cars or better.

Texas: 450 cars apples, 300 cars of pears, 1,500 cars peaches, being a normal yield for apples and pears, but only about 25 per cent of a peach crop. Peaches are light on account of late frosts.

Montana: Probably about 500 cars of apples, principally in the Bitter Root Valley.

Oregon: Hood River 1,200 to 1,500 cars of apples; the balance of the state about 1,000 cars, possibly more.

Washington: Apple conditions vary a little from early reports. Conservative estimate for Yakima district, 7,000 cars, possibly more; Wenatchee estimated about 8,000 cars, possibly more; Walla Walla about 500 cars; other districts 300, making a total of 15,800 cars for the state. July estimates for Yakima were: 971 cars pears, 1,595 cars peaches, 187 cars plums; Walla 238 cars pears, 205 cars peaches, 305 cars plums.

The apple crop of the Pacific Northwest sizes up about as follows: Washington, 15,800 cars; Oregon, 2,500 cars; Idaho, 1,500 cars; Montana, 500 cars; making a total of 20,300 cars. Of course it must be borne in mind these figures are only approximate estimates. Early estimates are frequently high, because when the final packing is done the culling is frequently more extensive than anticipated. A safe estimate at present would be from 18,000 to 20,000 cars of apples.

### Economy in Land Clearing

This is no time to use many men in land-clearing operations. Men are needed too badly in other important work for which there is no substitute for hand work, while the prevailing high rate of wages makes burning of stumps prohibitive even in spite of the high returns from crops. It is lucky that every farmer with idle land can turn so easily to the blasting method of taking out his stumps, for the liberal use of powder will enable him to accomplish with little labor what would be almost out of the question by any other means.

But there is blasting and blasting, and it is important that the right explosives be secured, or even this method may be more expensive than it should. All powders on the market (there are dozens of different kinds and grades) have certain uses for which they are particularly suited by their nature. Each one has been designed for breaking up some certain material in a cer-

**WE OLD FELLOWS APPRECIATE WHAT IT IS, TO GET THE ORIGINAL GRAVELY.**

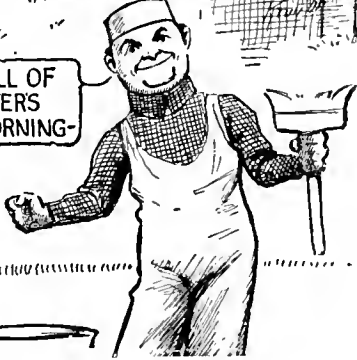
**IT'S TOO BAD PEYTON GRAVELY COULDN'T HAVE LIVED TO SEE THAT POUCH USED FOR HIS PLUG**

**GRAVELY'S CELEBRATED Chewing Plug**

BEFORE THE INVENTION OF OUR PATENT AIR-PROOF POUCH GRAVELY PLUG TOBACCO MADE STRICTLY FOR ITS CHEWING QUALITY WOULD NOT KEEP FRESH IN THIS SECTION. NOW THE PATENT POUCH KEEPS IT FRESH AND CLEAN AND GOOD. A LITTLE CHEW OF GRAVELY IS ENOUGH AND LASTS LONGER THAN A BIG CHEW OF ORDINARY PLUG.

*P.B. Gravely Tobacco Co. DANVILLE, VA. ESTABLISHED 1861*

**THERE'S AN EYE FULL OF NEWS ON BILLY POSTERS BILLBOARDS THIS MORNING—THAT'S A CINCH!**



tain way. On the selection of the powder for the use in view hinges a large part of the problem of economy in land clearing this year.

Farmers who will have this work to do should make it a point to inform themselves on the subject. They should do it without delay, for the market is very uncertain, and unless the war is to stop very soon, the supply of any particular grade or type may be cut off from civilian users. More than that, the price is advancing each month or

so, and the man who buys now buys cheapest. For work during the next twelve months, the explosives should be bought now and stored within reach.

Since most stumps throughout the Northwest are large, it seldom pays to blast them out by firing the charges with ordinary cap and fuse. Any one charge that can be loaded under a big stump to take it out, even of the most modern, improved powder, will create a big cavity that takes time to fill. What is needed is a multiplication of smaller charges, located one under each of the main roots. The total cavity then made is no larger than a one or two-stick charge will make, because, though a great deal more powder may be used than one or two sticks, it is spread over a large area.

The electric blasting machine as a labor saver is not yet fully appreciated. The difference between its use for firing charges and the use of fuse starts with the making of the holes for the charges. It is a comparatively quick and easy job to make inch and a half holes with a bar or auger to a depth of two or three feet, but to tunnel under a stump for the loading of a charge as big as a peck measure or larger is another matter. A still further saving results from the thorough splitting apart of the stump body and roots, so that they all may be handled easily by hand—not to mention at length the complete removal of all roots from the ground.

Economy in land clearing this year is a matter of doing a clean, complete job in as little time and with as little man-work as possible. To accomplish it, blasting is the one available means, and proper blasting at that, with carefully selected powder.

**To Inspect Perishables**

The Food Production Act authorizes the Bureau of Markets, United States Department of Agriculture, to conduct an inspection service in order to certify to shippers the condition as to sound-

**WANTED**

Complete outfit of used box making machinery, except boiler and engine. Must be in good repair. State price and shipping point in first letter. Address "Box Maker," care Better Fruit

**Wanted** Position as manager of bearing orchard. Understand thoroughly all kinds of orchard work. Can give best of references as to ability and character. At present employed, but want to make change.

James F. Worst, Husum, Wash.

**Standard Sprays of the World**



WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

**APPLES**

**GINOCCHIO-JONES FRUIT CO.**

Kansas City, Mo.

Apples, Pears  
Prunes, Fruits

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32 Years Our Record

**PORTLAND WHOLESALE NURSERY COMPANY**

Rooms 6 & 7, 122 1/2 Grand Ave., Portland, Oregon

Wholesalers of Nursery Stock and Nursery Supplies  
A very complete line of  
Fruit and Ornamental Trees, Shrubs, Vines, Etc.

SPECIALTIES

Olean Coast Grown Seedlings  
Oregon Champion Gooseberries and  
Perfection Currants

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**YOU CAN EARN \$50.00 PER DAY**

WITH THE

**Gearless Improved Standard Well Drilling Machine**

Drills through any formation. Five years ahead of any other. Has record of drilling 130 feet and driving casing in 9 hours. Another record where 70 feet was drilled on 2 1/2 gallons distillate at 9c per gallon. One man can operate. Electrically equipped for running nights. Fishing job. Engine ignition. Catalogue W-8.

REIERSON MACHINERY CO., Mfg., 1295-97 Hood St., Portland, Ore.

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

ness of fruits and vegetables and other food products when received at important central markets to be designated by the Secretary of Agriculture.

The service should stimulate proper grading and packing of products intended for shipment and also should have a considerable effect in increasing next year's production, as it will tend to inspire confidence in the minds of producers and will cause farmers to send to the market certain highly perishable commodities which are not now shipped because of persistent reports of arrival in bad condition.

This work still is in a more or less experimental stage, although experiments conducted at Fort Worth, Texas, in the fall of 1916 demonstrated its practicability and educational value to shippers. One or more inspectors will be placed in the more important markets to handle cars regarding which complaints have been received from shippers or receivers. The number of inspectors to be stationed in each city will depend not only upon the size of the market, but upon the number of commodities to be covered by the service. It is contemplated that certain phases of this work will be conducted in co-operation with the United States Food Administration.

#### Exchange Gives Returns on Berries

Frederick W. Buff of the Fruit Growers' Exchange, Hood River, Oregon, last week completed the closing of the season's strawberry pools. Some excellent returns were made to the growers, as follows: June 4th, \$5.20; 6th, \$4.03; 7th, \$3.50; 8th, \$3.84; 9th, \$3.60; 10th, \$3.80; 11th, \$3.49; 12th, \$3.52; 13th, \$3.52; 14th, \$3.60; 15th, \$3.56; 16th, \$3.56; 17th, \$3.44; 18th, \$3.31; 19th, \$3.33; 20th, \$3.06; 21st, \$2.82; 22nd, \$2.76; 23rd, \$2.90; 24th, \$2.84; 25th, \$1.99; 26th, \$2.50; 27th, \$1.66; 28th, \$2.14; 29th, \$2.10; 30th, \$2.08. July 1st, \$1.90; 2nd, \$1.90; 3rd, \$1.84; 4th, \$1.80; 5th, \$1.85; 6th, \$1.93; 7th, \$2.01; 8th, \$1.99; 9th, \$2.02; 10th, \$1.91; 11th, \$2.03; 12th, \$2.10; 13th, \$2.04; 14th, \$2.09; 16th, \$2.05; 17th, \$1.99; 18th, \$2.08; 19th, \$2.35.

Apple Growers' Association, Hood River, Oregon, prices on strawberries for 1917: June 1 and 2, \$4.80; 3 and 4, \$3.33; 5 to 11, \$3.45; 12 to 15, \$3.51; 16, \$3.64; 17 to 19, \$3.30; 20, \$3.18; 21 to 24, \$2.80; 25 and 26, \$2.63; 27 to 30, \$2.09. July 1 to 6, \$1.81; 7 to 11, \$1.87; 12 to 18, \$2.02; 19 to 27, \$2.25. Both dates given with each price are inclusive.

#### Food Conservation.

Mr. G. Harold Powell, manager of the Citrus Fruit Growers' Association, Los Angeles, probably the highest paid manager of any fruit association in the United States, has been given a leave of absence so that he could go to Washington to assist Mr. Hoover in the food conservation campaign. No better man could have been sent for this purpose, for the reason that Mr. Powell is familiar and has been interested in the fruit industry from boyhood and understands the business as thoroughly as any man in the United States.

# The Portland Picking Bag



*The Safe Way for Fruit*

#### PRICES

Single bag . . . . . \$1.75  
Lots of three bags . . . . . 5.00  
Lots of dozen bags . . . . . 18.50

By insuring both a safe and speedy method of handling fruit, this bag has no equal. Its large opening at the top relieves any hesitation as to where fruit should be placed.

The all-canvas sides and bottom prevent bruising.

Its large capacity saves frequent emptying.

It is carried by shoulder straps, leaving both hands free for picking.

Its emptying arrangement is so simple and efficient that a distinct saving in time and freedom from fruit injury is made.

Its price is so moderate that they should be found in every orchard.

## The Hardie Mfg. Co.

49 North Front Street

PORTLAND, OREGON

# CALIFORNIA ATTRACTIONS

SAN FRANCISCO  
DEL MONTE  
MONTEREY  
PASO ROBLES  
SANTA BARBARA  
LOS ANGELES

Very attractive at this season of the year. Automobiling, golf, tennis and all out of door sports.

**Round Trip Tickets** Now on sale to Southern California points will enable you to visit these places.

Ask your local agent for information.

John M. Scott, General Passenger Agent,  
Portland, Oregon

## Southern Pacific Lines



This Medford (Oregon) Ice and Storage Company Warehouse  
IS INSULATED WITH

## Cabot's Insulating "Quilt"

at the lowest cost and with the greatest efficiency and permanence. Quilt is made of eel-grass, the fiber that will not rot, will not burn, will not harbor insects or vermin. It makes a thick cushion of dead air spaces that keeps out heat better than other insulators that cost much more and that are not permanent, sanitary or safe. One layer of Quilt is equal in insulating power (by actual test) to forty or fifty layers of common building paper. It is easy to apply, low priced and never goes to pieces in the work.

Send for sample of Quilt, with catalog and prices, to

**SAMUEL CABOT, Inc., Manufacturing Chemists, Boston, Mass.**  
or to the Northwest Distributors:

**S. W. R. DALLY, Globe Building, Seattle**  
**TIMMS, CRESS & CO., Portland**

Conservo Wood Preservative—preserves posts, planks and all other timbers.  
Cabot's Creosote Stains—for shingles, siding and other outside finish.

United States Government Bureau of Standards tests show Cabot's Quilt more efficient than any other insulator, including cork board.

### How to Can Tomatoes

Select firm, well-formed tomatoes. Scald one and one-half minutes, or until skins loosen. Dip quickly into and out of cold water. Peel and remove stems and cores. Pack directly into cans or hot jars. Press down with a tablespoon (add no water). Add a level teaspoonful of salt per quart. Put the rubber rings and caps of jars into position, but do not tighten fully. Seal in cans completely. Place the packed containers on a false bottom in a vessel of water sufficiently deep to cover them by one inch and allow to remain at a boiling temperature for 22 minutes when using hot-water-bath canners.

### NORTHWEST FAIR DATES

#### STATE

Oregon—Salem, September 24 to 29.  
Washington—North Yakima, September 17 to 22.  
Idaho—Boise, September 24 to 29.  
Montana—Helena, September 24 to 29.  
California—Sacramento, September 8 to 15.

#### OREGON COUNTY AND LOCAL FAIRS

"Fan-'em-All"—Mitchell, September 3 to 5.  
Multnomah County—Gresham, September 11 to 16.  
Eastern Clackamas—Estacada, September 12 to 14.  
Coos and Curry Counties—Myrtle Point, September 12 to 15.  
Morrow County—Heppner, September 13 to 15.  
Jackson County—Medford, September 17 to 22.  
Community Fair—Hillsboro, September 18 to 20.  
Lincoln County—Toledo, September 18 to 20.  
Local Fair—Tygh Valley, September 18 to 20.  
Polk County—Dallas, September 18 to 20.  
Douglas County—Roseburg, September 18 to 20.  
Walheur County—Ontario, September 18 to 22.  
Linn County—Scio, September 18 to 20.  
Clackamas County—Canby, September 18 to 21.  
Columbia County—St. Helens, September 19 to 21.  
Round-up—Pendleton, September 20 to 22.  
Local Fair—Sisters, September 25 to 27.  
Wallowa County—Enterprise, September 25 to 28.  
West Side Fair—Tumalo, September 28.  
Harvest Festival—Grants Pass, September 28 to 30.  
Washington County—Forest Grove, October 2 to 5.  
Lane County—Eugene, October 3 to 5.  
Interstate Fair—Prineville, October 3 to 6.  
Local Fair—Albany, October 12 to 14.

#### WASHINGTON COUNTY FAIRS

Southwest Washington—Chehalis—Centralia, August 27 to September 1.  
Interstate—Spokane, September 3 to 8.  
Grays Harbor County—Elma, September 5 to 9.  
Pioneer Pow-Wow—Walla Walla, September 13 to 15.  
Local Fair—Kelso, September 15.  
Cowlitz County—Woodland, September 19 to 22.  
Klickitat County—Goldendale, October 9 to 13.

#### IDAHO COUNTY FAIRS

Madison County—Rexburg, September 3 to 8.  
Power County—American Falls, September 12 to 15.  
Bingham County—Blackfoot, September 12 to 15.  
Twin Falls County—Filer, September 17 to 22.  
Latah County—Moscow, September 25 to 29.  
Minidoka County—Rupert, October 2 to 6.  
Washington County—Cambridge, October 3 to 5.

#### OTHER EXPOSITIONS

Manufacturers' and Land Products Show—Portland, November 3 to 24.  
Northwest Livestock Show—Lewiston, November 8 to 15.  
Pacific National Dairy Show—Portland, November 16 to 23.  
Pacific International Livestock Show—Portland, November 19 to 24.

Red Crown's continuous chain of boiling points insures maximum power and mileage.

Standard  
Oil Company  
(California)

*The Gasoline of Quality*



## INCREASE THE FOOD SUPPLY

Let hoed crops provide for the present and the high prices obtained pay for a walnut orchard to provide for your future. Hoed crops, such as corn, beans and potatoes, grown between walnut trees will produce more food and income than grain grown on the whole ground. Walnut trees planted 40 feet apart use only a small part of the ground for the first few years. Plant our grafted Vrooman Franquettes. They have won a reputation for reliability and superior quality.

**Groner & McClure, Hillsboro, Oregon**

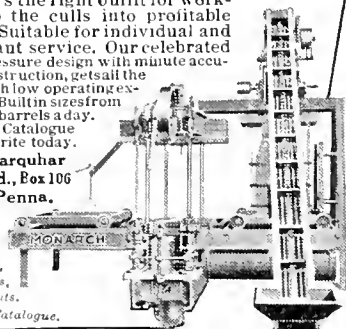


**MONARCH CIDER PRESS**

Here's the right outfit for working up the culls into profitable cider. Suitable for individual and merchant service. Our celebrated high pressure design with minute accurate construction, gets all the juice with low operating expense. Built in sizes from 15 to 400 barrels a day. 60-page Catalogue free. Write today.

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We also make Engines, Sawmills, Thrashers, Implements. Ask for Catalogue.



EXCLUSIVE SALES AGENTS FOR OREGON, WASHINGTON AND IDAHO

**Western Farquhar Machinery Co.**  
308 East Salmon Street  
PORTLAND, OREGON

**Packing Apple Ammunition**

Continued from page 6.

ened to another box. A rubber cot is worn on the thumb to assist in picking up the paper.

Wrapping apples is quite a trick. As the paper is held in one hand the apple is picked up with the other and placed, or rather thrown, into the middle of the sheet. As the hand closes over the apple the edges are caught by the other hand and given a slight twist, after which the apple is placed firmly in position in the box, folded side of the paper underneath.

Nearly all sizes of apples go into two styles of diagonal packs, three-two and two-two. The former is so called because three apples are placed across the end of the box, then two, and so on. Of the first three, one goes in each corner and one in the middle. The next two fit into the spaces between them, while the next three are placed in a position to the first three. The third and fifth layers are packed the same, but the second and fourth layers are packed two-three. That is, only two apples are laid next to the end of the box, fitting into the spaces below, between the apples in the layer underneath.

The two-two pack is started by placing an apple in one corner and another midway between it and the other corner. Of the next two apples, one is laid next to the space between the two just placed and the other in the space between one of the apples and the side of the box. All the layers in this pack are started the same way, only the corner apple is placed in the opposite corner from the one which contains an apple in the layer below.

Apples of which 104 or less fill a box are put into two-two packs, which have four layers, four rows to the layer, while all smaller sizes are packed three-two, having five layers of five rows each.

A postal scales is a great aid in determining in what pack apples of a certain size will go. This is found by dividing the weight of the apple into the weight of a box of apples, the latter being 45 pounds, or 720 ounces. For example, apples weighing a half pound each go into the 88 pack; seven-ounce apples pack 104; six ounce, 125; five ounce, 150; four ounce, 175. The use of a scales makes it possible to pick out for the grader guide apples of exactly the right size.

In exhibition packs the apples are all turned one way, but in commercial packs they are turned any way to make them fit closely together, so they won't work loose. In some packs, such as the 104 and the smaller three-two packs, the apples in each layer fit closely together, while in others, such as the 112, they must be left quite loose, being held in place by the apples above and below.

Given apples of a certain size, how can they be packed to "come out right"? It is all a matter of selection and knowing which way to turn the apple when it is laid in place. An expert packer must be a good judge of form and size, able quickly and accurately to measure

**I Say "Don't Buy this Tractor or Any Other Until You Get this Book"**

**It tells all about the most wonderful little Tracklaying Tractor ever built for Orchard and Vineyard work. Write me today, or send the "Tractor Opportunity" coupon. Lowest prices now.**

My name is W. B. Raymond, and I am the man in this concern whose job it is to get the story of the wonderful little Bean TrackPULL Tractor before orchardists and vineyardists. And I say "Don't buy this tractor or any other until you get the TrackPULL story, because that story may revolutionize your tractor ideas to your great benefit.

"There are some things that the TrackPULL won't do, and you want to know those things before you buy a Bean TrackPULL—and there are other things it will do that other tractors can't do, and those things are vitally important, particularly to vineyardists and orchardists.

"The front drive principle—steering with the track that PULLS—is just one of the features of this great little tractor that is patented. No other tractor is like it. A patent, of course, always means a big advantage.

"Look at the illustration. The Bean—6 h. p. at the draw bar—pulls instead of pushes itself over the ground, and you steer with the track that pulls. That means you can do everything with the Bean that you do with horses plus a lot of things horses and other tractors never have done—like going under tree-boughs only four feet off the ground and pulling full load on turns. The Bean works between seven-foot rows in vineyards—that's another advantage.

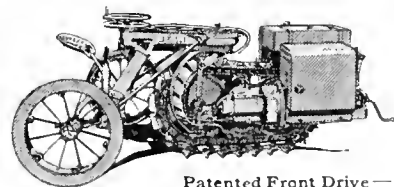
"But I couldn't begin to show you in an ad all the advantages. They've got to go into a book, and you ought to have that book before you buy a tractor because it will save you money."

**BEAN TrackPULL Tractor**

Send me the coupon below and I'll send you the book free. Read about the "Fifteen Features of the Bean." The price is \$150.00 now—the lowest priced track-laying type of tractor built—but material costs are steadily going up so I suggest you act quickly before a raise. There's a real tractor opportunity in this low price.—W. B. R.

**Bean Spray Pump Co.**

Makers of the Famous Bean Sprayers and Pumps



Patented Front Drive—No Other Like It

W. B. RAYMOND, BEAN SPRAY PUMP CO., 213 W. Julian St., San Jose, California.

Without any obligation on my part, send me your Bean TrackPULL Tractor Book at once.

Name \_\_\_\_\_  
Street \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_  
Number of acres \_\_\_\_\_  
Kind of crops grown \_\_\_\_\_  
I expect to buy a tractor about \_\_\_\_\_

**BUY AND TRY**

**White River Flour**

MAKES

**Whiter, Lighter Bread**

**GET A WITTE "KERO-OIL" ENGINE**

Save \$15 to \$200

Have More Power—Do your work easier—Get a better engine—At less cost—Make more money—Save more fuel—Immediate shipment—No waiting—Five-Year Guarantee—90-Day Trial—Hundreds of engines—2 to 22 H.P.—all styles—Ready to Ship—Suit yourself as to terms—Cash—or Payments—or



**NO MONEY DOWN** if arranged for. Write for latest book—(copy-righted)—"How to Judge Engines"—and latest wholesale factory prices—Direct. I ship everywhere in the U. S.—guarantee safe delivery—Save you \$15 to \$200—make you the best price. I ship big engines—or small engines—on wire orders.—ED. H. WITTE, Pres.

**WITTE ENGINE WORKS**

1888 Oakland Ave., Kansas City, Mo.  
1888 Empire Bldg., Pittsburg, Pa.

# DISTRIBUTION

## Is the Question of the Hour in the Great Northwest

(Read "Not Overproduction of Apples but Lack of Distribution," by E. H. Shepard, in July issue.)

How to get the **maximum of profit** with a **minimum of risk!**

You want to ship to the highest market. That means trading with people you never had any dealings with before. Sounds risky, doesn't it?

But, it is not—if you will use the **BIG BLUE BOOK**.

By referring to it you can tell at a glance what experience other shippers have had with every receiver in the country **AND INSTANTLY**, just as surely as if each and every shipper in the country had personally told you of his experience.

### The **BLUE BOOK** will:

- (1) Enable you to find the highest market.
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- (3) Gives you the accepted definitions of grades and trading rules.

The **BLUE BOOK** is our main feature—it helps Shippers avoid trouble—but there are other features of our Organization that help them out of trouble should they by any chance get into it.

Want to know any more about it? Write to

## Produce Reporter Company

904 Bell Telephone Building, CHICAGO, ILLINOIS

**I**F YOU would appreciate the services of old established, successful, responsible fruit distributors, keep the undersigned in mind when you have fruit to market. Write us for information. We give you conservative opinion on market conditions. We can market your fruit where it will bring best results. **PAGE & SON, PORTLAND OREGON**  
Thirty-six years same location.

## Pittsburgh Perfect Cement Coated Nails are of the highest standard

The Heads don't come off. Given Preference by Largest Pacific Coast Packers

MANUFACTURED EXCLUSIVELY BY  
PITTSBURGH STEEL COMPANY, Pittsburgh, Pa.

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359 Monadnock Building, San Francisco, California

WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

the size and shape of an apple with his eye. Since most apples are wider than they are long, the following suggestions will be found useful: To make the rows come out longer, lay the apples on end or on the side, crosswise; to make the rows shorter, lay the apples on the side, lengthwise; to make the layer wider, lay the apples on end or on the side, lengthwise; to make it narrower, lay the apples on the side, crosswise—that is, with the stems pointing across the box. If the box is too full, lay more apples on end; if not full enough, lay more on the side. It is sometimes necessary to choose very flat or very long apples to fit certain positions.

A similar application of the above principle is used to get the bulge on a box of apples, which is especially difficult for a beginner. Not only are slightly larger apples selected for the middle of the box but wide, flat specimens are picked out for that position—if the apples are being packed on the side—and long, narrow apples for the ends. If the apples are being packed on the end this process is reversed, the flat apples being used at the end of the box and the long ones in the middle. When the boxes are nailed up the bulge or crowns should be about three-quarters of an inch on both top and bottom. Before the top is nailed on the apples project above the top of the box about an inch and a half in the middle and half an inch at the ends, when pressed down firmly with the hands.

### Bitter Pit—Cause and Control

Continued from page 8

variety comparatively immune to the disease.

A valuable series of stock experiments are also being carried out by Mr. Quinn at the Government Experiment Orchard, South Australia. These trees are of various ages, and some of them are now beginning to produce a fair crop. The thinning experiments carried out by Mr. Quinn may also prove of commercial value. Early thinning may aid in the setting of fruit-buds for the following season, and thus insure a fair crop every season in the case of varieties that tend to bear alternate years. In order to minimize bitter pit in a variety subject to it, it is desirable to encourage regular bearing, and with regular thinning there is a possibility of inducing the habit of annual bearing, instead of having an "off" season. Experiments such as these can only be undertaken in connection with institutions which are likely to continue in existence for a long series of years. A beginning has been made in the government institutions of the School of Horticulture, Burnley, and the Experiment Orchard, South Australia, and it lies with those in authority to see that the work is carried to a successful issue.

We have already shown, in an experimental way, that the apple attains its full size at least a fortnight before it has fully matured; that by means of light pruning the amount of pit is considerably reduced; that under irrigation

conditions the least pit occurs when the trees are lightly watered throughout the season, and the greatest amount of pit when water is too liberally applied late in the season; and that in cold storage a uniform and constant temperature of 30-32 degrees Fahrenheit retards the development of pit and arrests the ripening process. Bailey, in his "Principles of Fruit Growing," recommends that "in the case of apples, it is generally best to pick them, if they are to be stored or exported, just as they have arrived at their full size and when they have attained only a part of their full color. Apples which are slightly green, however, generally continue to keep well after being taken from cold storage.

From these experiments we are fully justified in recommending: (1) For export purposes, to pick the fruit when it has reached its full size, but before it is fully ripe. (2) With pit-labile trees at least, to prune as lightly as possible when the bearing stage is reached, having regard to the bearing capacity of the tree, the vigor of its growth and the symmetrical development of its laterals. (3) When irrigation is practiced, to water lightly throughout the season, according to requirements and in order to keep the trees steadily going. (4) In oversea shipments it is necessary to maintain a constant and uniform temperature of 30-32 degrees Fahrenheit. The most successful shipment of apples from Australia was carried out on this principle. At the bottom of the hold there was a layer of six inches of sawdust, and the sides were lined with vegetable matting, as a good non-conductor of heat.

The export trade in apples from the commonwealth has now assumed large dimensions, and it is gratifying to find that we now know how to regulate the temperature of the freezing chambers so as to prevent the serious losses formerly arising from bitter pit developing on the voyage, and also from uniform temperature and until a line of commonwealth steamers has been established with refrigerating space,

## Cherry Trees

Fruit and Ornamental Trees, Shrubs, Vines, etc. *Free Catalog. Agents Wanted. Special Terms.*

**MILTON NURSERY COMPANY**  
MILTON, OREGON

## ORCHARD YARN

Listen, Orchardists: Now is the time to tie your fruit trees. All limbs can be readily seen; the spurs are less easily broken off than later; the saving of time is considerable and yarn is probably as cheap as it will be this season. **Orchard Yarn** is the correct method of supporting trees and the saving of a few trees is worth the cost of the yarn for an entire orchard.

Sold by all dealers. If they cannot supply you, please order direct from

**The Portland Cordage Company**  
Portland, Oregon      Seattle, Washington

# Denney & Co.

## CHICAGO

### Specialize in Box Apples and Other Western Fruits

WE'RE READY TO TALK BUSINESS WITH THOSE  
HAVING GOOD FRUIT

*Write or wire us what you have to offer*

### "Results are Better"

#### MITCHELL

Mitchell Motor and Service Co., Seattle  
"results are better and cost of operation considerably lower while using Zerolene."

#### BUICK

J. D. Lauppe, Sacramento  
"have found Zerolene to be a satisfactory lubricant for Buick automobiles."

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H. O. Harrison Co., San Francisco  
"gives perfect satisfaction."

#### MAXWELL

Cuyler Lee, Oakland  
"Zerolene has given us perfect satisfaction."



# ZEROLENE

## The Standard Oil for Motor Cars

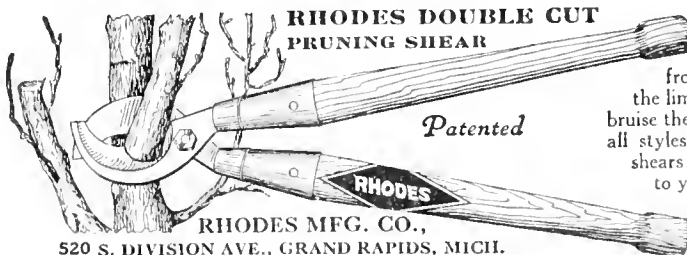
Endorsed by Leading Car Distributors

--because the records of their service departments show that Zerolene, correctly refined from California asphalt-base crude, gives perfect lubrication—less wear, more power, least carbon deposit.

Dealers everywhere and at our service stations.

**STANDARD OIL COMPANY**  
(California)

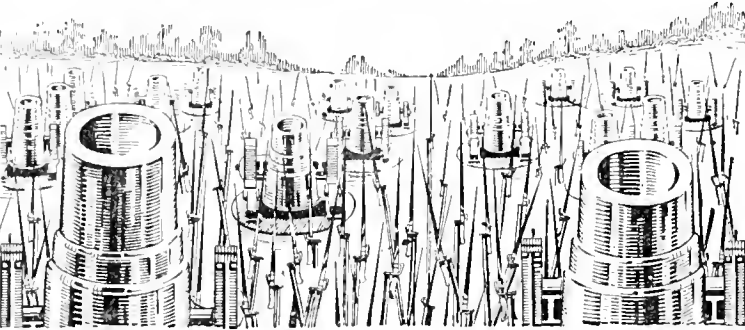
*For tractors, Zerolene Heavy-Duty is especially recommended.*



THE only pruner made that cuts from both sides of the limb and does not bruise the bark. Made in all styles and sizes. All shears delivered free to your door. Write for circular and prices.

**RHODES MFG. CO.,**  
520 S. DIVISION AVE., GRAND RAPIDS, MICH.

DU PONT AMERICAN INDUSTRIES



## Is the Enemy on Your Farm?

This is a war of endurance. Men and money are important but—*food counts most*. Soldiers who fight must eat. So must their dependents at home. The world must be fed.

Every idle acre of reclaimable land on your farm aids the enemy. Every acre of untilled soil deprives many needy mouths of food.

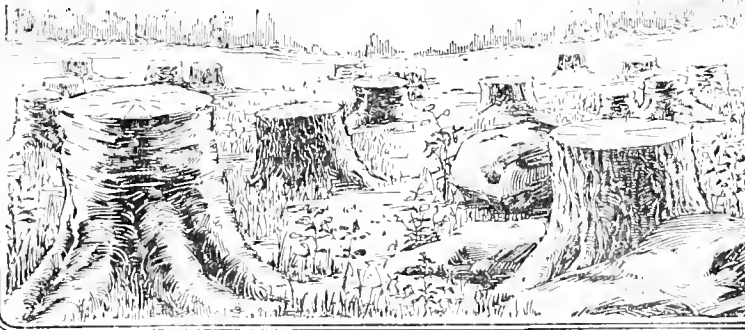
The sinking of each food ship is a disaster, but the idle acres of America could grow more food per year than all of the enemy's submarines can destroy. Fight the enemy now, with

**DU PONT and Repanno**  
**Stumping Powders**

Are the most efficient reclaimers of cut over, boulder strewn or swamp land. They help to solve the labor problem, enables one man to do the work of many and does it better and quicker.

Get our big book free. Write immediately for your copy of  
**Developing Logged-Off Lands**

**E. I. DU PONT DE NEMOURS & COMPANY**  
SEATTLE, WASH.                      SAN FRANCISCO, CAL.



when the temperature will be under control, it is desirable to adopt every means which experience has shown to be profitable for the safe carriage of the fruit.

The age of the trees has an influence on the development of pit, and this was clearly stated in my second report under the heading of "Old Apple and Pear Trees": "It is a well-known fact that young and vigorous trees are liable to this disease, while old and well-established trees are comparatively free, and this is just what would be expected from a consideration of the factors contributing to it."

An experienced shipper has given practical confirmation of this view in a letter recently received, and it is worthy of the attention of those orchardists engaged in the export trade. Mr. F. W. Moore, who was formerly Secretary to the Council of Agriculture in Tasmania and now belonging to a firm of Australian fruit merchants, Covent Garden, London, has kindly placed at my disposal his experience, extending over sixteen years. In 1900 he started shipping apples from Tasmania and came over to London with his first consignment, which landed in good condition. Next year he shipped two consignments of apples by way of the Cape, and had not only seen these apples growing on the trees, but many of them were wrapped and picked in his presence, and he felt satisfied that no better fruit had been shipped. When the fruit was opened in London, he was astonished to find that a very large proportion of the Ribston Pippins were badly affected with bitter pit. It so happened that a very large proportion of this variety, which was the only one affected, had been grown on young trees.

In 1902 he started the business in London of supervising the handling and sale of Tasmanian apples, and since that time his firm has had to do with the shipments of apples from all parts of Australia. As the result of this large experience he has come to the following conclusions: (1) That Ribston Pippins from older trees show less bitter pit than from younger trees, and instances the case of a Tasmanian grower who never ships this variety to England from trees under ten years old, and while bitter pit is never altogether absent from his consignments, it has never been very bad. (2) That fruit

Nice Bright Western Pine  
**FRUIT BOXES**  
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Good standard grades. Well made. Quick shipments.  
Carloads or less. Get our prices.

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See our representative or wire us.

## Sebastopol Apple Growers' Union

SEBASTOPOL, CALIFORNIA

from young trees is more severely attacked is strikingly confirmed by the fact that fruit from Northern Tasmania has shown a higher percentage of bitter pit than that from the south of the island. Fruit growing in Northern Tasmania is comparatively a new industry and a very large proportion of the trees there cannot be more than ten to twelve years old in the orchards which have been planted for commercial purposes.

In keeping with this view, West Australian fruit is often found to be badly affected, and it is known that a large proportion of the apple trees in that state are still comparatively young. It must not be forgotten that the fruit referred to, which was found to be badly affected on reaching London, had been placed on board comparatively free from any visible sign of pit. Kept at the proper temperature, it has been experimentally proved that the development of pit would have been retarded, but at the same time it suggests that many of these apples, if allowed to remain on the trees, would have become pitted.

In the experimental orchard in Western Australia, the Cleopatra trees were only ten years old when the fruit was picked, and this will partly account for the high percentage of pit in a season particularly favorable for its development. Just as the proper regulation of the temperature controls the pit in cold storage, so will the proper system of pruning in the orchard control it in the fruit still growing on the tree.

In seeking for the cause of this disease, we are at the same time endeavoring to discover how to prevent it, for by removing or counteracting the cause the effect will not be produced. Even although the cause is discovered, it is not always possible to get rid of it, and then we seek to minimize its effects. According to the nature of the cause or the supposed cause, so will be the nature of the remedial measure.

In France the insect origin of the disease is generally accepted, and accordingly the measures recommended are those calculated to destroy injurious insects. But we have found that the disease is produced even when insects are excluded, as in the case of apples grown inside calico bags, so that the special disease of bitter pit does not originate in this way.

In America it is sometimes mistaken for a disease caused by a fungus, and spraying with fungicides is resorted to,

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When packed in a plain box or crate, fruit is fruit. It does not mean apples or other fruit until you label it properly—and just as good clothes make a favorable impression—give distinction—so well designed and printed labels dress your package, appeal to the eye and help the sale.

*Our Lithographed Labels will advertise your brand and help the dealer sell your apples.*

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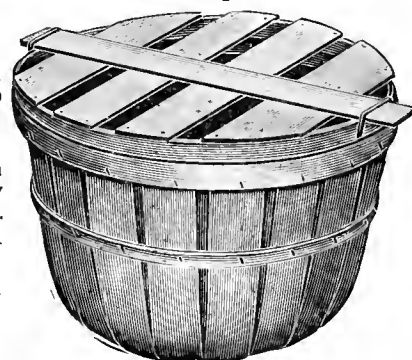
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PORTLAND, OREGON



# Ridley, Houlding & Co.

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Points to remember when consigning  
apples to the London Market

- 1.—We Specialize in Apples
- 2.—All Consignments Receive our  
Personal Attention
- 3.—The Fruit is Sold by  
Private Treaty

CABLE ADDRESS: BOTANIZING, LONDON

but the "bitter rot," for which it is mistaken, is quite a different disease, and all attempts to associate a fungus with bitter pit have failed. If we cannot always decide definitely what the cause of a disease is, it is important to know what it is not, in order to save the application of useless remedies. Bitter pit is due neither to insects nor fungus, nor even to bacteria, and therefore it is not parasitic in its origin.

In Australia it has been frankly confessed that the cause was unknown and that it required investigation.

The result of this investigation goes to show that the primary cause of the trouble is the extra pressure of the sap in the outermost layer of pulp-cells to begin with, causing them to burst and collapse, together with the vascular network associated with them. A large number of well-established facts have been brought forward to support this view, which has suggested the best known means of reducing the amount of pit in the orchard, and these remedies are supported by experimental evidence.

The cause having been considered, the control of the disease may now be attempted from a rational standpoint. Whatever tends to regulate the "flow of sap" and distribute it to the various fruit-buds so that each receives its due share without being over-gorged, will also tend to prevent pit. It is evident that pruning is the great factor here, and it has been proved experimentally that the pit in a susceptible variety such as Cleopatra may be reduced to 4-6 per cent by this means. But the fruit may be picked from the tree without any external trace of bitter pit and develop it afterwards. It was one of the main objects of this investigation to prevent the loss due to this cause in oversea shipments of fruit, and this serious loss may now be prevented by the exercise of common-sense methods. By keeping the fruit in cold storage at a uniform temperature of 30-32 degrees Fahrenheit, the development of bitter pit is retarded, and at the same time the ripening process is arrested. This is based upon the well-known principle that at that temperature there is a slowing down of the vital activities, and it is practically a case of suspended animation. All these results have been obtained by the experimental method, which is the only sure and satisfactory way of advancing our knowledge and at the same time assisting the orchardists. The practical applications have already been given and reported upon.

We are informed that a new booklet has just been published on reducing cider to boiled cider and apple jelly and the manufacture of apple butter by the steam process. Information on this subject will be of value to the fruit growers, especially this year, when all waste must be conserved to the fullest possible extent, and all perishable fruits converted into by-products for food use. This booklet, which is known as Catalogue No. 82, will be sent free on request by the Hydraulic Press Manufacturing Company, Mt. Gilead, Ohio.—Adv.

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TRUMAN BUTLER, Vice President  
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**ABSOLUTELY NO BRUISING**

Two men, one an **experienced machinest**, the other an **experienced cabinet maker**, with many years' practical experience in the fruit industry in Hood River, combined their **mechanical skill** and practical knowledge of fruit handling in perfecting a **grading machine**—a **model of simplicity, economy and efficiency**.

There is no machinery—Nothing to get out of order or be fixed connected with the Ideal Fruit Grader. It is practically all wood.

The operation is simple, consisting of a belt for a conveyor, operated by electricity or gasoline engine, and short elastic belts, which move each apple in the proper bin from the belt conveyor.

The Ideal Fruit Grader divides the crop into Extra Fancy, Fancy and C-grade, all at one time. The Extra Fancy being divided into seven bins on one side, the Fancy into seven bins on the other side and the C-grade going into six bins at the end of the grader.

Built for four sorters, the grader is 28 feet long and 9 feet wide built for eight sorters, 32 feet long.

In 1916 we packed 9,000 boxes with the Ideal Fruit Grader with two packers without the machine ever stopping once for repairs of any kind. Further detailed information, illustrated circulars and prices will be furnished upon request.

**IDEAL FRUIT AND NURSERY CO.**  
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**A**DHESIVENESS or holding power is the reason for PEARSON nails. For twenty years they have been making boxes strong. Now, more than ever.

**R**ELIABILITY behind the goods is added value. You can rely on our record of fulfillment of every contract and fair adjustment of every claim.

**S**ATISFACTION is assured by our long experience in making nails to suit our customers' needs. We know what you want; we guarantee satisfaction.

**O**RIGINALITY plus experience always excels imitation. Imitation's highest hope is, to sometime (not now) equal Pearson—meantime you play safe.

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THE COUNTRY'S FANCY  
APPLES  
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OUR MARKET-  
THE WORLD

# BETTER FRUIT

VOLUME XII

OCTOBER, 1917

NUMBER 4

## SPECIAL FEATURES

FEATURES OF THE  
TENTH NATIONAL APPLE SHOW  
SPOKANE, NOVEMBER 19-24  
1917

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FRUIT-BUD FORMATION

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GOVERNMENT ESTIMATES OF  
THE APPLE CROP

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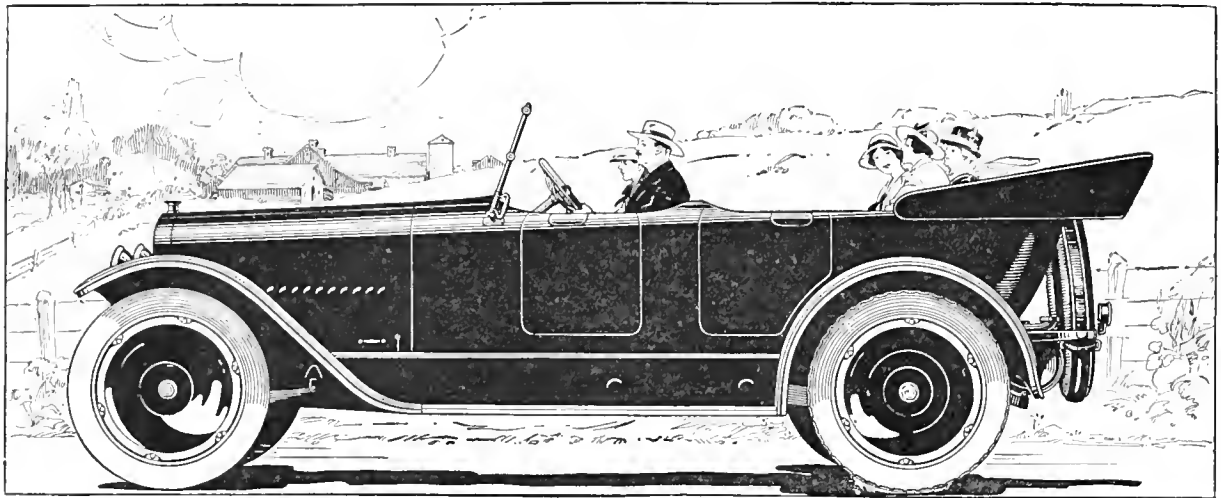
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It is evident that Mitchells offer more than buyers ask. Were it not so, all fine cars would need to have these extras.

The usual margin of safety is 50 per cent over-strength. Mitchells are built to the standard of 100 per cent over-strength. That is, each part is twice as strong as need be.

That means costly steels. It means oversize parts. It means toughened steel in more than 440 parts.

It means \$100,000 yearly for radical tests and inspections. Gears are tested for 50,000 pounds per tooth. Springs are so tested that in two years not one rear spring has broken.

But it means to you a lifetime car. Two Mitchells that we know of have already been run over 200,000 miles each. And it means repair cost reduced by at least 75 per cent.

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There are 31 features in Mitchells which nearly all cars omit. Things like a power tire pump, reversible headlights, shock-absorbing springs, etc. They are more than you ask, but every feature is something that you need.

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thus save a vast amount. All of that saving goes into added luxury. In the Mitchell you find every known attraction.

### Yet a Lower Price

Yet the Mitchell prices are far below other cars of like size and class. Note that \$1250 buys a 40-horsepower Six, with a 120-inch wheelbase.

The reason lies in a model factory, built under John W. Bate. By efficiency methods he has cut our labor cost in two. Every machine is designed to build this one type at the lowest factory cost.

With our mammoth output, this saving is enormous. Part of it goes into extra values—into over-strength, extra features, added beauty. And part of it shows in the lower price.

Here is the greatest value to be found in the fine-car field. You can see that at a glance. But the years will show you more than you can see.

Our latest models will amaze you by their beauty and completeness. For your own sake, go and see them. If you do not know our nearest dealer, ask us for his name.

MITCHELL MOTORS COMPANY, Inc.  
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**Mitchell**—a roomy 7-passenger Six, with 127-inch wheelbase and a highly developed 48-horsepower motor.

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Also Town Car and Limousine.

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*Mitchell*

Sixes

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**Mitchell Junior**—a 2 or 5-passenger Six on similar lines, with 120-inch wheelbase and a 40-horsepower motor.  $\frac{1}{4}$ -inch smaller bore.

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All Prices f. o. b. Racine.



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The home of the big "A" brand of apples.

Winner of first prize at the National Apple Show, 1916,  
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## The Hardie Nail Stripper

Made of heavily coated tin, this stripper is built for hard continuous service. Its use means a cutting of packing house costs.

It is but one of many practical orchard and packing house devices described in our free circular. Send for it.

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Drive and demonstrate the Bush Car. Pay for it out of your commissions on sales. My agents are making money. Shipments are prompt. Bush Cars guaranteed or money back. 1918 models ready. Write at once for my 48-page catalog and all particulars. Address J. H. Bush, Pres., Dept. 10MN



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# BETTER FRUIT

AN ILLUSTRATED MAGAZINE PUBLISHED MONTHLY IN THE INTEREST OF MODERN, PROGRESSIVE FRUIT GROWING AND MARKETING

## Food Administration and Fruit and Vegetable Industry

Address by G. Harold Powell at Twenty-third Annual Convention of the International Apple Shippers' Association, New York, August 16, 1917

IT is a pleasure to meet the members of the International Apple Shippers' Association as a representative of the United States Food Administration, to discuss some of the questions that confront the apple industry as a result of the war and to establish a relationship of mutual confidence between the Food Administration and this organization.

### The Food Problem of America.

The food problem of America is to send our Allies more foods of the most concentrated nutritive value in the smallest shipping space. These foods are wheat, beef, pork, dairy products and sugar. The solution is to eat less of these exportable foods, to substitute other foods, particularly the perishables, and to waste less food of all kinds.

The food supplies of our Allies have been greatly reduced because the farmers are fighting at the front. Before the war, the food production of the Allies was not equal to their consumption. They secured their surplus requirements from America, Russia, Roumania, South America, India, Australia and other countries. Now they can no longer obtain their food from most of the outside countries. There is a shortage in man power, in transportation, and there are other difficulties which they cannot surmount. Our Allies, therefore, ask America to supply them with the necessities of life that they may live and fight the battle—our battle, as well as their own,—for liberty and for democracy.

America will of course supply the Allies with food, but it can be done only by the co-operative, patriotic effort of every individual and every industry by producing abundantly, by handling food products wisely, by reducing the economic wastes in distribution, by simplifying the distributing machinery, by selling at reasonable prices without excessive distribution profits and by practicing economy and efficient management in the use and handling of food supplies.

America must increase her normal exports of wheat from 88,000,000 to 220,000,000 bushels if the Allies are to be properly fed. It can be done by reducing the use of wheat one pound per person per week and by the substitution of other foods.

The food animals of the Allies have decreased 33,000,000 head since the war began. The needs of the Allied soldiers have increased the meat consumption abroad. The United States has already tripled the meat exports

to the Allies since the beginning of the war. With an increase in the demand for meat and a decrease in the source of supply abroad, our exports must be greatly increased. If we will save one ounce of meat per person per day, the Allies can have what they need.

There is a steady falling off in the dairy products of our Allies because of the loss in cattle and the increased cost of feed. Our exports last year reached three times as much butter and ten times as much condensed milk as we sent before the war. These exports must be still further increased if the Allies are to be adequately supplied.

The Allies will need 2,000,000 pounds more of sugar than they imported before the war. The supply must be drawn from the same source as our own supply. This can be done only by individual economy. Our present consumption of sugar per person is twice that of France.

In meeting the war food problem, the Food Administration approaches the business interests of America in a

spirit of co-operation, and with a confidence that when the problem is clearly defined the industries will act quickly and directly in reaching the solution. But there are no miracles in prospect in the handling of perishable products. Taken in the large, we are dealing with millions of farmers most of whom are unorganized; with at least three hundred and fifty thousand wholesale and retail distributors who as a whole are equally unorganized; with the habits of twenty million families whose individualism is not less pronounced than that of the producer himself; with systems of transportation and of terminal distribution; with business methods and with buying and consuming habits that have grown up through generations of gradual evolution. Yet we are confident that from national necessity the evolution in the methods of handling the nation's food will quickly effect a saving in food supplies and develop a more direct method of distribution at a lower cost to the producer and consumer. Through the co-operation of the pro-

Continued on page 21

## WOODROW WILSON

President of the United States

SAYS

TO THE MEN WHO RUN THE RAILWAYS OF THE COUNTRY—THE railways are the arteries of the nation's life and that upon them rests the immense responsibility of seeing to it that these arteries suffer no obstruction of any kind.

THE GREATEST SINGLE OBSTRUCTION TO THE PROMPT handling of freight today is the shortage of cars.

IT IS NOT POSSIBLE TO BUILD NEW CARS IN TIME TO relieve the situation.

THERE IS NO OTHER MEANS BY WHICH THE CAPACITY of the railways can be so economically and efficiently increased as by increasing the load per car.

YOU

CAN HELP WIPE THIS DIFFICULTY OFF THE MAP.

It's easy! Listen!

NO CAR IS LOADED UNLESS AND UNTIL FILLED TO FULL visible capacity, or to 10 per cent above marked weight-carrying capacity.

A CAR LOADED TO FULL (10 PER CENT ABOVE MARKED) capacity can be moved just as fast as an under-loaded car and does not take up any more yard or sidetrack room.

That's 110 per cent efficiency!

AN INCREASE OF ONLY TWO TONS PER LOADED CAR WOULD be the same as adding 200,000 new cars to the supply available for public use.

HEAVIER CAR LOADING WILL ELIMINATE THE CAR SHORTAGE OF THE NATION.

JUST A LITTLE THOUGHT AND QUICK ACTION IS ALL THAT IS NECESSARY.

HOW CAN YOU AFFORD NOT TO "DO YOUR BIT"?

# The Fruit-Bud Formation Related to Orchard Practice

Address Delivered by E. J. Kruse at Twelfth Annual Meeting of Washington State Horticultural Association, Spokane, Wash., November 15, 1915

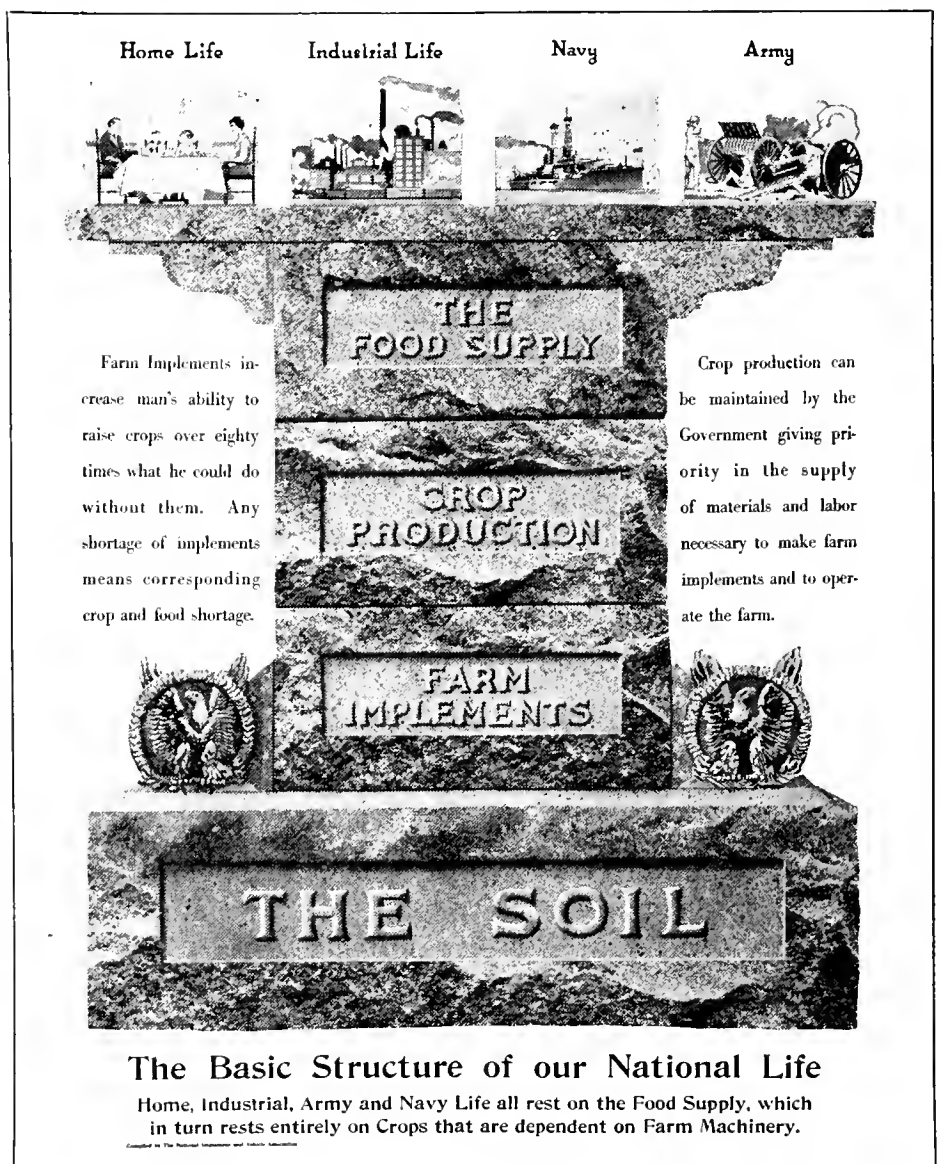
It is intended in this talk to deal with some of the possible methods for the modification of fruit production, especially a few of the many pruning practices in use, since they are generally and widely discussed, and viewpoints differ greatly. It is to be understood from the outset, however, that any practice is a means to an end and not an end in itself. As soon as the fruit grower recognizes this he is in a way to make substantial progress in his work and not until then. It makes absolutely no difference what system or systems of orchard practices may be employed, nor can any one system be universally recommended as best; the power of control of the fruit bud or fruit spur system rests not upon a mere code of pruning or cultivation ideas, but upon principles and laws influenced by every practice. Since this is so one should be ready to adopt whatever of good there may be in any set of rules and discard that which is not acceptable. Orchard practices must be supplemented one by another. It is only by a rational combination of pruning, cultivation, fertilization, irrigation, cover-cropping, inter-cropping, or any other operation which has to deal with the change or modification of the functions of the tree, that ideal fruiting conditions can be maintained. To determine the exact adjustment of orchard practices each man, to a large degree, must conduct his own experiments and determine not only what is best for his orchard as a whole but for each tree individually. The surest way to judge the needs of a tree is to carefully check over the treatment given it during the past and note the response. Having done this, modify the practice to conform to requirements. It may be an increase or decrease in cultivation to suppress or encourage growth; the application of manures or fertilizers, irrigation, or the combination of these and other agencies rather than a radical change solely in the pruning or any other one practice. Fruit-bud formation is directly induced and the buds are dependent upon the conditions existing within the tree, and not by any system that may be hotly agitated today and abandoned tomorrow.

In the past argument has waged around the ideal tree form but all are coming to realize more and more that tree-form is less essential than tree performance. It is folly to say that any one form is best; it may be best under certain circumstances, but certainly not universally so. Whatever the shape chosen, however, under all circumstances it must be compatible with the basic idea of production, and in discussing production one is at once lead into a discussion of the fruit-producing machinery, the fruit-bud system.

That misunderstanding may be avoided later, the several classes of fruit buds are mentioned. Those of perhaps most general occurrence and certainly the most widely discussed are those borne on fruit spurs. Now a fruit spur may be either simple or compound, depending on whether it bears a single terminal bud, as is the case when very young, or many buds, as is often true when several years old. The second most frequently occurring class of buds is the axillaries. They are borne on current-year wood in the axils or angles of the leaves and always close to the branch from which they arise. In apples it is often very difficult to tell them from the axillary leaf buds, in pears they are usually readily distinguishable by their large size and plumpness. This class of buds merits more attention than it has received in the past, though they are of rare occurrence in certain varieties, in others they are extremely abundant, and it is often from them that the major portion of fruit is produced on

young, vigorous trees. The third class embraces the terminals, so-called because they are borne at the tips or terminals of shoots or branches. Of course it is realized that in the case of fruit spurs the fruit buds are really terminal in position, but in the class now under consideration the shoots and branches are of considerable length, longer than would generally be considered a spur growth. In Ben Davis, for example, the spurs bearing a fruit may produce one to three very long laterals which in turn produce a fruit bud at the tip. If these laterals are very long the fruit bud would be considered "terminal"; if shorter, it would be regarded as forming part of a very loose, open spur. Actually, the difference is rather one of degree than of kind.

The relation of each class of buds to the productivity of any particular variety is of greatest importance. All varieties of apples and pears produce fruit spurs, and after the tree comes to full bearing age the greater portion



of fruit is generally borne on them. The trees should be so managed, therefore, that the spurs are well distributed throughout the entire tree, and afforded the best condition for producing prime fruit. On the other hand, many varieties while young, particularly those that come into bearing at any early age, produce a very large proportion of the first few crops from terminals and axillaries. For such varieties a method of pruning which will tend to conserve and encourage as many as possible of these fruit buds should be adopted. As the trees grow older, and fruit spurs are developed and an increasingly greater proportion of the fruit is so borne, the method of pruning should be modified in such a way as to encourage more fruit spurs, to maintain those present in good condition and also to provide some new shoots bearing axillary and terminal buds. Of course it is realized that some growers are confronted with the tendency of their trees to over bear, to produce fruit at the expense of shoot production. Such a state of affairs is really an exception to conditions generally encountered and special practices, largely cultural rather than pruning, would have to be employed for handling such trees. It is a more difficult task to counteract the habit to over bear due to peculiarly local environment than to manage the average trees which fail to bear, unless circumstances are extremely unusual.

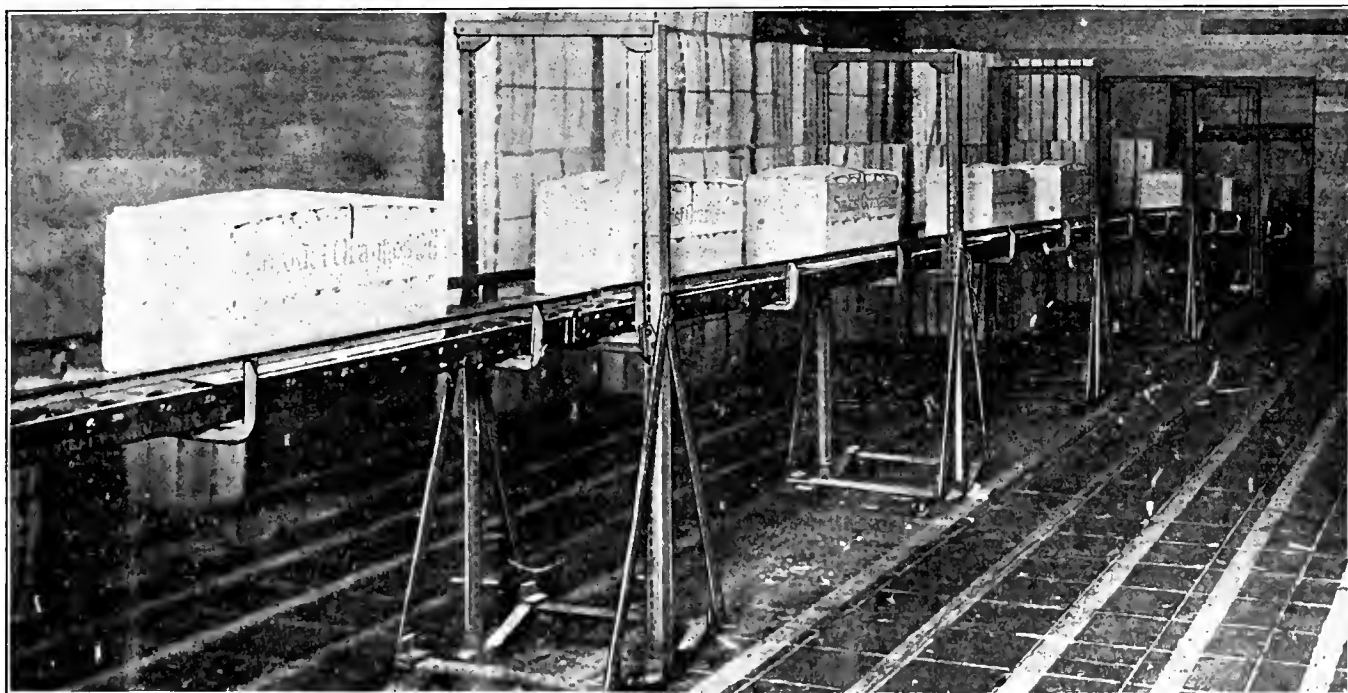
Briefly then, determine the type of production of the variety as limited by the conditions under consideration and adopt such methods as best apply

to it. One of the first pruning principles to be learned is the difference in effect of heading back and thinning out the top. It may be regarded as virtually a universal rule that under like conditions a liberal heading back tends to produce vegetative shoots and thicken the top at the expense of fruit bud formation, both because of excessive vegetative stimulation and a shading out due to an increased size and number of branches, while thinning out with no heading back means a generous number of fruit buds, a lessened vegetative response and a possible sacrifice of tree form. It would be easy to take a hypothetical case and compute the number of shoots and fruit buds resulting from the two methods of pruning, but it is sufficient to say that the result would substantiate the foregoing statement. Knowing the effects of these two practices, the successful grower will combine the two for best success. In other words, neither method is the better, except that when trees have been neglected or pruned wholly according to one system or the other, as many orchards have been, it is frequently an advantage to completely reverse the method for a year or two and thereafter follow both.

The fruit grower is frequently confronted with the condition, where apparently, either he must sacrifice form or fruit production, as for example young trees which have set a number of fruit buds towards the tips of long branches, or which probably would develop fruit buds on branches left uncut. It will be found that instead of treating all branches on the trees

alike and pruning to the best possible form, judged from the standpoint of beauty only, the tree would be more profitable and of exactly as good form eventually if some of the supernumerary branches were not removed and either headed back very lightly or not at all; this to be done during the winter. It is the general experience that such uncut branches will go into the fruiting condition, especially if well exposed to light and air, sooner than those cut heavily. They may be removed later when the remainder of the tree begins to fruit. The advantages of such a system are at least two-fold: first, the fruit which is harvested from the branches and second, the tree as a whole receives a lighter pruning and goes into the fruiting condition more quickly than if severe pruning is continued. Its disadvantages lie mostly in the fact that the pruner has difficulty in keeping the final form of his tree in mind unless entirely cut over; that the tree may be a bit unsightly; that there is a tendency to allow the tree to become too thick, and a hesitancy to remove the unpruned branches after the tree as a whole has come into bearing. The practice is better adapted to slender or open growing varieties such as Spitzenburg, Ortley, or Jonathan, than to the denser growing varieties as Newtown or Arkansas Black. It is worthy of trial on pears, but due to the very upright tendency of some varieties, it might be difficult to manage them.

Another way of inducing and maintaining a good fruit spur system is through summer pruning. There are



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many methods, all of which have their supporters; only a few will be taken up. It is now five years since the Oregon Experiment Station tried the first experiment on what may be called early summer pruning and first recommended it for limited trial pending its success. Personally, I believe this idea can be recommended with confidence for use on young vigorous trees and those just coming into bearing. Briefly, the method is as follows: When the new growth has attained a length several inches more than the branch would be left after a winter pruning of it at the end of the season, cut it back into wood which is firm and on which the leaves are as far apart as they would be at full maturity. Usually this means the removal of several inches to a foot or even more of growth. Generally such a pruning will come from the fore part of June to the fore part of July, depending on locality. The effect of such cutting back varies according to variety and vegetative vigor of the tree. To be successful it is expected that two or three buds on each branch will break and form shoots from six to possible some thirty inches long by fall, while below these there will probably be several shorter shoots or spurs pushed out. In other words, instead

of having one very long shoot by fall, it will be in much the same condition so far as branching is concerned, as it would have been the year following. This early summer pruning then is similar to and takes the place of a winter pruning. In a sense two years have been combined into one. Of course such a statement is comparative, the result is not exactly the same.

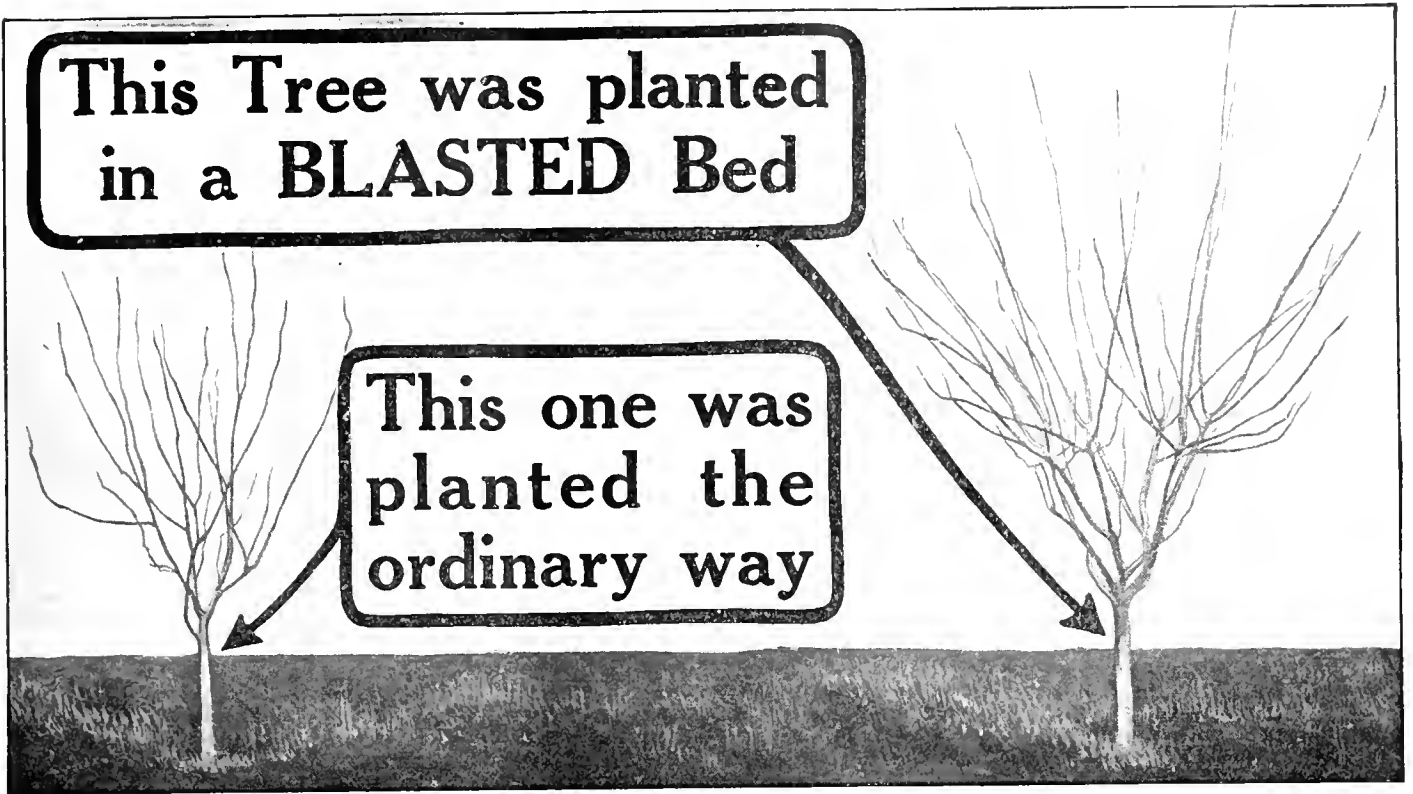
During the winter following such a pruning, the secondary shoots which have pushed out should be headed back, if long, to the desired length, and a liberal thinning given, while if but a few inches of secondary growth have been the result, either do not prune at all except for thinning out or merely tip back the terminals. This tipping back is unnecessary in the case of varieties which normally break several buds but should not be neglected with those, such as Spitzenburg, Ortle, and Spy, which tend to break at the terminals only and produce long, slender, willowy shoots. It may prove advisable to do such second tipping in the fall just as length growth is ceasing, but on this point data are now lacking.

What are the results of such pruning? There are advantages and disadvantages, the former seemingly overbalancing the latter. In the first place,

as just pointed out, virtually two years so far as form building is concerned, are combined into one; excessive heavy winter pruning is avoided; it is possible to correct, to a very large degree, the willowy spreading habit of many trees; the shorter stock branches resist the effect of the wind to greater advantage, there is no production of "crow nests" which often result from pinching; and of greatest importance, there is a more advantageous placing and probably an increase of fruit buds. This latter result is brought about in two ways. First there may be and often is a development of fruit buds on the lower part of the pruned shoot during the summer that the pruning is done, and even more likely so during the summer following when this part of the shoot functions as if it were a year older than it actually is. And second, in the case of many of those varieties that tend to produce axillary buds far out toward the terminus and which would be removed, therefore, by the ordinary winter pruning, may be retained since they may have been induced to develop below the summer cut or develop as axillaries and terminals on the secondary shoots, the shorter of which require no winter pruning.

The method is also successful with pears. I have in mind a number of young pear trees on which virtually the only immediate response from such a summer pruning was the pushing out of the axillary buds a short way and then producing fruit buds, and a number of older pear trees, which the owner tells me still show a beneficial effect in fruit production from such an experimental pruning given several years ago. The method is recommended also for use on trees that have been top worked, and are making a vigorous growth. For by it considerable time may be saved in shaping the new top and again bringing it into bearing.

The disadvantages urged against it are that the secondary branches are apt to be weak and form a poor angle or crotch, that the tree becomes too dense and twiggy, and that the process is devitalizing. No one or all of these suggestions is sufficiently serious to discourage the recommendation of early summer pruning, as a general practice. It is true that on some varieties the crotches the first year are not so desirable as are those resulting from winter pruning, but this effect disappears in a year or two and neither crotch nor branch can be distinguished from any other except that there are more fruit buds or spurs present. The question of density is easily regulated by thinning out either during the summer or winter and in this connection attention is again directed to the relative merits of heading back and thinning out. It certainly remains to be proven that the system as recommended is devitalizing. It is true that excessive summer pruning can be made a detrimental practice, but there are many and sun-



Herman H. Smidt, R. F. D. 3, Oregon City, Oregon, owner of these trees, read in *Better Fruit* that trees planted in blasted soil would grow faster and be better in every way than trees set in dug holes. He tried it, and on February 14, 1916, wrote as follows:

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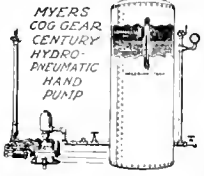


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dry forms of summer pruning; one or two others will be mentioned later.

There are several precautions to be observed in this method. First, there is a tendency to leave the branches too long with the result that the intervals between sets of branches are too great and unproductive of either fruit or branch buds. In the second place there is a tendency for vigorous trees to become too dense and therefore there should be a generous thinning out of extra branches at the time of winter pruning or in many instances preferably during the summer so as to permit plenty of light into the interior of the tree. In the third place, not all trees respond alike to the treatment, and the pruner must judge of the vigor of the tree and cut accordingly. The rule to be observed is, consider the tree as a whole, then the more vigorous the tree the greater will be the response to the heading back; or to restate the idea, in general of two trees of equal vigor, the one cut back the more severely gives the greater response. Very weak trees must be headed back severely to obtain any response whatsoever; and at best the method cannot be considered more than partially successful on them.

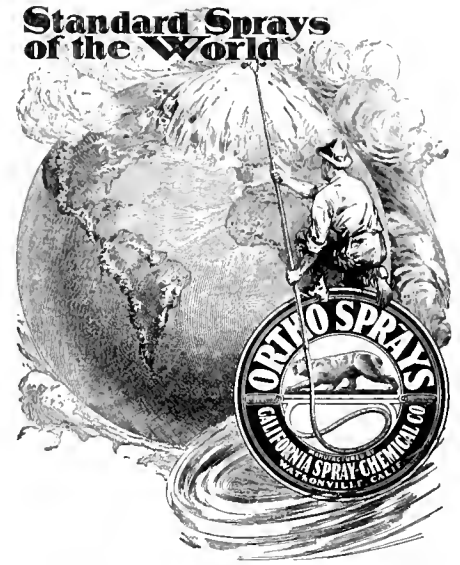
Two other methods of summer pruning have been so generally recommended that they should be mentioned in this connection. The first one consists of thinning out, the other of a heading, clipping, or pinching back of the terminals in late summer. A few observations and brief experience only can be given in regard to these methods.

It is claimed that thinning out during the summer offers several advantages, among them that it does away with the necessity for any heavy win-

ter pruning, that it admits light and air to the interior of the tree, resulting in an increased number of fruit buds, that it is an easy method of shaping the tree since it is in full leaf and its form is definite, that it tends to make the remaining branches more stocky, and that it serves as a check to excessive vegetative vigor. There are some grains of fact and truth in the claims and there can be no question that trees rationally handled according to this method show sufficient advantages over those not so treated that the practice may be recommended. Again variety bearing habit, whether on axillaries or spurs, must be taken into consideration and while one may be benefited to a great degree, another may fail to respond favorably. On the other hand, observation shows that it is easily possible to carry this practice to an excess, and make it a seriously devitalizing process. Perhaps all have seen young trees that have been heavily thinned several times during the season, or even for several successive seasons. Usually they appear more compressed and upright, the branches and scaffolds small in diameter and with peculiar narrow angles and crotches. The whole impression of the tree is one of lack of vigor when compared with unpruned trees. There is nothing to commend such excessive thinning. To admit light to the interior of the tree and thereby aid in the developing and strengthening of the fruit buds is good sense, to carry the idea to an extreme is not.

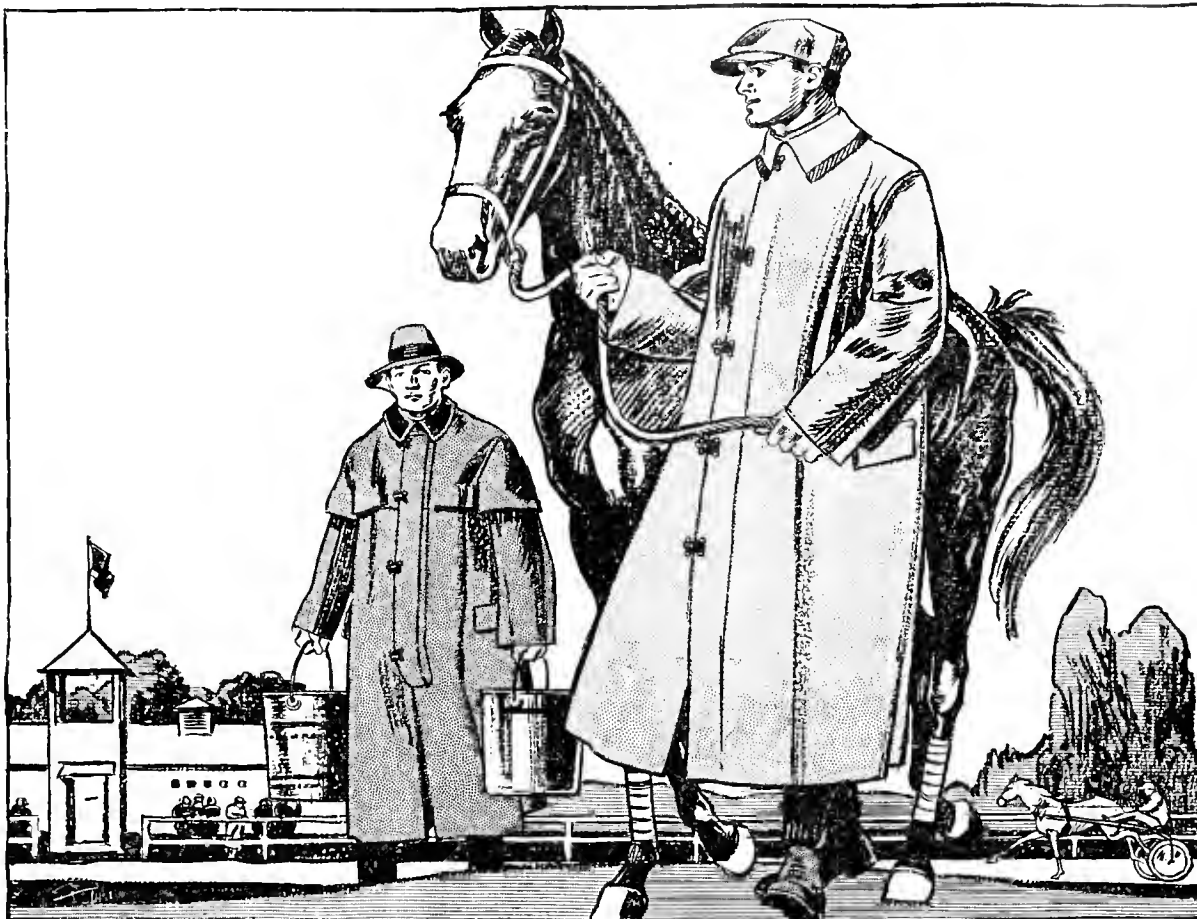
Concerning the value of the second widely practiced method of summer pruning, topping back in late summer, little can be said from direct observation of a wide series of trials. Several advantages are claimed; namely, that it aids in the elimination of heavy winter pruning, that the branches so pinched increase in diameter proportionally greater than those unpruned, that it induces fruitfulness at an earlier age. These claims are in part substantiated by the meager information at hand. There are several disadvantages. In the first place if slight cutting or light pinching is done near the tip of the shoot, say in August before growth ceases, either small branches are pushed out so close together that they form "crow's nests," or the shoot is left very long; both of which conditions must be corrected by the regular winter pruning to avoid a poorly formed tree. If, as often recommended, the pruning of vigorous shoots is delayed until the terminal bud is set, then new difficulties arise; first, if the pruning is heavy new growth is induced which is very weak and is apt to be winter injured, or second, if the cutting is light, virtually no response is obtained and the usual winter pruning must be given to preserve desirable form. There is an increase in the diameter of the shoot, often accompanied by an increase of tissue about the buds. In some instances apparently there has been an increase of fruit buds, a condition largely explainable as an indirect ef-

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fect of summer pruning, in that the winter pruning in such instances is usually a thinning out rather than a heading back. Without further data, however, it is not safe to conclude that there is no direct effect on the buds, perhaps through an added storage of food materials in the shoots themselves, indicated by increased diameter and swelling about the buds. In any case such late summer pruning or pinching does not show a direct effect the following spring or summer insofar as fruiting is concerned, but rather the second season thereafter. That is to say, if the pruning were done in August or September, 1915, its effects, if any, in actual fruit or blossom production would be apparent in 1917 or 1918, rather than 1916, since during the summer of 1916 the influence of the 1915 pruning would be brought to bear in the production of fruit buds. It is equally possible that there would be little or no noticeable effect of the cutting. It remains to be shown whether or not the system actually serves as a check to vigor.

In the discussion of these several systems of summer pruning, they have been recommended from the viewpoint of similar environmental conditions. Much of the conflicting opinion regarding the possibility or manner of influencing the fruit buds through pruning methods has arisen because men have applied different methods, or similar methods under widely different environments. There can be no doubt that there are some advantages in all of them. The main idea must be to avoid becoming an extremist. If winter pruning has not been a success, try combining with it rational summer pruning, an increase or decrease of tillage, an inter-crop or shade crop, fertilization, irrigation, or all of them. Above everything else, become familiar with the bearing habit of the variety being grown; make a careful study of how the fruit buds are distributed, the proportions of crop borne on spurs, axillaries and terminals, and note the adjustment of the variety to specific treatment and to local environment.



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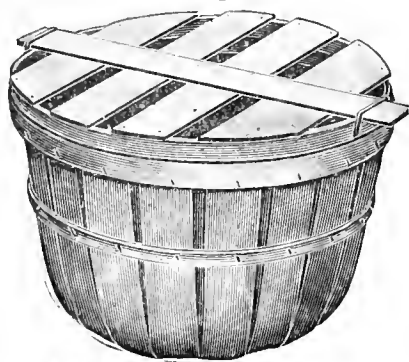
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sires rather to consider in this article the letters of criticism rather than the letters of commendation. The main criticism comes from the salesman-manager of one of the large associations, who briefly comments as follows, "in checking up the list of towns sold by his association during the past year he finds that 29 towns of over 3000 population were sold by his association that do not appear on the list, and 41 towns under 3000 were sold by his association which do not appear on the list." The editor desires to call attention to this fact in connection with this criticism. The list of towns sold as stated in the article covered the cities reported, as handling carlots direct, by the Northwestern Fruit Exchange up to December 31, 1916, and the towns reported by the Fruit Growers' Agency only for the months of October and November, 1916. It is true there probably was a greater distribution than the list of towns indicated for the reason the reports from the Fruit Growers' Agency only included October and November shipments. It also must be borne in mind that a number of other towns may have been sold during these months where cars were diverted from their original destination to some other point which would not appear on the Fruit Growers' Agency list of towns shipped. Another point of criticism worthy of comment and one which the fruit industry should have, is this salesman's statement in connection with the number of towns that can be sold. He has called attention to a mailing list furnished by mailing list agency, which states there are only 7000 names of wholesale fruit dealers and jobbers with \$5000 capital; and therefore there are no dealers in all of the other towns and consequently it would be impossible to do business in many of them for this reason. The salesman's contention is admitted. The editor does not claim that every town or every fruit jobber in the United States can be sold. The main contention is that a greater number of towns can be sold and a greater dis-

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**Distribution of the Northwestern Apple Crop**

By E. H. Shepard, Editor Better Fruit

THE series of article on Distribution that appeared in the July, August and September editions of BETTER FRUIT have created more comment and more favorable consideration than any series of article ever published in BETTER FRUIT since BETTER FRUIT commenced publication in July, 1906. Some managers of selling associations feel that it is the disposition of the Editor to find fault or criticize. Such has not been and is not the intention. The sole object the Editor had in writing these articles was to state the facts as nearly as possible, believing that in so doing it would stimulate the selling concerns to a greater effort of wider distribution. Every one must

admit that if the crop can be so distributed so as not to congest or glut any market that a higher level of prices can be maintained and better net results obtained for the grower, and that is what the growers want. While a great number of letters of appreciation have been received from many fruit growers and members of the different associations, commending the editor for the valuable information furnished, the first of its kind ever published by the way, and assuring the editor it is their opinion that this series of articles will stimulate and create a greater and a better distribution of the Northwestern apple crop than we have had, the editor de-

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tribution created in selling individual dealers in small towns in carlots. The editor realizes there are thousands of dealers who could not handle carlots, and on the other hand there are many instances in some of the small cities where if one dealer could not handle a carload, three or four dealers combined could. This plan has been successfully used by some of the progressive fruit concerns of the Northwest. Manufacturers and jobbers frequently place carloads which are divided among three or four dealers in one city. Fruit shippers can do the same where such an arrangement is advisable. The article on Distribution of the Peach Crop of New York City is very significant in connection with the distribution of the Northwestern apple crop. This article appears elsewhere in this edition. Special attention is called to the fact that the New

York peach crop amounted to about 5000 cars. The record shows that 4119 cars were shipped to 339 cities. As the apple crop of the Northwest is about five times as great as the New York peach crop it would mean that the apple crop of the Northwest could reasonably be expected to cover five times as many cities as the New York peach crop, or 1695 cities and towns, and it is reasonable to assume, as peaches are a perishable commodity and have to be sold in a limited time, that many dealers could handle a carload of apples where they could not handle a carload of peaches.

In making a comparison on the distribution of the New York peach crop with the Northwestern apple crop, please bear in mind that the distribution of the New York peach crop, for reasons which every fruit grower well understands, was confined principally to New York State, the New England States, Pennsylvania, Michigan, New Jersey, Maryland and Indiana, in reality covering approximately less than one-tenth of the area of the United States.

The editor of BETTER FRUIT does not claim to be a prophet nor to be absolutely correct at all times, and even if some of his contentions or opinions are incorrect, the editor believes that much good will come out of the work already done along this line if the managers and salesmen will only give the matter of distribution their fullest and most careful attention. The very fact that this salesman criticized this article appearing in BETTER FRUIT and took the pains to check up his list and secure a list of the fruit jobbers with \$5000 capital, indicates that he realizes the possibility of a greater distribution, and has taken the trouble to look into the matter and find out just where he is at. If other salesmen will do the same careful work as this one has done it is just this kind of work that will result in a greater distribution.

### Save Your Own Vegetable Seed.

Home gardeners as well as truck growers who find seed of favored varieties difficult to secure or high in price would do well to save their own seed, according to the United States Department of Agriculture. The saving of seed from beans, peas, corn, peppers, okra, egg plant, squash, cucumbers, muskmelons and watermelons is very simple, the chief requirement being to select seed from good plants. Obtaining seed from tomato, radish, lettuce, kale, collards, cabbage, kohlrabi, beets, carrots and mustard, while not so simple, is not beyond the ability of any amateur gardener. A newly published Farmers' Bulletin, "Saving Vegetable Seeds for the Home and Market Garden," (No. 881) which will be supplied free by the United States Department of Agriculture, explains in detail how to gather and cure seeds commonly needed by truck growers.

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# BETTER FRUIT

HOOD RIVER, OREGON

Official Organ of The Northwest Fruit Growers' Association  
A Monthly Illustrated Magazine Published in the  
Interest of Modern Fruit Growing and Marketing  
All Communications Should be Addressed and Remittances  
Made Payable to

**Better Fruit Publishing Company**

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The Tenth National Apple Show will be held in Spokane, November 19-24th, inclusive. Just think, this is the tenth year for the National Apple Show, and it seems but a moment ago when Spokane startled the world with the famous announcement, the first of its kind ever made, they would hold an exhibit to consist of apples in carloads. Nothing of the kind had ever been done before. Previous to that time apples had been exhibited, as everyone knows, on plates in county and state fairs, in a small way box exhibits had been made under the auspices of the Northwestern Fruit Growers' Association, an old organization consisting of growers, fruit dealers and railroad men and everybody interested in the business, who held annual meetings successfully in Oregon, Washington and Idaho along in the winter months. Hood River had put up a small local exhibit, called the Hood River Apple Fair at which were usually exhibits from 100 to 500 boxes of apples. The National Apple Show of Spokane has done more to promote the apple industry of the Northwest and to develop it than any other similar effort. It has provided a common meeting ground for growers from all over the Northwest where they have had an opportunity to see what each other was producing; how they were packing it, and a chance to learn how to do things better. Growers universally profited from the knowledge gained from the splendid exhibits of perfectly graded and properly packed fruit. In addition to this, the Apple Show always held a convention at which was discussed all problems pertaining to the fruit growing industry—in earlier years more particularly the growing and cultural methods, and in recent years marketing, distribution prices, advertising

and transportation. The National Apple Show has done more to standardize the Northwest exhibit—more to bring the growers closer together and do away with petty jealousies that existed between other fruit districts than any other public institution of the Northwest. It is entitled to the fullest support of every fruit grower. Growers should be liberal in their exhibits. No grower can afford to miss attending this show—it is of real value, of real interest, and affords a pleasant diversity for the fruit grower, a nice vacation with a splendid opportunity for a little sight-seeing in the beautiful and attractive city of Spokane, where there are many good theatres and many other public places of entertainment and amusement. It must be borne in mind that Spokane is entitled to a great deal of credit, because the Editor knows that business men of Spokane have put up for this show every year, and each year the receipts were less than the expense—the Spokane business men digging down in their pockets to make up the deficit. Progressive Spokane business men are willing to do this on account of the importance of the apple industry of the Northwest to business interests. In the end, Spokane will not be the loser, because Spokane will profit by the increased business of the apple growers. The prizes this year are very attractive, consisting of \$3000 in cash. Exhibits will consist of equipment for pruning, spraying, picking, packing, etc. Every implement, and every piece of machinery used by the apple growers in their business will be on exhibit, so every fruit grower will have an opportunity to see all of the different kinds and makes and judge for himself which is the best. DON'T MISS THE APPLE SHOW.

**Comment on Distribution.**—A comment is made by one of the sales managers on the articles on distribution appearing in the July edition of BETTER FRUIT, calling attention to the fact that nineteen cars appearing on his list are not included. The Editor does not question the statement for one moment and in way of explanation desires to say that the report only included the concerns reporting to the Fruit Growers' Agency for October and November, and the Northwestern Fruit Exchange up to December 31st. Diversions are frequently made which would not appear on the list. In towns under 3000 he claims to have sold 41 that do not appear on the list. He also calls the attention of the Editor to the fact he has obtained a list of fruit jobbers with \$5000 capital, and states there are but 7000 on the list. Admitting that this is correct we have sold less than one-tenth of the number. The Editor desires to express his appreciation and thanks for this comment, and in addition desires to commend this manager and to say it is the best kind of evidence in the world that the articles on distribution are proving of value to the fruit growers

because it indicates that this man is progressive enough to check up his list and obtain a list of all the possible dealers with capital large enough to justify credit. If other sales managers will do as much the question of distribution will be solved in the near future.

**Mr. G. Harold Powell**, assistant to Howard Hoover, delivered a most excellent address before the International Apple Shippers' Convention on Food Conservation, which appears elsewhere in this edition. The father of G. Harold Powell had a large orchard in New York State where Mr. Powell learned the orchard business as a boy. After attending college he specialized in horticulture, taking a position in the Department of Agriculture, at Washington. Many fruit growers of the Northwest have met Mr. Powell, who annually makes trips to the Northwest to study conditions. Afterwards Mr. Powell became chief executive in the Department of Agriculture, Washington, later accepting a position with the Citrus Fruit Growers' Association at the highest salary paid any sales manager by a fruit concern anywhere in the world. Mr. Powell has secured a leave of absence to do his duty to the government and probably at a very small salary compared with what he is paid by the association. The Editor knows Mr. Powell intimately, having known him for many years, and recognizes him as one of the ablest men in the fruit business in America, therefore unhesitatingly advises everyone to read Mr. Powell's article in this edition.

**Distribution of the Peach Crop.**—The articles appearing in July, August and September editions of BETTER FRUIT on the Distribution of the Northwestern Apple Crop have proved exceedingly interesting. In this issue is published the Distribution of the Peach Crop of New York. The crop amounted to about 5000 cars, a record being obtained of 4419 cars distributed in 339 cities. The apple crop of the Northwest last year was over 20,000 cars, being distributed to a little over 600 cities and towns. If the Northwestern apple crop had been as well distributed as the New York peach crop they would have sold to 1600 towns. The peach crop of New York was marketed in about one-tenth of the area of United States, whereas Northwest apples are marketed over the entire United States. Peaches are limited in distribution on account of their exceedingly perishable nature and for this reason only comparatively large dealers in large cities can handle peaches in carlots. On account of the longevity of apples and splendid keeping qualities, much smaller cities and much smaller dealers can handle carlots, for reason of the very long time given to dispose of a carload before it begins to show decay or become over-ripe.

**Apple Prices.**—There is an immense range in the price lists being sent to the trade by the different organizations on some varieties of apples. For instance, Spitzenburgs, extra fancy, are being quoted at \$1.65, \$1.75, \$1.85, \$1.90, some have been sold as low as \$1.50. There is also a wide range in the difference in the price of fancy compared to extra fancy—for instance, one concern quotes \$1.75 for extra fancy Spitzenburgs, fancy at \$1.65. Another concern quotes extra fancy \$1.75, and quote fancy \$1.50. One makes a difference of 10c between extra fancy and fancy. Another 25c. It would seem their idea ought to be nearer together on fancy as both agree on extra fancy. It was suggested last year that the sales managers connected with the Fruit Growers' Agency meet in conference and get each others' ideas of values. Of course, it is understood they could not arbitrarily fix a price on account of the Anti-Trust laws, but it would seem they ought to become better informed and have a clearer idea of the value than is indicated by the great difference in prices being quoted, which range, for instance, on Spitzenburgs as already stated, for the following scale, \$1.50, \$1.65, \$1.75, \$1.80 and \$1.90.

**Values of Apples.**—The prices of apples this year are considerably higher than in 1916, apparently due principally to the difference in quantity this year as compared with last year. One point worthy of consideration with every fruit grower and every sales manager, and in fact every buyer as well, is that nearly every other commodity has increased in price. All implements, tools and supplies cost the fruit grower a great deal more this year than last. All spray material, fertilizer and other materials have also increased in price. Wages have gone up—boxes have advanced, last year boxes cost 10½ cents and this year 18 to 20 cents. This year growers estimate the increased cost of apples anywhere from 25 to 40 cents per box, consequently fruit growers must get a much higher price this year for their apple crop to pay the cost of production and anything like a fair profit.

**Harvesting.**—When the Editor was in Washington, D. C., a few years ago, he had the pleasure of being shown the hand colored paintings of apples that had been placed on cold storage, showing the effect on the keep of picking at the proper time. In a word, all apples that are picked too early or too late either scald or show off-condition in a comparatively short time after coming out of cold storage. Experiments carried on in the Northwest, of which the Editor has seen many, all conclusively prove the same thing. The Editor of BETTER FRUIT picked some Spitzenburgs in 1915 when the red had become a bright color and the basic color, whitish, not yellow, packed them promptly and placed them on cold storage, keeping them a year and

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ten months in fine condition. So it behooves the apple grower not to pick too early or let them become too ripe, if he wants to have them in the best keeping condition and deliver them to the consumer in first-class condition.

**Shortage of Supplies and Equipment.**—The shortage of raw materials in all lines and increasing prices, undoubtedly will continue during the war and may continue for some time afterwards, making it important for every fruit grower to buy all articles he is going to need for the coming season at the earliest opportunity. If he does not, it is pretty certain they will be higher in price and it is quite probable if he puts it off too long he may not be able to purchase at all. A great many manufacturers have been unable to fill their orders this year on account of the shortage of raw materials, consequently the fruit growers should not delay in securing such articles as they may require for the coming season.

#### NORTHWEST FAIR DATES

##### OREGON COUNTY AND LOCAL FAIRS

Washington County—Forest Grove, October 2 to 5.

Lane County—Eugene, October 3 to 5.

Interstate Fair—Prineville, October 3 to 6.

Local Fair—Albany, October 12 to 14.

##### WASHINGTON COUNTY FAIRS

Cllickitat County—Goldendale, October 9 to 13.

##### IDAHO COUNTY FAIRS

Minidoka County—Rupert, October 2 to 6.

Washington County—Cambridge, October 3 to 5.

##### OTHER EXPOSITIONS

Manufacturers' and Land Products Show—Portland, November 3 to 21.

Northwest Livestock Show—Lewiston, November 8 to 15.

Pacific National Dairy Show—Portland, November 16 to 23.

Pacific International Livestock Show—Portland, November 19 to 24.

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## High Living Eighty Years Ago

By F. C. Bradford, Amherst, New Hampshire

**D**ISCUSSIONS of the high cost of living frequently turn to the "good old days," the inference being that the good old days was a Golden Age, when food and shelter and clothing did not vex the mind and the family income could be devoted to Latin lexicons and Transcendental essays. When great-grandfather and great-grandmother took their respective gold-headed cane and market basket and walked down to Fanueil Hall and Quincy Market, if—as all respectable ancestors should—they lived in Boston, a few large coppers, we are prone to believe, sufficed to buy a week's supply of food.

If misery loves company the present generation can take comfort in viewing the prices of fruits in those days of plain living and high thinking. We have before us, as we write, market quotations, taken once a month, for Fanueil Hall and Quincy Market, gleaned from the files of the Magazine of Horticulture from 1834 to 1846, and to judge from these figures, Bostonians of that time could not have been penurious—or they got along without fruit.

Consider the peach. Not Crawfords or Elbertas, but Malacatunes, Oldmixons and Red Rareripes. Large peach orchards existed at this time in

New Jersey and Delaware, but much of the product was made into brandy. The Boston market was chiefly supplied first, with peaches forced under glass, second, with peaches brought in from New York and finally, with "natives." Consequently on July 23, 1836, to be exact, the cheapest peach on the market cost twelve coppers and a half-cent; the best cost twenty-five cents each. There were no quotations on larger quantities. On August 22 of that year they were cheaper: twenty-five to fifty cents a dozen; \$1.50 to \$2.00 per peck and \$6 to \$8 per bushel. In September they were down to from \$3 to \$4 per bushel, with twenty-five cents the cheapest price per dozen. Forced peaches—grown under glass—sold in July, 1837, for six dollars a dozen.

Concord grapes were unknown, for Ephraim Buli had not yet raised the original Concord. For most of the year the market was supplied with forced grapes, Black Hamburgs and White Sweetwaters, at from fifty cents to \$1.50 a pound; many greenhouse establishments of the time were devoted to this crop. Isabella and cat-awba grapes, grown out-of-doors, sold occasionally as low as eight cents per pound; at this rate we should pay sixty-four cents for our eight-pound basket. This was the lowest quotation of the period; the standard price was twelve and a half cents per pound, at the rate of a dollar a basket. November, 1835, found Malaga grapes on the market, at thirty-seven to fifty cents a pound; two years later they were down to twenty-five cents.

No Boston back-yard—and there were many in those days—was complete without its assortment of pear trees. Indeed, Eastern Massachusetts was then the leading pear-growing section of the country and most of our Bonchretien, St. Michaels, Capiau-monts, Urbanistes and so on, entered this country through Salem or Boston. Yet with all the abundant supply at hand, in September, 1839, Seckels were selling at seventy-five cents per half peck, Urbanistes and Heathcoats at

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fifty cents per dozen, while in October of that same year Beurre Dix brought seventy-five cents a dozen, and in November our thrifty ancestors paid, for St. Germain, fifty cents to a dollar per dozen. These figures are but typical; even higher quotations might be cited.

On the other hand, if little Nehemiah wanted an orange, his father could have bought, on February 20, 1835, one hundred sour oranges for one dollar or the very best for a dollar and a half, or a hundred lemons for between seventy-five cents and a dollar, while a pineapple would have cost between twenty-five and fifty cents. These were all imported. Along in July the price was up to three dollars for oranges and in November they were selling at thirty-seven to sixty-two cents per dozen. Then, with a falling off in quality, they dropped again to from twenty-five to thirty-seven and a half. In 1838 Sweet Havanas appear in the quotations, the February prices for these being fifty to seventy-five cents a dozen, while "common" oranges were bringing twenty-five to fifty. Havanas held their price pretty consistently. Lemons could be bought, even in summer months, for twenty-five cents a dozen, often for less.

Other fruits seem rather high in price. For example, here are the quotations for strawberries by the quart, June 29, 1843: Methven Scarlet, twenty-five cents; Hovey's Seedling, thirty-seven to fifty; Keen's Seedling, twenty-five to thirty-one.

Here, selected at random, are quotations on plums, for August 28, 1841: Washington, thirty-seven cents per quart, White Gage, twenty-five; Green Gage, twenty-five; "common," twelve and a half, and for Damsons, a dollar



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a peck. That same year raspberries were selling at twenty to thirty-seven cents a quart; blackberries were bringing seventeen to twenty.

Now as to apples: the average prices in the period 1834 to 1846 were somewhat below those of recent years. Some three or four years ago Mr. H. H. Knapp, worked out the average wholesale prices of apples in New York from 1893 to 1913. Though these figures are not strictly comparable with the Boston prices for the earlier period, we have utilized some of them in an interesting table or two. Then, as now, Baldwin constituted the B. Knapp, in a Cornell University publication of the apple trade. In Table 1.

the average prices, month by month, for the earlier and later periods are compared:

TABLE 1.—AVERAGE PRICE OF BALDWIN APPLS.

	1834-46	1893-1903	1903-13
September	\$1.93	\$1.75	\$2.08
October	2.09	1.85	2.16
November	2.25	2.39	2.39
December	2.43	2.61	2.51
January	2.57	2.75	2.80
February	2.75	3.03	3.19
March	2.89	3.15	3.10
April	3.51	3.15	3.61
May	1.41	2.56	4.07
June	5.00	3.57	4.03

These figures show, for that part of the season when trading is most active, a fairly uniform advance in price, though the falling off in May and June is noteworthy. This may be



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due to cold storage making a greater supply available for these months or it may be due to increased competition with other fruits.

In Table II, all varieties are averaged together. This is hardly an approved statistical method, since Baldwin should be weighted more heavily in such a table than a less common variety, like Spitzenburg, but since no figures as to amounts of sales were available, all were averaged in alike.

TABLE II.—ALL VARIETIES, BY MONTHS.

	1831-16	1893-1913
August .....	\$2.11	\$2.27
September .....	1.86	2.32
October .....	2.08	2.41
November .....	2.23	2.66
December .....	2.31	2.81
January .....	2.39	2.94
February .....	2.49	3.26
March .....	2.58	3.35
April .....	2.77	3.56
May .....	3.31	3.74
June .....	3.67	3.70

Both tables indicate a slight increase in the price of apples. Measured in terms of other commodities, however, the rise is slight indeed. On the other hand, considering the vastly increased production and use of other fruits, the apple shows a surprising ability to hold its own. Apples and lemons seem to be the only fruits to show any well-marked advance in price in seventy or eighty years; the lemon alone shows a sharp advance.

The conclusion seems inevitable then, that fruits are cheaper, relatively and actually, than when our great-grandparents went shopping. To that extent the consumer is better off now than he was in the "good old days."

### Tenth National Apple Show

By Ren H. Rice, Spokane, Washington.

SPOKANE is preparing to stage the Tenth National Apple Show in that city November 19 to 24 inclusive. Preliminary plans and purposes have been announced, indicating that the exposition, while steadfastly carrying forward its original purposes of fostering and emphasizing the importance of the apple as a food product, will take on new lines of endeavor which are peculiarly appropriate to the spirit of the times. With the nation engaged in a long struggle requiring the utmost in food saving, the Apple Show trustees have quite properly announced that the dominant feature of the show this year will be conservation of the apple, augmented by patriotic features calculated to inspire recruiting and aid the government in its various phases of war preparation.

The show will be held on the grounds adjoining the Union Pacific-Milwaukee depot, which location has been found so admirably suitable during the past three shows. The affair is being directed by thirty-five business and professional men, aided and advised by fifty practical growers and shippers from Washington, Oregon, Idaho and Montana. Jake Hill, proprietor of the Hill Shoe Company, is president of the National Apple Show. He has been a resident of the Northwest nearly all his life, and has been identified with many movements

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Three daily trains from Portland connecting at San Francisco for the South and East. First and second class sleeping cars. Unexcelled Dining Car Service.

Ask your local agent for tickets and booklets descriptive of this wonderful trip.

John M. Scott, General Passenger Agent,  
Portland, Oregon

## Southern Pacific Lines

for the advancement of the Inland Empire interests. In assuming the presidency of the Apple Show, he made the one stipulation that the exposition should be primarily one to exploit the apple, and that its leading features should be approved by the men who know the apple business and who realize its importance to the Northwest. President Hill promises plenty of amusement features and liberal entertainment programs, but he wisely in-

sists that first, last and always this shall be an *Apple* show.

Since the first National Apple Show was born in Spokane in 1908, it has been a big factor, if not the biggest factor, in drawing the world's attention to the wonderful adaptability of the Northwest to the production of the apple. At first the show was held largely to advertise this fruit and to encourage its consumption. This was during the time of the big earload dis-

plays, a feature which has never been attempted by any other apple exposition. Along with the advertising came the conventions of fruit growers and fruit shippers who annually have met for the exchange of ideas and who have constantly labored for a higher standard of commercial apple growing, until now the Northwest virtually sets the pace for the entire country in fruit excellence. This feature alone has made the National Apple Show invaluable.

Marketing problems have grown even as the apple orchards have increased. They are far from solution yet but recent years have proven the futility of several marketing attempts, while at the same time they have proven the value of others. The ideal method is yet to be evolved and the annual conferences at the National Apple Show are most helpful in this respect.

The National Apple Show has always been a money loser. The people of Spokane expect it always will be. No such an exposition can be held on so big a scale, give the prizes which it does to stimulate competition and furnish such big entertainment programs without being conducted at a loss, because it is impossible to charge an admission price which will bring sufficient return to meet receipts and be within reach of the general public. But the people of Spokane believe the Apple Show is a big advertising asset to the community and they realize that it brings much business to the city, indirectly making returns for the money they cheerfully put up each year. Consequently they are backing the Tenth National Apple Show with the same optimistic spirit that has characterized the nine previous exhibitions.

## WITTE Kero-Oil ENGINES



### Immediate Shipment

Direct from Factory—SAVE \$15 TO \$200—Simple in construction, strong and powerful, few working parts—easy to understand, easy to operate, easy to own. Buy practically on your own terms—Cash, Payments or No Money Down, 90-Day Trial—5 Year Guarantee. Write for latest prices—ED. H. WITTE,

**WITTE ENGINE WORKS**

1887 Oakland Ave., Kansas City, Mo. 2  
1887 Empire Bldg., Pittsburgh, Pa.

## THE ORIGINAL CHEMICAL RO-San Indoor Closet

30,000 SOLD—FIFTH YEAR  
More Comfortable,

### Healthful, Convenient

Eliminates the out-house, open vault and cess-pool, which are breeding places for germs. Have a warm, sanitary, odorless toilet right in your house. No going out in cold weather. A boon to invalids. Endorsed by State Boards of Health.

### ABSOLUTELY ODORLESS

Put It Anywhere In The House  
The germs are killed by a chemical process in water in the container. Empty once a month. No more trouble to empty than ashes. Closet absolutely guaranteed. Guarantee on file in the office of this publication. Ask for catalog and price  
**ROWE SANITARY MFG. CO.** 1410 6th ST., DETROIT,  
Ask about the Ro-San Washstand—Hot and Cold  
Running Water Without Plumbing MICH.

# WONDERFUL EGG PRODUCER

Any poultry raiser can easily double his profits by doubling the egg production of his hens. A scientific tonic has been discovered that revitalizes the flock and makes hens work all the time. The tonic is called

## "MORE EGGS"

Give your hens a few cents' worth of "More Eggs" and you will be amazed and delighted with results. A dollar's worth of "More Eggs" will double this year's production of eggs, so if you wish to try this great profit maker, write

**E. J. REEFER, Poultry Expert**  
3897 Reefe Building  
KANSAS CITY, MISSOURI

who will send you a season's supply of "More Eggs" Tonic for \$1.00 (prepaid). So confident is Mr. Reefe of results that a million-dollar bank guarantees if you are not satisfied your dollar will be returned on request and the "More Eggs" costs you nothing.

Send a dollar today, or ask Mr. Reefe for his FREE Poultry Book that tells the experience of a man who has made a fortune out of poultry.



**YOU CAN EARN \$50.00 PER DAY WITH THE Gearless Improved Standard Well Drilling Machine**

Drills through any formation. Five years ahead of any other. Has record of drilling 130 feet and driving casing in 9 hours. Another record where 70 feet was drilled on 2 1/2 gallons distillate at 9c per gallon. One man can operate. Electrically equipped for running nights. Fishing job. Engine Ignition. Catalogue W-8.

**REIERSON MACHINERY CO., Mfg., 1295-97 Hood St., Portland, Ore.**

An attractive list of prizes has been issued, with some sweepstakes and championships which should appeal strongly to the growers. For instance, in the five-box competition there are fifteen separate contests, ranging from Arkansas Black to Yellow Newtown. The best five boxes in each of the fifteen lots will draw \$25 in gold; the second, \$10, and the third \$7.50, and besides each and every entry competing in the fifteen contests will be eligible for a sweepstakes of \$100 additional. This means that the winner of the five-box contest on Grimes Golden, for example, will get \$25 and, without making any additional entry, he stands a chance of winning \$100 additional.

Virtually the same proposal applies to the three-box contest, in which there are 20 varieties open, with a first-class prize of \$15, a second of \$10 and a third of \$5, and a \$75 King Pip Sweepstakes for the best of all entries in the 20 varieties and no special entry required, all three-box exhibits competing.

In a single box contest the lucky first prize winner will be given \$7.50, the second \$5 and the third \$2.50, and all of the entries stand a chance for the \$50 grand championship prize offered, as the trustees say, "for the best single box of apples in the world." There are 22 varieties in which entries can be made, and in addition to these any exhibitor in the five-box or three-box contest may designate any one of his boxes in those exhibits to compete also in the single box division.

Just to sweeten things a little more, the show offers \$25 additional to the exhibitor who has the largest number of boxes of apples which win prizes in the one, three and five box classes. As a sister prize another \$25 is offered to the exhibitor who has the largest number of entries in these three

classes. It would take some mathematician to figure out just how much money the individual grower can win if he is lucky enough to carry off the blue ribbon in several of these competitions.

Originators of slogans and creators of brilliant advertising ideas are to have special recognition this year. Six separate prizes are offered by the North Pacific Fruit Distributors and their affiliated shippers to stimulate gray matter fertility. Ten boxes of extra fancy apples, delivered to the home of the winner, will be given for the best slogan urging the use of apples during the war period. Competition in this event is open to the world and nobody barred from making any number of entries.

Five other prizes are offered for ideas as follows: Five boxes of "Blue W" apples, furnished by the Wenatchee-North Central Fruit Distributors, for the best 250-word article on the subject, "Wheatless and Meatless Days Made Easy." Five boxes of "Blue I-O" apples, furnished by the Idaho-Oregon Fruit Growers' Association, for the best 250-word article on "Apples as Mr. Hoover's Ally." Five

boxes of extra fancy apples, furnished by the Western Oregon Fruit Distributors, for the best 250-word article on "Apples the Wasteless Food." Five boxes of "Blue M" apples, furnished by Montana Fruit Distributors, for best 250-word article on "Apples as a Part of a Well-Balanced Ration." Five boxes of "Blue Selah" Yakima apples, furnished by Selah Fruit Distributors, for best 250-word article on "Apple Consumption a Patriotic Duty."

General district displays are encouraged by the offering of \$125 first prize and a Gold Medal Banner, with \$75 and Silver Medal Banner for second prize, and \$50 third prize. The contest is open to commercial clubs, associations, unions, counties, or districts (not by individuals).

Novelty feature exhibits are sought for with prizes of \$125, \$75 and \$50 for first, second and third prize winners. This contest will be open to commercial organizations, community and fruit growers' organizations and individuals.

James A. Ford, secretary of the Spokane Chamber of Commerce, is the business manager of the show.

## MONTHLY CROP REPORT.

ESTIMATED APPLE CROP CONDITIONS SEPTEMBER 1, 1917, WITH COMPARISONS.

STATE	Condition Sept. 1, 1917.		Forecast 1917 from condition, Sept. 1.		December estimate, 1916.	
	1917.	10-year average.	Total Sept. 1.	Total Aug. 1.	Commercial Sept. 1.	Total Commercial.
	Pct.	Pct.	Bushels	Bushels	Barrels	Bushels Barrels
Maine	56	59	4,460,000	4,630,000	818,000	5,040,000 911,000
New Hampshire	52	61	1,170,000	1,350,000	175,000	1,596,000 250,000
Vermont	45	60	1,654,000	2,064,000	220,000	3,312,000 497,000
Massachusetts	52	65	2,343,000	2,623,000	359,000	3,450,000 517,000
Rhode Island	45	64	196,000	263,000	9,000	261,000 13,000
Connecticut	47	65	1,328,000	1,512,000	110,000	1,830,000 153,000
New York	31	55	18,445,000	22,186,000	3,075,000	37,800,000 6,930,000
New Jersey	55	61	1,977,000	1,977,000	363,000	2,250,000 413,000
Pennsylvania	57	58	12,690,000	14,310,000	1,269,000	18,621,000 1,862,000
Delaware	72	58	438,000	438,000	80,000	249,000 37,000
Maryland	62	62	2,610,000	2,610,000	365,000	2,544,000 297,000
Virginia	53	60	10,335,000	10,725,000	1,515,000	13,299,000 1,995,000
West Virginia	43	56	5,728,000	5,861,000	764,000	10,032,000 1,271,000
North Carolina	65	59	6,669,000	6,669,000	489,000	7,074,000 637,000
South Carolina	82	55	849,000	859,000	5,000	588,000 4,000
Georgia	72	57	1,741,000	1,687,000	192,000	1,623,000 157,000
Ohio	38	47	7,367,000	8,724,000	736,000	8,601,000 860,000
Indiana	51	48	5,775,000	6,076,000	520,000	3,921,000 261,000
Illinois	64	42	8,294,000	8,233,000	968,000	1,848,000 566,000
Michigan	32	53	6,470,000	8,803,000	820,000	12,180,000 1,414,000
Wisconsin	51	59	2,479,000	3,305,000	115,000	2,634,000 105,000
Minnesota	70	63	1,386,000	1,426,000	46,000	1,266,000 42,000
Iowa	58	49	5,963,000	6,169,000	198,000	4,725,000 110,000
Missouri	57	45	12,825,000	11,886,000	1,197,000	8,100,000 675,000
South Dakota	72	63	330,000	367,000	4,000	348,000 5,000
Nebraska	61	50	2,446,000	2,436,000	163,000	1,704,000 142,000
Kansas	42	43	3,024,000	2,957,000	252,000	3,120,000 208,000
Kentucky	64	54	8,486,000	8,619,000	424,000	6,441,000 215,000
Tennessee	51	53	5,118,000	5,018,000	205,000	5,316,000 177,000
Alabama	67	52	1,111,000	1,390,000	24,000	1,440,000 19,000
Mississippi	59	50	116,000	374,000	7,000	348,000 6,000
Texas	55	58	408,000	414,000	13,000	468,000 20,000
Oklahoma	66	51	1,624,000	1,195,000	53,000	825,000 27,000
Arkansas	67	52	4,116,000	4,140,000	816,000	2,950,000 590,000
Montana	65	78	897,000	925,000	135,000	768,000 102,000
Colorado	74	58	3,774,000	4,013,000	628,000	2,205,000 367,000
New Mexico	58	63	635,000	616,000	127,000	357,000 59,000
Arizona	65	75	129,000	129,000	16,000	138,000 17,000
Utah	90	67	810,000	816,000	135,000	99,000 3,000
Nevada	83	61	194,000	216,000	2,000	48,000
Idaho	93	72	2,092,000	2,025,000	246,000	441,000 15,000
Washington	81	78	13,435,000	13,825,000	3,583,000	13,825,000 3,467,000
Oregon	66	76	3,322,000	3,329,000	388,000	3,855,000 514,000
California	83	79	5,583,000	5,515,000	1,240,000	5,754,000 1,247,000
United States	51.1	53.3	177,157,000	187,743,000	21,315,000	202,245,000 25,695,000

**Food Administration, Etc.**

Continued from page 5.

ducer, the distributor, the consumer and the government it is entirely possible to give the producer a good price for his product, the distributor a reasonable return for the service which he performs and the consumer his supply at a fair cost. It is in this spirit of confidence and co-operation that I represent Mr. Hoover, the United States Food Administrator.

**Food Administration Will Encourage a Greater Use of Perishables.**

In the readjustment of the world's food supply, perishable foods are suddenly thrown into national prominence. This, therefore, is the greatest opportunity for development that has ever been presented to the perishable food industries. Their increased use and substitution for other foods will liberate an exportable surplus of the more concentrated foods for our Allies. Therefore, the Food Administration will encourage a greater consumption of perishable products such as fruits, vegetables, fish, poultry and eggs, as a means of sending our Allies more of the foods they must have to maintain their people at home and their armies in the field.

The Food Administration will supplement the very efficient work of the Department of Agriculture, encouraging a better handling of perishable products in harvesting, in preparing them for market, transportation, storage, in the market, and in the household in order that the enormous waste that annually occurs from bad handling may be greatly reduced. Frequently one-half or more of a perishable crop is lost by careless handling. The industries interested will, of course, need to work this problem out in a practical way. It cannot be done by discussion or the passing of resolutions.

The Food Administration will encourage organization among producers in order that the products of the farm may be shipped in standard packages, standard grades and in earload quantities. Only in this way can an equitable distribution of farm crops be effected. Organization among producers is fundamental in intelligent, economical marketing. Otherwise, distribution will be chaotic and costly to the producer and consumer alike, and frequently disastrous to the distributor. The responsibility in taking this step is the farmer's responsibility. Unless he organizes to help himself no one else can solve his problem for him. Nor can the consumer's problem be met unless farm crops are standardized and merchandised either by the producers or by the distributor in quantity.

The Food Administration will cooperate with the Bureau of Markets, through relations which it will develop with the organized perishable industries, in making its market news service more useful to the producer, the distributor, and to the consumer.

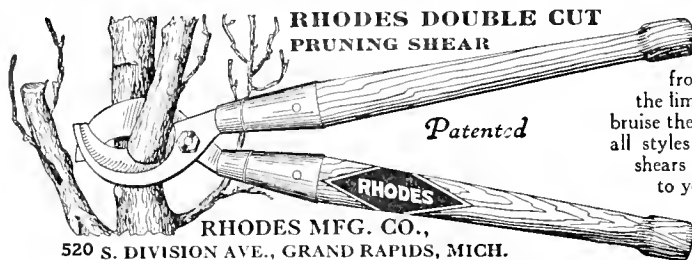
# Fruit Labels

When packed in a plain box or crate, fruit is fruit. It does not mean apples or other fruit until you label it properly—and just as good clothes make a favorable impression—give distinction—so well designed and printed labels dress your package, appeal to the eye and help the sale.

*Our Lithographed Labels will advertise your brand and help the dealer sell your apples.*

## THE UNITED STATES PRINTING & LITHOGRAPH CO.

901 Hoge Building, Seattle, Washington  
112 Market Street, San Francisco, California



**RHODES DOUBLE CUT PRUNING SHEAR**  
*Patented*  
RHODES MFG. CO.,  
520 S. DIVISION AVE., GRAND RAPIDS, MICH.

THE only pruner made that cuts from both sides of the limb and does not bruise the bark. Made in all styles and sizes. All shears delivered free to your door. Write for circular and prices.

## OUR 1917 CLUBBING OFFER

BETTER FRUIT offers the following clubbing lists to its subscribers. If any of our subscribers desire different clubbing arrangements we shall be pleased to quote them from this office.

Western Farmer .....	\$1.00	Hoard's Dairyman.....	\$1.00
Country Boy.....	.25	BETTER FRUIT .....	1.00
BETTER FRUIT .....	1.00		
<b>Total .....</b>	<b>\$2.25</b>	<b>Total .....</b>	<b>\$2.00</b>
<b>All for.....</b>	<b>1.25</b>	<b>All for.....</b>	<b>1.30</b>
Girls' Companion.....	\$0.50	Twice-a-Week Spokesman-	
Boys' Companion.....	.50	Review .....	\$1.00
Today's Housewife .....	.75	Mothers' Magazine.....	1.50
BETTER FRUIT .....	1.00	BETTER FRUIT .....	1.00
<b>Total .....</b>	<b>\$2.75</b>	<b>Total .....</b>	<b>\$3.50</b>
<b>All for.....</b>	<b>1.50</b>	<b>All for.....</b>	<b>2.00</b>
Western Farmer .....	\$1.00	Delineator .....	\$1.50
Today's Housewife.....	.75	BETTER FRUIT .....	1.00
BETTER FRUIT .....	1.00		
<b>Total .....</b>	<b>\$2.75</b>	<b>Total .....</b>	<b>\$2.50</b>
<b>All for.....</b>	<b>1.50</b>	<b>All for.....</b>	<b>1.80</b>
Weekly Oregonian.....	\$1.00	Rural Spirit.....	\$1.00
BETTER FRUIT .....	1.00	McCall's Magazine.....	.75
		BETTER FRUIT .....	1.00
<b>Total .....</b>	<b>\$2.00</b>	<b>Total .....</b>	<b>\$2.75</b>
<b>All for.....</b>	<b>1.25</b>	<b>All for.....</b>	<b>1.50</b>



**W**HEN you trim your outfit down to military bedrock, W-B Cut Chewing scores a bull's-eye. A soldier gets more from his pouch of W-B than from a bulky ordinary plug--rich leaf plump full of sap, *all* tobacco satisfaction, every shred of it. And the water-proof pouch keeps it clean and fresh in the pocket of his khaki.

Made by WEYMAN-BRUTON COMPANY, 1107 Broadway, New York City

*The modern fireside*

Ready at the touch of a match—out just as quickly. No waste. No smoke or odor. Portable.

**HEAT WITH PEARL OIL**

Standard Oil Company (California)

# PERFECTION OIL HEATER

It will co-operate with the railroads in securing the most efficient types of cars and an adequate supply in order that our perishables may be more safely, widely and economically distributed; it will encourage the storage of seasonable perishable products, such as apples, because the Food Administration recognizes the vitally necessary place which storage plays in the preservation of perishable foods and in equalizing their distribution throughout the year; it will encourage the development of the most desirable terminal facilities in order that the cost of inadequate distributing facilities may not unnecessarily burden the producer and the consumer; and it will promote those fundamental principles of merchandising by the wholesale and retail trade which results in a wide distribution, an increased business, quick sales at a reasonable profit per turn over and a continuous supply of fresh, appetizing food for the consumer.

The encouragement of a greater consumption of perishable foods presents an unusual opportunity to those who are engaged in the growing and distributing of perishable products, and by enlarging the perishable food business the war food problem for our Allies and for America can be more easily solved. We are, therefore, firm in the conviction that there will be a mutual co-operation and a mutual understanding of the aims of the Food Administration and of the perishable industries, the aim being to increase their consumption, eliminate the waste from bad handling, distribute them as directly as possible from the producer to the consumer at the least possible cost to both, with a reasonable compensation for the distributing services. To capitalize this unusual opportunity for self-interest, by unnecessary speculation, by storage beyond the reasonable requirements of the merchant for the purpose of distributing a seasonal surplus over the year; to restrict the supply that should be liberated from week to week; or to enhance or diminish the price or to exact excessive prices; to limit the facilities for storing; to attempt to monopolize; to wilfully destroy a perishable for the purpose of enhancing the price or restricting the trade supply or wilfully to permit preventable deterioration—these practices should make a merchant an outcast among his business associates, because the man who capitalizes patriotism for his personal ends cannot be trusted to uphold the interests of America and her Allies wherever his personal interest is involved.

I would, therefore, confidently expect that such organizations as the International Apple Shippers' Association, the National League of Commission Merchants, the Western Fruit Jobbers' Association and other regional or national trade organizations will stand shoulder to shoulder with the Food Administration in creating a patriotic sentiment among their members that will automatically regulate and con-



control any abuses that might creep into the distributing system without the necessity of regulation and control through the law. If that sentiment is fostered and given definite direction by such organizations as the International Apple Shippers' Association in co-operation with the Food Administration, the food control problem of America will be greatly simplified.

**Problem Suggested for Definite Consideration by Apple Distributors as an Aid to the War Food Problem.**

I would suggest that this organization give definite consideration to the following problems in handling the apple crop this year:

(1) The reduction of waste from bad handling in harvesting the crop and in preparing it for market in co-operation with the State and Federal Departments of Agriculture.

(2) The storing of apples in the quickest possible time after harvesting to prevent deterioration from decay and ripening.

(3) A close co-operation with the Bureau of Markets and Food Administration in order to effect an equitable distribution of the crop both for immediate sale and for storage purposes, to prevent temporary gluts, short supplies and fluctuating prices.

(4) The equitable distribution of the storage stocks monthly throughout the year, taken as a whole, and by individual dealers, taking the condition of the fruit and the varieties into account, in order to eliminate speculation of an undesirable character. This should be done in co-operation with the Bureau of Markets and the Food Administration.

(5) The direct sale by the wholesale dealer to the jobber or retailer and by the jobber to the retail trade or by the auction method to the jobbing or retail trade and the elimination of trading in storage stocks between dealers of the same class, except for actual trade requirements, i. e., the reduction of the number of transfers between the producer and consumer to the smallest possible number.

(6) The handling of apples on reasonable margins by the wholesale and retail trade in order that excessive margins may not lessen consumption and restrict the markets; the margin of the wholesale and retail trade to parallel their purchase price, including a fair and not excessive profit.

(7) A definite, well directed campaign in co-operation with other trade organizations and with the Food Administration to establish fruit and vegetable departments in the grocery and special food stores throughout the country, as a means of wider distribution. Make the campaign a definite business-getting one on the basis of new opportunities. From the retail standpoint the opportunities are exceptional because the loss in the sale of dry groceries can only be met by pushing the sale of perishables. The consumer is asking what to buy in

# Do You Want to Sell for Spot Cash— F. O. B. Loading Station?

Did it ever occur to you that the Cash Buyer's salary and expenses come out of you? Well, they do—you will (as a rule) get a lower price than if you were to keep in touch with the markets and sell direct to reliable dealers in the **highest market**.

Ever figure it out? Well, you can generally get anywhere from 10 to 25 cents a box more by selling direct. Watch the market, and judge for yourself. **Sell by wire.**

10 cents more per box on a minimum car of 630 boxes would give you \$63.00 more per car profit—on 10 cars \$630.00—on 20 cars \$1,260.00, and so on.

In this year of unusually high prices, don't make the mistake of being satisfied with what may look like a high price to you—**GET THE LAST CENT POSSIBLE OUT OF YOUR SHIPMENTS!**

Afraid to ship direct? Why? Because you may get into the hands of a Receiver who is a "kicker," "rejector," or "rebater."

Don't let that bother you any more! Get the **BLUE BOOK** and see who they are! There are plenty of reliable Commission Merchants and Jobbers who will be glad to purchase by wire, or **send their buyer if you prefer**, but you can't expect them to pay as much when they do so.

Want to know just how the **BLUE BOOK** will enable you to make this additional profit? Write

## Produce Reporter Company CHICAGO

# Pittsburgh Perfect Cement Coated Nails are of the highest standard

The Heads don't come off. Given Preference by Largest Pacific Coast Packers

MANUFACTURED EXCLUSIVELY BY  
PITTSBURGH STEEL COMPANY, Pittsburgh, Pa.

A. C. RULOFSON COMPANY, Pacific Coast Agents  
359 Monadnock Building, San Francisco, California

## Power Drag Saw does the Work of 10 Men



One man can move machine from cut to cut on log. Two men can carry it. Cuts through 3½ foot log in three minutes. Approximately 25 cords a day. 4 H. P. gasoline engine warranted. Steel wheel cart \$10.00 Send for catalogue. MANUFACTURED BY

**REIERSON MACHINERY CO.**  
1292 HOOD STREET, PORTLAND, OREGON



## United States Food Administration—Home Card

By Herbert Hoover, U. S. Food Administrator.

**Save the Wheat.**—One wheatless meal a day. Use corn, oatmeal, rye or barley bread and non-wheat breakfast foods. Order bread twenty-four hours in advance so your baker will not bake beyond his needs. Cut the loaf on the table and only as required. Use stale bread for cooking, toast, etc. Eat less cake and pastry. Our wheat harvest is far below normal. If each person weekly saves one pound of wheat flour that means 150,000,000 more bushels of wheat for the Allies to mix in their bread. This will help them to save DEMOCRACY.

**Save the Meat.**—Beef, mutton or pork not more than once daily. Use freely vegetables and fish. At the meat meal serve smaller portions, and stews instead of steaks. Make made-dishes of all left-overs. Do this and there will be meat enough for everyone at a reasonable price. We are today killing the dairy cows and female calves as the result of high price. Therefore, eat less and eat no young meat. If we save an ounce of meat each day per person, we will have additional supply equal to 2,200,000 cattle.

**Save the Milk.**—The children must have milk. Use every drop. Use buttermilk and sour milk for cooking and making cottage cheese. Use less cream.

**Save the Fats.**—We are the world's greatest fat wasters. Fat is food. Butter is essential for the growth and health of children. Use butter on the table as usual but not in cooking. Other fats are as good. Reduce use of fried foods. Save daily one-third ounce animal fats. Soap contains fats. Do not waste it. Make your own washing soap at home out of the saved fats. Use one-third ounce less per day of animal fat and 375,000 tons will be saved yearly.

**Save the Sugar.**—Sugar is scarcer. We use today three times as much per person as our Allies. So there may be enough for all at reasonable price use less candy and sweet drinks. Do not stint sugar in putting up fruit and jams. They will save butter. If everyone in America saves one ounce of sugar daily it means 1,100,000 tons for the year.

**Save the Fuel.**—Coal comes from a distance and our railways are overburdened hauling war material. Help relieve them by burning fewer fires. Use wood when you can get it.

**Use the Perishable Foods.**—Fruits and vegetables we have in abundance. As a nation we eat too little green stuffs. Double their use and improve your health. Store potatoes and other roots properly and they will keep. Begin now to can or dry all surplus garden products.

**Use Local Supplies.**—Patronize your local producer. Distance means money. Buy perishable food from the neighborhood nearest you and thus save transportation.

**General Rules.**—Buy less, serve smaller portions. Preach the "Gospel of the Clean Plate." Don't eat a fourth

# The Nation's Strength



is not only in the mailed fist but in the hand of industry—the hand of health. It behooves all of us to be strong and keep strong, in order to carry the present day burden.

As a strength-giving food product Ghirardelli's Ground Chocolate is an ideal blend of foods—cocoa and pure sugar, each full of elements that supply energy and build up worn tissues.

A tablespoonful of Ghirardelli's Ground Chocolate, 1c. worth, makes not only a delicious but an unusually nutritious beverage. Drink daily a cup of

## Ghirardelli's Ground Chocolate

Comes in ½-lb., 1-lb. and 3-lb. Cans.

D. GHIRARDELLI COMPANY  
Since 1852 San Francisco



Red Crown is not a mixture. It has a continuous chain of boiling points.

Standard Oil Company  
(California)



# not a mixture

# Ridley, Houlding & Co.

COVENT GARDEN, LONDON

Points to remember when consigning  
apples to the London Market

1.—We Specialize in Apples

2.—All Consignments Receive our  
Personal Attention

3.—The Fruit is Sold by  
Private Treaty

CABLE ADDRESS: BOTANIZING, LONDON

LESLIE BUTLER, President  
TRUMAN BUTLER, Vice President  
C. H. VAUGHAN, Cashier

Established 1900

## Butler Banking Company

HOOD RIVER, OREGON

Capital . . . \$100,000.00

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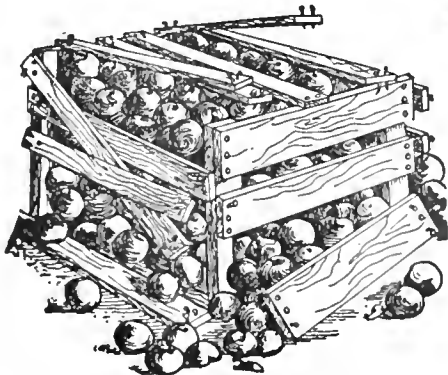
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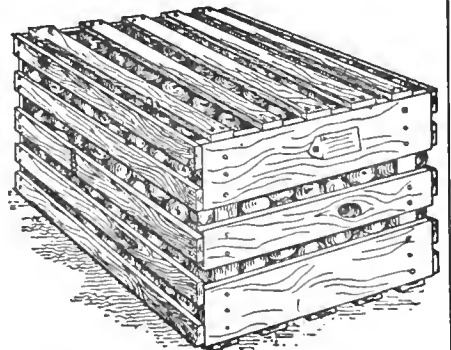
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VOLUME XII

NOVEMBER, 1917

NUMBER 5

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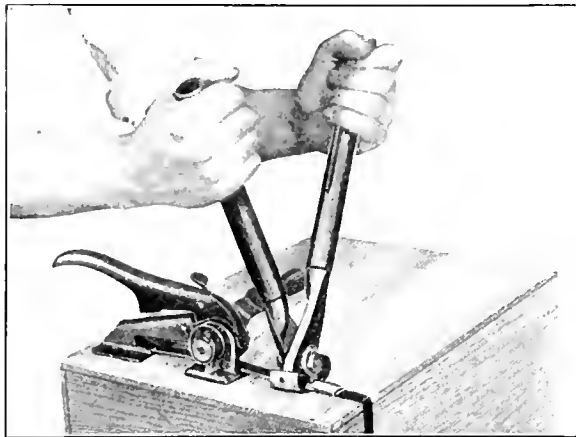
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# BETTER FRUIT

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## The Pruning of Stone Fruit Trees

By O. B. Whipple, Bozeman, Montana

OF all phases of orchard work, none is more interesting than pruning; and of all pruning, none is more fascinating than the pruning of those trees commonly known as stone fruits. It is safe to say that no class of fruit trees suffers more quickly from improper pruning, and none responds more promptly to proper treatment. Probably it is this ready response, a response which so clearly indicates whether the pruning has been right or wrong, that makes the work interesting. We are able to see results and to intelligently reason out causes for success or failure, before we have forgotten how the pruning was done. However, the subject is a large one, and I feel it would be a mistake to attempt, in the time at our disposal, to cover the entire field.

The ideas advanced are based upon personal observations and experience in pruning apricots, sweet and sour cherries, nectarines, peaches and plums; and, while of a general nature, and though to some of you they may seem far-fetched, I hope we may be able to get at some of the fundamental principles to be observed in pruning these plants. In the case of each fruit, or at least the more important ones of this class, I shall attempt to answer three questions: Where does the plant bear its fruit? What are the most desirable types of fruiting wood? And how can we best maintain these desirable types? To some this may seem an unusual manner of attacking the subject of pruning, yet I feel that these are things we must know if we are to prune intelligently. In other words, that the principles involved are important ones and that systems of pruning are largely dictated by the fruit-bearing habit of the plant.

The Nature Study idea has in recent years been much talked of in educational circles. Probably nature study in its truest sense was designed for children, but many of us older people might profit had our faculties for observation been quickened by such study. Did it ever occur to you that so much of our education is gained through observation? And do you realize that most of us are such poor observers that two or three good educations might be overlooked in a lifetime? The doctor who is a leader in his profession is not necessarily the man who graduated at the head of his class. More likely he is the one who has done most to educate himself. Such education has been acquired by accurate observation, and the opportunities for observation were afforded by his practice. We are accustomed to class such training as experience, but I fail to see why such an

important part of one's education should receive this commonplace classification.

What I have to say to you, you may call nature study if you like; I shall not feel insulted. But how many are able to answer such questions as these? How many flowers will a single fruit-bud of the peach, plum or cherry develop? Does the fruit-bud of the peach, cherry or plum produce leaves as well as flowers? Where do these fruits really bear their fruit-buds? Yet the information is important if we are to be good pruners. The moral is, we should all be better observers.

Anyone who has had any great amount of experience in pruning our common fruit trees realizes that these trees bear their fruit in certain positions, each kind of fruit tree having a fruit-bearing habit more or less of its own. Possibly we have not stopped to think that many other plants, grown for flowers for instance, have their flower-bearing habit which must be considered in pruning. The rose bears its flowers from certain types of wood and the gardener has learned to regulate flower-bearing by thinning to a certain amount of this wood. However, a system of pruning, such as is commonly practiced in pruning the rose, would leave a lilac bush without a flower. Even the cucumber and the canteloupe have a regular habit of bearing fruit. The pistilate flowers which develop into fruits appear in certain places, while the staminate flowers occupy all other positions where flowers are normally borne. On the first main vine the first pistilate flower is generally well out in the axil of say the sixth, seventh or eighth leaf. On the branch vines a pistilate flower appears in the axil of the first leaf. This branch then commonly grows for some distance before it bears another pistilate flower. If, however, another branch vine arises from this, the first flower is a pistilate flower and it appears in the axil of the first leaf. In these cucurbits, early setting of fruit may be induced by such pruning as encourages early branching. The gain is not so much in production as in securing an early set of fruit, and consequently the ripening of the crop over a shorter season.

Among our common deciduous fruit trees, we have two types of fruit-bearing—from axillary buds and from true terminal buds. The axillary buds are borne in the axils of leaves along the side of the branch, and the terminal buds at the tip of the shoot or branch. When applied to buds the last term is confusing, for we must remember that not every bud terminating the growth

of the season is a true terminal bud. In the case of many of the plums and the apricot, the last bud, in fact all buds, are axillary. Each is developed in the axil of a single leaf, while the true terminal bud is usually subtended by two leaves, one on either side of the stem. The plant which bears its fruit from the axillary buds is naturally more productive than the one that bears only from terminal buds. One can see at a glance that a tree bears many more axillary than terminal buds. The stone fruits as a class bear from axillary fruit-buds, and we recognize them as more fruitful than apples and pears, which bear mostly from terminal buds. For this reason, the stone fruits require more vigorous pruning. But a fruit-bearing habit may mean more than bearing from axillary or terminal fruit-buds. These axillary fruit-buds may appear on certain types of wood, or those on certain types of branches may be more desirable. While all stone fruits bear from axillary buds, each has a fruit-bearing habit more or less peculiar to itself, and the pruning of each must be considered separately.

The sweet cherry bears most of its fruit-buds axillary on short spurs. Each bud may produce from one to five or more flowers, but, if any at all, only rudimentary leaves. These spurs are always provided with a terminal branch bud which continues the growth of the spur in a straight line. The rate of growth will vary according to how well the trees are pruned. Spurs on poorly-pruned trees may not grow over a quarter of an inch, and under such conditions of growth are inclined to bear only alternate years. The tree insufficiently pruned bears so many of these spurs that during seasons when they are developing fruit, they cannot obtain enough food material to develop lateral fruit-buds. They simply mature a terminal branch bud which unfolds the following spring, and, under favorable conditions, produces new growth long enough and strong enough to bear lateral fruit-buds.

The most desirable type of sweet cherry fruit spur is one that grows at least three-quarters of an inch per year. Those that grow this much will produce annual crops of vigorous blossoms and large fruit. Spurs may live and produce fruit for many years, but it is a question if it is wise to depend upon old spurs. It is better to prune the tree enough to secure each year some new growths from four to twelve inches long. Such twigs are found in the tops of trees poorly pruned, but they can only be developed throughout the entire tree by vigorous pruning both in the way of

thinning-out and heading-in. These new twigs will bear a few lateral fruit-buds near the base, while those nearer the tips will be branch buds. These branch buds will develop into vigorous and productive young fruit spurs. If the new growths are long and produce many lateral buds, it is best to reduce the number of branch buds to five or six by cutting off the tips during the dormant pruning season. If many buds are left, the resulting spurs will be weak and the best ones will be too far removed from the main branches of the tree.

The sweet cherry then produces its fruit on short spurs and at the base of longer one-year-old twigs. Remember that weak spurs with few axillary fruit-buds are the result of insufficient pruning which leaves too many branch buds. Remember that a few new spurs should be developed each year to take the place of older ones. Remember that these new spurs are the result of pruning, sufficiently severe to force the growth of new shoots which develop not only axillary fruit-buds, but axillary branch-buds. The growth of fruiting wood throughout the entire top may be encouraged by such heading-in and thinning-out as will force new growth in the center of the tree. If we neglect to watch this feature, we some day awake to the fact that all of our fruit is a long way from the ground and must be gathered with long ladders and at a heavy expense.

Also remember that the sweet-cherry bud produces only flowers and that the fruits developed are, to a certain extent at least, dependent upon foliage of the spur for elaborated-food material. This means that fruiting wood cannot be shortened-in as a means of thinning fruit. The fruit upon wood with its terminal and axillary branch buds removed by pruning, would be at a disadvantage, for it must either elaborate food material itself (this it could do during its early period of growth) or it must draw this food material from the limb from which the twig arises. Not only this, but the wood with all its branch buds removed by pruning is destroyed. It has no means of continuing its growth and must die at the close of its fruiting season. Pruning employed as a means of thinning fruit must remove entire and not parts of fruiting branches.

The sour cherry is much like the sweet cherry in its fruiting habit. It is more fruitful on the longer twigs, often all the lateral buds on twigs a foot long being fruit-buds. In fact, the trees can be depended upon to produce much fruit from these stronger new growths. Old spurs are less desirable than in the case of the sweet cherry.

It is well to remember that fruiting branches can be shortened in only to branch buds, for like the sweet cherry, the sour cherry fruit-bud produces from one to five or more flowers, but no leaves of real value. Contrary to the common impression that the sour cherry will not stand pruning, the tree really thrives with severe pruning. In the neglected tree all the axillary buds are fruit-buds. New fruiting wood can

only be developed from terminal buds, and as a consequence the tree is filled with fine wood from one to three, four or even five feet in length bearing a half dozen fruit-buds on a half inch of new growths of sufficient length and vigor to bear axillary branch buds as well as fruit-buds. These branch buds develop into strong young spurs bearing well-developed fruit-buds, which will the next season produce the maximum number of well-developed flowers.

The fruit-buds of the peach are normally axillary and only very, very rarely do we see one terminating a twig. These buds open and produce a single flower, but no leaves. They are borne singly in the axils of single leaves or in pairs, one on either side of a branch bud, the three buds being borne in the axils of as many leaves. The first type of bearing is found in trees poorly pruned or on weak spurs in well-pruned trees. In most varieties shoots that do not make a growth of over ten or twelve inches bear their fruit-buds singly. The triple buds are found on the stronger one-year-old wood. The stronger type of fruiting wood with its triple buds is the most desirable. In the case of single buds it is impossible to thin the fruit by heading-in the fruiting wood. To do this would remove all the foliage from the twig as in the case of the cherry, and the fruit borne by this leafless twig would be poorly nourished. Where the tree has made a poor growth and all the fruiting wood bears single buds, pruning can be employed as a means of thinning fruit only so far as entire branches can be spared. Surplus fruit on the remaining branches must be removed by hand thinning. The buds at the base of these twigs are usually branch buds, and it is well to remember that those to be removed may be made a source of desirable new fruit wood if spurred back to one or two of these branch buds. The fruiting wood with its fruit-buds in pairs with a branch bud between may be cut back even to its last pair of fruit-buds. The branch bud will continue the growth of the twig. With this type of fruiting wood, practically all of the thinning can be done with the pruning shears. It may not be desirable to cut this close when doing the general pruning, but after the fruit is set and danger of frost is past, the fruiting wood may be shortened-in to remove the oversupply of fruit. Thinning is a small task as compared with that on a tree bearing single fruit-buds.

Such a type of fruiting wood can only be developed by severe pruning. As in the cherry, some of these strong twigs will grow in the tops of the poorly-pruned trees, but to grow them in the center of the tree the top must be pruned back severely. Remember that it is almost impossible to maintain a fruiting area over seven or eight feet in depth. Little is gained by growing a peach tree fifteen feet in height when the bottom seven feet is barren. It is better to keep the trees down to a height of ten feet with fruit wood within three feet of the ground. A well-pruned tree will grow three feet

of new top each year; but, if the tree is to continue productive, practically all of this must be removed each year. Prune according to the wood growth you get, and set the standard of twig growth to be desired at from fourteen to twenty inches. It is safe to say that in a well-pruned peach tree four-fifths of the one-year-old growth is removed at each pruning season. Pruning that is too severe will produce strong twigs with the first fruit-buds, near the middle or farther out on the year's growth. Such pruning not only causes the tree to expend energy in the production of needless wood, but necessitates the leaving of fruit-spurs long. This makes the tree bushy and hard to work in, and develops a type of fruiting wood that must be early replaced by newer arms forced from the main limbs. Wood with the triple buds near the base may be spurred back close each year and may be maintained several years before they are long enough to become undesirable.

The nectarine is really a peach and the trees so much like a peach tree that it is unnecessary to outline a special system of pruning. Prune the tree as you would prune a peach tree.

The fruiting habit of the apricot is much like that of the peach, or at least a system of pruning adapted to the peach would do very well for the apricot. The tree is inclined to bear more of its fruit upon short spurs, but it also bears abundantly on longer new growths. On the weaker spurs especially the fruit-buds are often borne singly in the axils of single leaves. On the longer twigs they are found in groups of two, three or four, and on these stronger growths, branch buds are more often found in the clusters with the fruit-buds. Unlike the peach, the apricot twigs bear no true terminal buds. All the buds are axillary and those at the tips of branches may be either fruit-buds or branch buds. The fruit-buds normally bear a single flower and no leaves. As in the case of the peach, fruiting wood bearing its fruit-buds single, cannot be headed-in as a means of thinning the fruit.

The most desirable type of fruiting wood is the longer growth bearing fruit-buds in groups. In these groups there is nearly always a branch bud, and the twig may be headed-in to any point without destroying the spur or leaving the fruits without foliage. The shorter spurs on poorly-pruned trees are apt to bear only fruit-buds. As a result, the spurs die at the end of the fruiting season, for they have no means of continuing their growth. Such trees are inclined to bear heavily only alternate years; at least they bear heavy crops in the main body of the tree only once in two years. Even if poorly pruned the stronger branches in the top of the tree bear every year.

The apricot tree should be pruned severely. Prune until the tree makes as much growth as the well-pruned peach. The growth should be strong enough so fruiting wood will bear some branch buds in the clusters of axillary buds. The twig may then be headed-back to any one of these groups of buds,

as in the case of the peach. The branch bud will continue the growth of the spur and furnish elaborate food material for the developing fruit. Heavy pruning will not by any means do away with bearing from spurs, but it will tend to develop strong spurs that will produce new growth each year and bear annually. Pruning will not take the place of hand thinning entirely, but will greatly reduce the amount of thinning necessary. The tree may as well be headed low and kept low like the peach, for fruiting wood soon smothers out below if the tree is allowed to grow high. In some sections, summer pruning after the crop is off may develop a desirable type of fruiting wood. Fruit-buds formed upon this later growth are tardy about opening in the spring and may escape late spring frost injury.

The different plums vary considerably as to their fruiting habits, but as a class they are more like the apricot in their manner of bearing fruit. On the weaker growths the buds are borne singly and on the stronger growths in groups, either all fruit-buds, or part branch-buds. At least the great majority of plums bear no true terminal buds and weak spurs are objectionable for the same reason that weak apricot spurs are undesirable. Some varieties,

especially those of the Japanese group, bear almost like a peach and can be pruned like a peach. Others, as those of the *Domestica* group which you know as prunes, will not stand such severe pruning. The plum fruit-buds produce only flowers and no leaves, or at best only very rudimentary leaves. Each fruit-bud may bear from one to four or five flowers, the larger number of flowers indicating more vigorous growth and better pruning.

Generally speaking, the best types of fruiting wood are spurs vigorous enough to bear some branch buds, or if the tree bears well on longer growth, twigs bearing groups of fruit-buds well mixed with branch-buds. The first type of fruiting wood is supplied with means of continuing its growth to develop fruit-buds for another year. If the branch bud is not present, the fruit spur dies at the close of the fruiting season and becomes a thorn. And yet we sometimes wonder why plum trees have thorns. Spurs cannot be depended upon for very long service. The best spurs are those one year old. To keep up an annual supply of these one-year-old spurs, one must grow each year a good supply of new twigs from twelve to eighteen inches in length. In most varieties, these twigs will bear some

fruit the following year, and will also develop, from axillary branch buds, strong spurs that may be depended upon for the next crop. In many varieties, these stronger new growths are a very good type of fruiting wood. If the tree is pruned vigorously enough to get new wood twelve or eighteen inches long, this may be shortened-in as a means of thinning the fruit. Nearly every cluster of buds will have one branch bud which may be depended upon to continue the growth of the twig.

One should study the variety of plum he is growing, and prune to get these desirable types of fruiting wood. If the tree bears heavily and requires much thinning, or if it bears fruit throughout the head one year and only in the top the next, the pruning has not been severe enough. Head the tree in from the top each year, for little is gained by growing a tall tree.

It is to be hoped that we have gained something by a discussion of this phase of pruning. If I have not made myself entirely clear, maybe you have the most important points. The time has not been wasted if we only see the importance of being better observers. We must know our plants if we are to care for them well.

## The Walnut—Cultural Methods—Top Grafting

By J. B. Neff, Anaheim, California

**W**ALNUTS should be planted only on good deep soil, not underlaid by hardpan, nor where the water will stand on the surface for any considerable length of time. A deep sandy loam is to be preferred, but walnuts will do well on heavy soils that are fertile. Good drainage is always necessary, as well as freedom from late-spring and early-fall frosts. The damage which might occur from late-spring frosts can be largely avoided by planting late-blooming varieties, but a very early-fall frost is sometimes fatal to the next year's crop. The greater part of the orchard planting has been 40 feet apart in squares. This has proved to be too close on good land and 60 feet apart in squares is not too far in most cases. The planting is too often done with the object of getting a large number of trees to the acre instead of getting the maximum production of walnuts and increasing the length of life of the tree. An orchard can be made to pay a good income early in its life by planting 60 feet apart in squares with a tree in the center of each square which can be taken out after twelve to fifteen years. In this way the nuts produced by the inter-set trees will often be enough to pay for the land and the planting by the time they will have to be removed.

Plant only grafted trees, and these should be on roots which are known to succeed well in the locality where the orchard is to be grown. Stocky trees of six to eight feet in height with good root systems should be selected. The planting should be done soon after the

trees have been taken from the nursery. All broken and bruised ends of roots should be cut clean with a sharp knife. Plant at the same depth the tree stood in the nursery, placing the soil around the roots by hand and giving them all the space they will occupy conveniently. Walnut trees do not require the heavy pruning that is needed by most deciduous trees, and if there is a good root system carefully taken up with the tree it is not necessary to cut back the single stem of a walnut tree when planting. The lower branches should start at four to five feet from the ground and in such position as to have the heavy side of the tree to the southwest. A good rule for the early pruning is to cut off only those branches in the way of the team when cultivating, or that tend to draw the tree too much away from the prevailing winds. No general heading back should be done as this causes the tree to become bushy, which is a condition to be avoided. When the trees are eight to ten years old there will be small branches in the center which shut out the sunshine. These should be taken out, together with all branches that are crossed, as there will be no walnuts in the centers of the trees unless there is sunlight through the trees. A good deal of labor and time can be saved if the trees are gone over in June and the long and useless shoots taken out. It may also be necessary to go over them in July, but much less work will be needed then. The young trees should be supported by stakes during the first two or three years. A convenient stake

is made by using redwood 2x2 inches by 9 feet long. In addition to making a support for the body any drooping branches can be raised to the proper angle by using short lengths of light rope tied to the top of the stake.

A walnut orchard which has received good care will begin to produce paying crops after the fifth year from planting and should increase in production for many years. Walnut trees will live to a great age in suitable localities and with proper care. Trees in the south of France and in Spain which are believed to be more than 300 years old are producing heavy crops. Much thought should be given to cultivation and pruning as these assist in producing larger crops and giving longer life to the trees. Frequent cultivation keeps the moisture in the soil for use in filling the nuts and making strong buds for the next crop. Proper pruning promotes growth of wood, gives light through the tree and produces larger walnuts. Instead of pruning to take out dead wood the pruning should be done to keep the wood from dying. If the grower will but remember that walnuts measuring one and one-eighth inches in diameter are almost one-half larger than walnuts measuring only one inch in diameter, and that walnuts measuring one and one-fourth inches in diameter are almost twice as large as those measuring only one inch in diameter he will do much better pruning, since the better pruning produces the large walnuts.

Continued on page 19

I T S A L L I N T H E W R I N K L E

I T S A L L I N T H E W R I N K L E

*Corrugated Paper Products*

that unless the market prices, which are now in the neighborhood of \$100 a ton, fall the farmers' demand for nitrate will decrease.

As has been stated, the purchasing will be handled directly through the war industries board. The department of agriculture will co-operate with the purchasing committee in the effort to procure nitrate of soda. It is authorized by law to secure facts as to the demand for fertilizers, including nitrate of soda, their supply, consumption, costs and prices, and the basic facts relating to their ownership, production, transportation, manufacture, storage and distribution. This inquiry is now being prosecuted through the bureau of markets. In connection with this the needs of farmers will be ascertained and all amounts purchased for their use, after the shipments reach the ports, will be taken charge of by the department and will be distributed through the department to farmers at cost for cash. The collections will be made by the department and will be turned into the treasury. To assist the department in its activities in this direction the services of Mr. Mell R. Wilkinson of Atlanta, Georgia, have been secured. He will be given such assistants as may be needed and will have available the services of the experts of the bureau of soils and the bureau of plant industry.

Authority has been given the President, if necessary, to license the importation, manufacture, storage and distribution of fertilizers, to require the licensees to submit reports, and to permit entry and inspection of their places of business. The President is further authorized, if he shall find that any storage charge, commission, profit or practice of any licensee is unjust, or unreasonable, or discriminatory and unfair, to cause such charge, commission, profit or practice to be discontinued, and in lieu of such charge, commission, profit or practice may determine what is just and reasonable, and his finding shall be prima facie evidence in any court in which proceedings may be brought. It is also provided that licenses may be revoked for cause. If it becomes necessary to exercise the licensing power, the department of agriculture, through a special agency, will utilize the services of the licensing division of the food administration.

There have been available no thoroughly satisfactory data as to the yields of crops, due solely to the application of nitrate of soda, and therefore as to the price at which farmers can afford to use it. Realizing this fact, the Secretary of Agriculture directed the bureau of plant industry last spring to make 100 experiments. These experiments are being made with corn in five Southern States—Virginia, North Carolina, South Carolina, Georgia and Alabama—in ten counties in each state, and on two farms in each county. It is hoped that the results of the investigation will be available within the next six weeks. When information is secured it will promptly be given publicity.

## Nitrate of Soda for Fertilizers

[Weekly News Letter, U. S. Department of Agriculture]

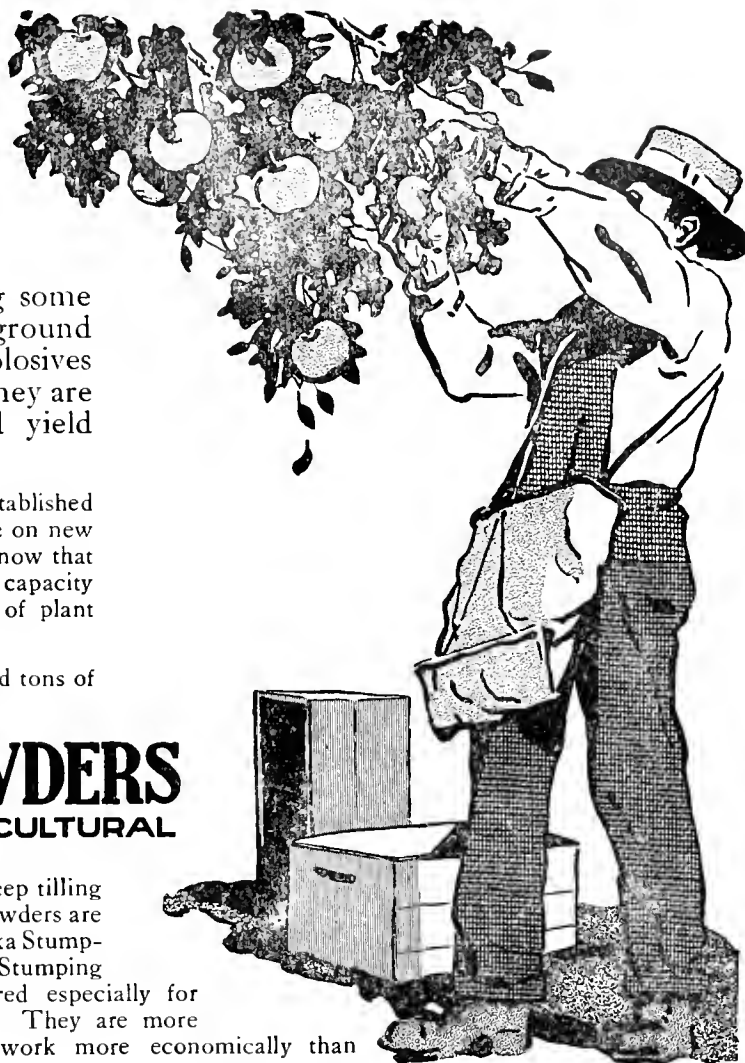
THE Department of Agriculture has for some time been giving careful consideration to the problem of securing nitrate of soda for fertilizer use. Under a recent authorization of Congress there is available an appropriation of \$10,000,000 to be used, at the discretion of the President, to secure nitrate of soda and to supply it to farmers at cost for cash.

It is proposed to co-ordinate all the Government purchases of Chilean nitrate for this country through the purchasing committee of the war industries board, under the immediate supervision of Mr. Baruch, so that there will be no competitive bidding for this material. This should very much simplify the problem and make it feasible to secure the best possible terms. The price of Chilean nitrate on board ship in Chile has greatly increased within recent months without justification. Shipping rates also have increased. The increase in price is due in part to unfounded statements regarding the demand for Chilean nitrate for munitions purposes and for fertilizers, especially in connection with the \$10,000,000 recently appropriated by Congress to pur-

chase nitrate of soda. As a matter of fact, the demands of this country for nitrate of soda will be smaller than heretofore. The navy already has placed contracts for this material to satisfy its needs for the next twelve months. The war department announces that practically all the sodium nitrate which it has been planned to procure for the gradual building up of the war reserve already has been contracted for. The quantity which may be purchased for fertilizer use under the special appropriation of Congress will not be an addition to the quantity normally used. Any quantity purchased by the Government and sold to farmers will simply take the place in part of quantities heretofore supplied to them through private agencies. As a matter of fact, unless satisfactory prices can be secured it is probable that the farmers will not seek as large a quantity of this material as has been used in the last year or two. Some contracts already have been made by farmers for nitrate of soda. In view of all these facts, it is probable that the aggregate demand for the next five or six months will be below the normal. It is certain



# Trees in BLASTED soil bear better



Fruit growers have proved—by planting some trees in blasted beds and others in ordinary ground—that trees planted after the use of explosives root deeper, grow faster and better—that they are thriftier in every way, bear earlier, and yield larger crops.

They have proved also that when the soil of established orchards is properly blasted the trees immediately take on new vigor and bear better fruit thereafter. Orchardists know that this condition is due to the increased moisture-storage capacity induced by blasting and to the consequent release of plant food from the subsoil.

Fruit growers in every Pacific Coast State have used tons of

## GIANT FARM POWDERS STUMPING — AGRICULTURAL

### Fruit Growers Say:

"My orchard has made excellent growth, due to the fact that I used dynamite, breaking up the soil and making excellent beds for the roots. If I were to set another orchard I would not think of doing so without blasting each tree hole."

T. A. JOHNSON,  
Boise, Idaho.

"Generally speaking, the growth of plants depends upon the condition of the soil into which the roots penetrate. If the depth of loose soil is too limited or the surface water is permitted to stand too long, the growth is impaired. Explosives properly used have invariably resulted in excellent growth. The yield is often three times as great on blasted soil as from those untreated in the same vicinity."

ROSECROFT FRUIT FARM,  
Summer, Wash.

"We consider the use of explosives an important factor in planting orchards. It is important to secure good drainage and the roots should be able to penetrate deeply into the subsoil. Young fruit trees newly planted should make at least one foot of new growth the first year, and this is hardly possible unless the land is put into good mechanical condition, with plenty of room for the roots to spread in the loosened subsoil."

A. LINGHAM,  
Puyallup, Wash.

"Giant explosives are of great benefit for blasting beds for orchard planting. The difference in growth between unblasted trees and trees in blasted ground is so much in favor of the latter that no adequate comparison can be made."

DONALD NURSERY CO.,  
Donald, Ore.

for planting trees and deep tilling their orchards. These powders are made in two brands, Eureka Stumping Powder and Giant Stumping Powder, and are prepared especially for farm and orchard work. They are more effective and do their work more economically than ordinary dynamites.

Eureka Stumping Powder pulverizes the soil instead of caking and packing or throwing it high in the air. This is the action that is wanted in stump and soil work, and the action that the so-called "high strength" dynamites will not give. When you use Eureka Stumping Powder the finished job costs you less money.

Giant Stumping Powder, which is also used for subsoil blasting, is the most efficient explosive for many other kinds of farm work, including blasting dead trees or stumps in wet soil.

### Make this test of Giant Powders

By using the Giant Farm Powders you can demonstrate their superiority for tree planting and orchard tillage. Mail today a trial order with your book coupon. We will have our nearest distributor supply you—at lowest market price—with a 25- or 50-pound case of either of the Giant Farm Powders. Test this in comparison with any dynamite. The results will show you why fruit growers in every section insist upon having the Giant Farm Powders for orchard tillage work.

Giant Farm Powders and other Giant blasting supplies are sold by distributors everywhere. Your own dealer has them or can get them for you. If he offers you a substitute, write us and we will see that you are supplied with the genuine. Giant Powder is the trade name of explosives manufactured by The Giant Powder Co., Con. Because Giant Powders are best known everywhere, many have assumed that all high explosives are Giant Powders. Insist upon having the genuine.

### THE GIANT POWDER CO., Con.

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HOOD RIVER, OREGON

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## Lime and Sulphur Bordeaux Paste Miscible Oil

Huron, S. D.	2	Peach, Wash.	3
Harris, Minn.	1	Paris, Idaho	1
Beaton, N. D.	1	Portland, Maine	4
Hilton, Neb.	1	Pittsfield, Mass.	1
Huntington, Neb.	1	Quebec, Canada	1
Indianapolis, Ind.	25	Quincy, Ill.	2
Isabel, S. D.	1	Rugby, N. D.	1
Independence, Kan.	1	Regent, N. D.	1
Junction City, Kan.	1	Regina, Canada	21
Jackson, Tenn.	1	Rockford, Ill.	2
Jamestown, N. D.	13	Bafford, Canada	1
Joplin, Mo.	1	Richland Center, Wis.	1
Jacksonville, Fla.	3	Redfield, S. D.	1
Joliet, Ill.	2	Rocksprings, Mont.	1
Kansas City, Mo.	76	Biverton, Wyo.	1
Kimmerer, Wyo.	2	Bed Deer, Canada	1
Kimball, S. D.	1	Bolla, N. D.	3
Kent, Wash.	2	Boundup, Mont.	1
KerRobert, Canada	1	Baymore, Canada	1
Kitchner, Canada	1	Louisville, Ky.	2
Lakata, N. D.	3	St. Paul, Minn.	2
Lakata, N. D.	3	Salt Lake City	2
Landon, N. D.	1	San Antonio, Tex.	38
Laramie, Wyo.	3	San Francisco, Cal.	11
Laredo, Texas	3	Seattle, Wash.	82
LeBoy, N. Y.	27	Selah, Wash.	2
Lincoln, Neb.	27	Shreveport, La.	20
Los Angeles, Calif.	59	Sioux City, Iowa	40
Laurel, Mont.	19	Spokane, Wash.	85
Little River, Kans.	1	Springfield, Ill.	3
Livingston, Mont.	3	Strasburg, N. D.	1
Lewiston, Mont.	3	Streator, Ill.	1
Lindsay, Okla.	1	Sumner, Wash.	14
Lethbridge, Can.	2	Susp. Bridge, N. Y.	16
Lewisville, Idaho	2	Swift Curr'nt, Can.	8
Lexington, Ky.	2	Shelley, Mont.	1
Lewiston, Idaho	4	Scottsbluff, Neb.	1
Lima, Ohio	1	Sault Ste. Marie	1
Lake City, S. D.	1	Stockton, Calif.	1
Lake Preston, S. D.	1	Sacramento, Calif.	3
Laramie, N. D.	2	San Bernardino, Calif.	1
Logansport, Ind.	1	San Bernardino, Calif.	1
Malvern, Iowa	1	Santa Barbara, Cal.	2
Mason City, Iowa	1	San Diego, Calif.	3
Medina, N. Y.	14	Shelby, Mont.	1
Millette, Wyo.	1	Sioux Falls, S. D.	14
Milwaukee, Wis.	23	Saskatoon, Canada	23
Minneapolis, Minn.	34	Stanley, N. D.	1
Minot, N. D.	87	Sherburn, Minn.	1
Minnesota Transfer	5	Springfield, Ohio	1
Monroe, La.	2	Springfield, Mass.	5
Moosejaw, Canada	1	Sterling, Wyo.	4
Millette, S. D.	1	Sheridan, Wyo.	1
MacRorie, Canada	1	Sterling, Ill.	1
Missoula, Mont.	14	Syracuse, N. Y.	1
Mobile, Ala.	1	Sidney, Wyo.	1
Mohridge, S. D.	1	Scottsbluff, Neb.	1
Muskegon, Okla.	5	Spiritwood, N. D.	1
Miles City, Mont.	6	Texarkana, Texas	1
Manchester, Mont.	1	Thorne, N. D.	1
Mayville, N. D.	1	Tulsa, Okla.	12
Memphis, Tenn.	4	The Dalles, Oregon	7
Mitchell, S. D.	6	Topeka, Kans.	5
Morinville, Canada	1	Toronto, Canada	25
Manchester, Iowa	1	Tacoma, Wash.	8
Mandan, N. D.	1	Terry, Mont.	1
Mohridge, Minn.	1	Trinidad, Colo.	1
Manville, Canada	1	Temple, Texas	1
Montreal, Canada	4	Tulsa, Arizona	1
Minden, Neb.	1	Tyler, Wash.	1
Marshalltown, Ia.	2	Tracy, Mont.	1
Mowbride, S. D.	1	Tripp, S. D.	1
Milford, Mo.	1	Temple, Arizona	1
Marion, Ohio	1	Tabor, Canada	2
Marcus, Iowa	1	Topenish, Wash.	2
Medicine Hat, Can.	2	Toledo, Ohio	1
Milton, Oregon	1	Tunis, Mont.	1
Norfolk, Va.	3	Vancouver, Canada	23
Nashville, Tenn.	9	Velva, N. D.	1
New London, Wis.	1	Vergas, Minn.	3
New Orleans, La.	22	Valley City, N. D.	1
New York, N. Y.	459	Vermillion, S. D.	1
North Bay, Canada	1	Vulcan, Wash.	1
Norfolk, Neb.	7	Walla Walla, Wash.	4
North Platte, Neb.	39	Washington, D. C.	31
New Haven, Conn.	4	Waterbury, Conn.	7
New Rockfd, N.D.	1	Waterloo, Iowa	1
Newberg, Oregon	1	Whitefish, Mont.	33
Newport, R. I.	1	Williston, N. D.	1
North Battleford	1	Wilson, N. Y.	1
New Salem, N. D.	1	Winnipeg, Canada	30
New Bedford, Mass.	1	Winona, Minn.	1
Ogenia, Wis.	1	Wasco, Texas	12
Oklahoma City	10	Wallace, Idaho	3
Omaha, Neb.	176	Weyburn, Canada	7
Ogden, Utah	1	Wapato, Wash.	2
Olympia, Wash.	1	Wahpeton, N. D.	3
Ottawa, Canada	4	Warren, N. D.	1
Oshkosh, Wis.	2	Wolfpoint, Mont.	1
Orient, S. D.	1	Worland, Wyo.	1
Othello, Wash.	1	Wichita, Kans.	4
Peoria, Ill.	3	Watertown, S. D.	2
Philadelphia, Pa.	34	Winfield, Kans.	6
Pittsburg, Pa.	121	Worcester, Mass.	1
Portland, Oregon	34	Wilson, Idaho	1
Providence, R. I.	14	Walford, N. D.	1
Payette, Idaho	4	Wells, Wash.	1
Pocatello, Idaho	6	Xenia, Ohio	1
Princeton, Minn.	1	Yakima, Wash.	24
Prescott, Wis.	1	Yorkton, Canada	3
Phoenix, Arizona	2	Yoakum, Texas	1
Portal, N. D.	1	Zilla, Wash.	8
Phillipsburg	1	Zanesville, Ohio	1
Prince Albert	1		

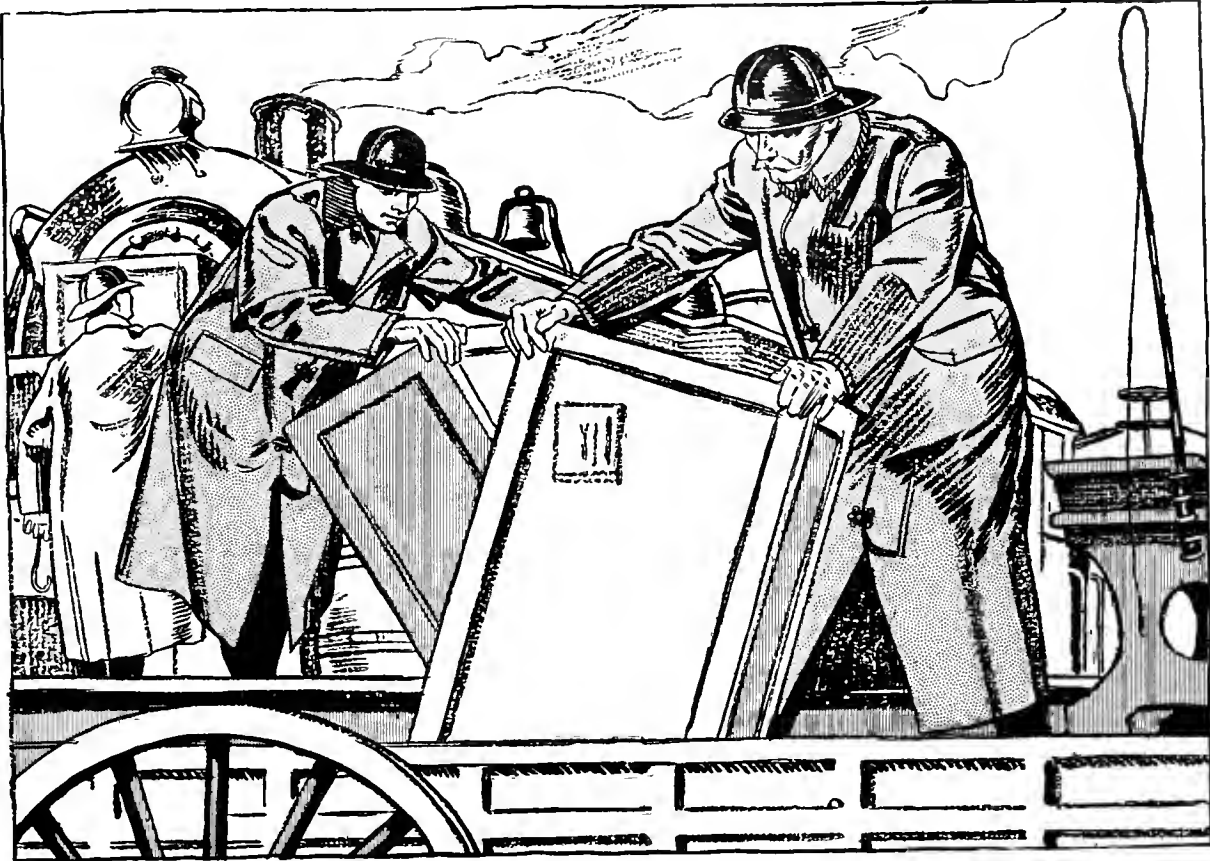
Total towns 394; total cars 4,217.

The person who wastes food during war time is helping the enemy.

## Recent Car Shipments from the Northwest

THE following list of towns to which carloads of apples have been shipped from the Northwest is made up from reports of the Fruit Growers' Agency, October 1 to 22 inclusive. The reader should bear in mind that this list does not represent the entire number of towns shipped, for the reason that many of the towns are diversion points from which the cars are shipped to a number of other cities, and therefore it cannot be an exact record, but nevertheless contains valuable and interesting information. One large apple dealer in the Middle West calls particular attention to the fact that Jamestown, South Dakota, is a diversion point, to which his firm has shipped 55 cars of apples, which have been diverted from Jamestown to various cities, and that every town in their territory has been sold. We are certainly glad to have this information, for the reason it shows the trade is anxious in serving the Northwest to establish as wide a distribution as possible. The editor is also pleased and feels complimented over the fact that dealers, shipping concerns, as well as individuals, have given sufficient attention to the series of articles appearing in the past few issues of BETTER FRUIT to write the editor, complimenting and criticising him. The editor is glad that the articles are of sufficient interest to command attention and appreciates the fact BETTER FRUIT is read and its articles criticised as well as complimented. The list contains 394 towns, to which 4,217 cars were shipped direct, not including apples going to diversion points for other cities. This list is from October 1 to October 22. Last year the list published in the November edition was from October 1 to October 26, four days more, showing 415 towns shipped to, or 21 towns more than have been shipped in the list for this year, but this year would undoubtedly equal last year on the same number of days. But the reader must take into consideration that the season is very late this year and that shipments to date are about 25 per cent less than last year. When these facts are taken into consideration it shows a decided improvement for 1917:

Aberdeen, S. D.	23	Carlton, N. Y.	2
Alexandria, La.	2	Clinton, Iowa	1
Anderson, Ind.	1	Dallas, Texas	29
Ardmore, Okla.	1	Denver, Colorado	108
Ashton, Idaho	2	Duluth, Minn.	37
Australia	1	Des Moines, Iowa	30
Adrian, Wash.	1	Dayton, Ohio	4
Akron, Ohio	5	Detroit, Mich.	40
Albany, N. Y.	2	Deer Lodge, Mont.	2
Alexandria, Minn.	4	Dickinson, N. D.	2
Appleton, Wis.	2	Dillon, Ohio	1
Arco, Minn.	1	Deadwood, S. D.	1
Arlington, S. D.	1	Devil's Lake, N. D.	2
Altoona, Pa.	1	Davenport, Iowa	3
Altus, Okla.	1	Dillon, Mont.	1
American Falls, Idaho	1	Drake, N. D.	1
Alexander, N. D.	1	Douglas, Arizona	1
Auburn, N. Y.	1	Dubuque, Iowa	1
Astoria, Oregon	1	Dekatur, Iowa	1
Aneta, N. D.	1	Enterprise, Oregon	1
Bakersfield, Oregon	1	El Paso, Texas	4
Baltimore, Md.	11	Enid, Okla.	8
Beach, N. D.	3	Everett, Wash.	2
Billings, Mont.	9	Evansville, Ind.	1
Bismarck, N. D.	22	Everson, Pa.	1
Boston, Mass.	39	Eau Claire, Wis.	1
Beaumont, Texas	7	Edmonton, Canada	11
Buffalo, N. Y.	18	Ellsworth, Kansas	1
Bellingham, Wash.	6	Esbon, Kansas	1
Berham, Minn.	1	Ellwood, Minn.	1
Birmingham, Ala.	13	Emhden, N. D.	2
Brandon, N. D.	2	Emporia, Kansas	1
Bridgeport, Iowa	5	Eshbach	1
Brownville	1	Elmira, N. Y.	2
Bueyrus, Ohio	1	Erie, Pa.	1
Butte, Mont.	24	Fairfield, Neb.	4
Bozeman, Mont.	4	Fargo, N. D.	25
Brandon, Canada	1	Ferndale, Wash.	1
Bridgeport, Conn.	8	Fairfield, Iowa	1
Browning, Mont.	1	Fort Worth, Texas	14
Burlington, Iowa	2	Fosston, Minn.	1
Brownvalley, Minn.	1	Freemont, Neb.	2
Burlington, Iowa	1	Farrell, Nevada	1
Bisbee, Ariz.	3	Ferndale, Minn.	1
Brookings, S. D.	1	Flasher, N. D.	2
Baker, Mont.	1	Farmers City, Ill.	1
Bellefontaine, Ohio	1	Ft. Wayne, Ind.	1
Belle Fourche, S. D.	1	Freeport, Neb.	1
Bangor, Maine	1	Faith, S. D.	1
Berthold, N. D.	1	Forsyth, Mont.	1
Braunford, N. D.	1	Faulkton, S. D.	1
Council Bluffs, Ia.	2	Geneve, Neb.	1
Calgary, Canada	21	Grafton, Texas	1
Canton, Ohio	2	Great Falls, Mont.	14
Chattanooga, Tenn.	4	Glendive, Mont.	3
Cedar Rapids, Ia.	3	Grand Island, Neb.	4
Clainworth	1	Grand Forks, N. D.	18
Cheyenne, Wyo.	121	Greton, S. D.	1
Chicago, Ill.	509	Gooding, Idaho	1
Cincinnati, Ohio	19	Greenville, Texas	2
Columbus, Ohio	18	Gackle, N. D.	1
Cleveland, Ohio	32	Glasgow, Mont.	3
Crawford, Neb.	4	Groton, S. D.	1
Casicana, Texas	1	Gr. Prairie, Texas	1
Crookston, Minn.	2	Galesburg, Ill.	1
Cuthank, Mont.	27	Glenullin, N. D.	1
Candalls, Kansas	1	Garden City, Kan.	1
Charlestown, W.V.	2	Grafton, N. D.	3
Chester, Mont.	1	Helena, Mont.	3
Chippewa Falls, Wis.	2	Hartford, Ill.	1
Conrad, Mont.	3	Hilton, S. D.	1
Council Bluffs, Ia.	1	Houston, Texas	35
Canwood	1	Havre, Mont.	1
Carrington, N. D.	1	Hilton, Wash.	2
Churches Ferry	1	Houlton, Maine	3
Concora, Wyo.	1	Huntington, Texas	1
Cogswell, N. D.	1	Hutchinson, Kans.	1
Clarendon, Texas	1	Hoguiam, Wash.	1
Centerville, Iowa	1	Harvey, N. D.	1
Condi, S. D.	1	Hastings, Neb.	3
Creston, Wash.	1	Hartford, Conn.	5
Cherokee, Iowa	1	Harwood, N. D.	1
Camrose, Canada	1	Hettinger, N. D.	1
		Hunter, N. D.	1
		Harlowtown, Mont.	1
		Hope, Idaho	1



Look for this Label  
on your Coat



Reg. U. S. Pat. Off.

# Raynster

Reg. U. S. Pat. Off.

The hustle and bustle of farm and freight station never stop for rain. Men must be outdoors in the worst of weather.

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This new word "Raynster" is the name of the United States Rubber Company's entire line of weatherproof clothing. And to make sure that you *get* a Raynster when you buy, each coat is labeled.

The Raynster label is your assurance that you are getting a waterproof coat that is serviceable and comfortable and made of the best of materials. Buy by this label—it's your protection.

These practical storm-coats are made with ample room to work. They're made strong and durable. They're made to fit every purpose and person.

Raynsters are of so many different styles and kinds that to say these storm-coats are obtainable to fit the needs of all men, women, boys and girls just starts to tell the story.

Stop at your dealer's and you'll learn the rest about Raynsters. And if you *do*, it's ten to one you take one home.

Send a postal today for interesting book of styles. It shows Raynsters for men, women and children.



## United States Rubber Company

Clothing Division, New York and Boston

## Store Box Apples in Indiana on Storage-in-Transit Basis

We are advised that the storage-in-transit privilege has been extended, effective October 27th, to Central Freight Association territory. Our modern fire proof facilities served by four trunk line railroads, together with the sales service of F. H. Simpson Fruit Company, are at your service. Rates furnished upon application.

**Ebner Ice and Cold Storage Company**  
**VINCENNES, INDIANA**

Accurate figures could not be obtained from the Hudson River Valley and Long Island shipping points as so much of the fruit is shipped by water, but basing the yield in 1915 on the census reports of 1909 as to yields and number of trees as compared with similar data for these years from Western New York, a rough approximation of the number of carloads in Eastern New York is 600. From reports received from the chief Hudson River navigation lines it would seem that they probably carried about one hundred carloads.

Practically all of the 600 carloads grown in Eastern New York were consigned to New York City or nearby towns. From the above table we may assume that about 5000 carloads were produced in the rest of the state and we are fortunate in having a record as to where 4419 of these were consigned. The New York Central Railroad distributed the number of carloads named as follows:

No. Cars	Pct. of Crop	Destination	No. Towns
1628	36	Buffalo and points west, including Pittsburg...	96
906	20	Pennsylvania and points south of Newberry Jct.	72
222	5	Points east of Albany...	25
986	22.3	Points north of New York City .....	145
677	15.7	New York City.....	1
4419			339

## Distribution of the New York Peach Crop

[EDITOR'S NOTE.—This article contains some valuable and interesting data on the distribution of the New York peach crop, which everyone should read who is interested in the distribution of the Northwestern apple crop, as it indicates a very broad distribution for the quantity marketed.]

In the past the great problems of peach-growers, as of those who grow other agricultural products, have been cultural in their essential character. Attention to problems of distribution have had to do with the opening up of new regions of production—the expansion of the agricultural domain; with developing means of transportation—railroad lines, steamboat service, canals; and in developing centers of consumption in habitable parts of America. Until recent years, little has been done in studying the commercial disposition of agricultural products. Now, however, studies are being made everywhere of the distributive systems by which products get to market and to determine what share of the consumer's price should go to the producer and what to the distributor. Everywhere the importance of these economic studies is recognized and no producer sees more clearly than the New York peach-grower the need of improvement in handling products to distribute risks, reduce risks, decrease the number in the vast armies of middlemen and in every way improve defective distribution. But these questions belong to specialists—economists. We wish here only to furnish a few fundamental data which may be of use to all concerned in the distribution of the peach-crop.

In the economic study of the peach-industry in the state it is essential to know the volume of the product in the state; what proportion of the total dif-

ferent sections produce; how the crop is distributed in consumption; and the movement of the peach-crop from competing peach-states. These data we undertake to furnish for the year 1915, a normal peach-year, taking the figures from the transportation lines handling peaches in New York so far as obtainable. The volume of the product for Western New York is shown by figures taken from the New York Central Railroad and the Lehigh Valley Railroad. Peaches were shipped from towns as follows:

Cars	Cars
Adams Basin .... 26	Lewiston ..... 432
Albion ..... 41	Lockport ..... 119
Appleton ..... 108	Lodi ..... 3
Ashwood ..... 19	Lindenville ..... 171
Barker ..... 261	Medina ..... 76
Barnard ..... 72	Middleport ..... 36
Brice ..... 24	Millers ..... 87
Brighton ..... 3	Model City..... 156
Brockport ..... 116	Morton ..... 188
Buffalo ..... 2	North Road..... 2
Burt ..... 244	Ontario ..... 43
Carlton ..... 25	Pittsford ..... 2
Caywood ..... 16	Ransomville ..... 38
Charlotte ..... 88	Rochester ..... 214
Covert ..... 21	Rushville ..... 3
E. Williamson... 52	Sodus ..... 126
Elberta ..... 21	Spencerport ..... 91
Elm Grove ..... 1	Trumansburg ..... 11
Fancher ..... 17	Union Hill..... 1
Fruitland ..... 48	Valois ..... 5
Casport ..... 108	Walker ..... 168
Geneva ..... 19	Waterport ..... 15
Greece ..... 14	Waverly ..... 1
Hamlin ..... 216	Webster ..... 3
Hector ..... 28	Williamson ..... 371
Hilton ..... 314	Wilson ..... 126
Holley ..... 27	Wolcott ..... 15
Junius ..... 61	
Kendall ..... 70	Total ..... 4568

These figures include plums, but the shipment of plums in 1915 was so insignificant as to be negligible and more than offset by shipments of peaches not accounted for by the carriers' names. In addition to the above the American Express Company took out of this territory about 175 cars, mostly in less than car-lot shipments.

Analyzing these figures we find that 4,419 carloads reached 339 destinations grouped as follows: 9 cities took 2,378 cars, over one-half of the crop; 21 cities took 3,018 cars, two-thirds of the crop; 59 cities took from 4 to 10

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WE CARRY - AND CAN SHIP IN 24 HOURS - STOCK LABELS FOR PEARS, APPLES, CHERRIES & STRAWBERRIES.

cars each; 231 cities took from 1 to 3 cars each; 62 per cent of the crop went outside of the state; 22.3 per cent went to points in New York north of New York City; 15.7 per cent went to New York City.

The nine cities which took over one-half of the crop are:

Cars	Cars
New York..... 677	Cincinnati..... 116
Pittsburg..... 555	Syracuse..... 109
Philadelphia..... 418	Columbus..... 109
Cleveland..... 156	Detroit..... 103
Boston..... 135	
Total.....2378	

While these nine cities took over one-half of the 1915 peach crop, twenty-one cities took 3,018 carloads. In addition to those already named, these cities are as follows:

Cars	Cars
Newark, N. J.... 77	Schenectady..... 46
Dayton, Ohio... 69	Watertown..... 44
Albany..... 67	Indianapolis... 43
Utica..... 64	Toledo..... 37
Baltimore..... 55	Providence..... 36
Troy..... 52	
Wilkes-Barre... 50	
Total.....3018	

Remarks—The New York peach crop for the year 1915 was 5000 cars, with actual destination obtained for 4419 cars. The statistics show that 4419 cars were distributed in 339 cities. If the Northwest apple crop susceptible to as wide a distribution in carlots for the reason that many towns are too small to consume a carload of peaches in a limited time before they would spoil, whereas a carload of apples would keep sufficiently long to afford every small city a much longer period for consumption, which is sufficient evidence in itself to show that apples can be sold in carlots to much smaller cities than peaches. Particular attention is called to the fact that 231 cities, evidently small ones, appear in the distribution taking from one to three cars each. It must be borne in mind in connection with this article that the peach crop of New York is only one of many of the large districts producing peaches extensively. It would seem if the Fruit Growers Agency would collect data in was distributed equally as well in proportion to quantity the distribution would cover 1695 cities. However, in making this statement it must be noted that peaches are far more perishable than apples, and consequently not so reference to the shipment of apples from the Northwest during the coming season they could present some very valuable information on distribution for future years. In as much as the work on the distribution of the peach crop was largely done by the Experiment Station of New York it would seem that the Experiment Stations of Washington, Oregon, Idaho, Montana and other states could do some similar work on the apple shipments of the 1917 crop, and by proper analysis of the data present some suggestions that would be well worthy of consideration. As the number of cars of apples shipped from the Northwest is about five times greater than the number of cars of peaches shipped from the state of New York, and as the peach crop was distributed in 339 towns, it would seem that the

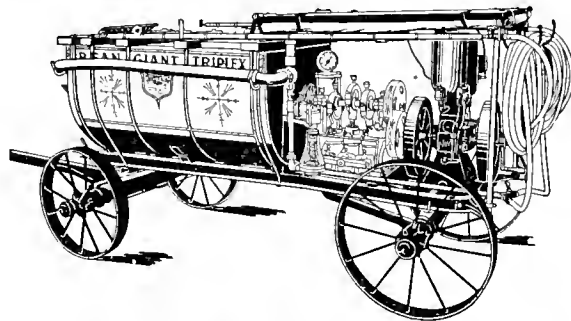
apple crop of the Northwest should at least be distributed in 1625 cities—and then some, which would be a big increase over the past distribution of about 611 cities—the number known so far as reported.

**A 25,000 Box Apple Sale at Wenatchee.**

Officers of the Wenatchee Heights Unit have sold the apple crop of the Heights, approximately 25,000 boxes, the sale including almost all of the fruit of Wenatchee Heights. The contract calls for the delivery of the fruit at South Wenatchee Avenue. The Heights fruit this year, as in years past, grades high, and the extra fancy prices particularly are very satisfactory to the growers. The growers get

pay for the fruit on delivery at the warehouse and the burden of furnishing cars is on the buyer. The following are the prices for the different varieties and grades:

Winter Banana, \$1.75, \$1.50, \$1; Delicious, \$1.70, \$1.45, \$1; Spitzenbergs, \$1.50, \$1.25 and 90c; Jonathans, \$1.15, \$1 and 75c; King David, \$1.10, 95c and 75c; Black Bens, \$1.10, 90c and 75c; Staymen, \$1.10, 95c and 75c; Black Twigs, \$1.05, 90c, 75c; Wine-saps, \$1.45, \$1.20, 80c; Rome Beauty, 88 and larger, \$1.40, \$1.20, 90c; Rome Beauty, smaller, \$1.20, \$1, 75c; Yellow Newtowns, \$1.25, \$1.10, 75c; White Winter Pearmains, \$1.20, \$1 and 75c; Ben Davis, \$1.05, 90c and 75c.—“The Packer.”



# RIGHT NOW

Begin to investigate NOW the sprayer you are going to use this next season. When you decide, be sure you are making an investment of permanent value—that you will get an outfit that will do what others cannot do, and will save time and trouble, and make money for you for years to come. That is just what you get in the

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### Bean Spray Pump Co.

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Send me the Bean Sprayer Catalog.  
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ADVERTISING RATES ON APPLICATION

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Postoffice at Hood River, Oregon, under Act  
of Congress of March 3, 1879.

**Fall Spraying.**—A great many districts throughout the Northwest are troubled with anthracnose. The most effective time to spray for anthracnose is in the fall immediately after harvesting. The best remedy known is bordeaux treatment, which can be bought already prepared or made by the orchardist. Every grower as soon as he harvests his apple crop, if he has any anthracnose, or if there is anthracnose in his neighborhood, should immediately spray his orchard, not stopping until the job is completed. The sooner the orchard is sprayed after harvesting the better. It is equally important to spray orchards to the fullest extent possible before the fall rains commence; but even if a few showers occur do not stop spraying with bordeaux until the whole orchard has been sprayed.

**Codling Moth.**—A great many growers got the idea this season that worms were not going to be bad, others felt like economizing, omitting some of the sprays and failing to spray thoroughly in the balance. Whenever a grower omits any spray or fails to do his work thoroughly he can rest assured that, whether a good year or a bad year for worms, he will have a large percentage. There is no reason in the world why an apple crop should not be cleaner and more free from worm stings than it is, which is all due to a lack of spraying. It seems timely to call the attention of the fruit growers to this subject right now, when the loss is apparent and before they forget it, with the hope and belief that by so doing growers will do better work in 1918 and have a smaller percentage of wormy apples. There is nothing that hurts the apple grower or prevents consumption more than the marketing of wormy and badly-stung apples.

**National Apple Day.**—Thursday, November 1, was National Apple Day, which was pretty generally observed throughout the United States. All kinds of advertising publicity should be given the apple during the coming year for the purpose of increasing consumption and for the further purpose of having people eat apples instead of non-perishable foods. The dealers in the city can continue National Apple Day publicity in a great many ways, which will be big factors in increasing consumption. Apple shows can be held; occasionally special sales can be put on by the retailers; window decorations can be made by retail grocers; street-car advertising can be utilized to excellent advantage. Newspaper advertising is the best method in the world. The subject can be brought before the schools by the school teachers; electric signs can be displayed in the various prominent public places: "An Apple a Day Keeps the Doctor Away."

"Health's Best Way—Eat Apples Every Day."

"Eat Apples and Conserve the Non-Perishable Food."

From time to time special menus can be served in hotels, restaurants and clubs. The retail trade can hang out signs, banners and distribute dodgers, and in a thousand and one ways the wholesaler, the retailer and the public in general can help to increase the consumption of apples this year. Nothing contributes more to the health and the digestion than an apple a day. Nothing will contribute more to the prosperity of the apple growers—a big factor in the United States—than increased consumption of apples. Increased consumption of apples is highly desirable in the United States this year on account of the embargo on export trade, which means the United States will have to consume about 10 per cent more apples than in previous years—very easily accomplished if everyone would do his share.

**Car Shortage.**—Criticism is being made by the Northern Pacific Railroad about shippers along that line loading cars too light. There has already been a shortage of cars in the Northwest this season. If all shippers would load their cars to the maximum in accordance with uniform conditions, instead of loading to the minimum, it would require 10 per cent less cars, and probably 10 per cent would cover the shortage that exists this season.

**Distribution.**—The Northwestern Fruit Exchange, one of the large shipping associations of the Northwest, has announced they are selling apples to an increased number of cities and towns this year, stating in connection with the announcement that advertising has been a big factor in enabling them to open up new territory. A number of district associations have also announced they are selling to towns which they have not sold before. This is very gratifying. There is no question if the Northwestern apple crop is

properly distributed, and it can be done, there will be no further talk about overproduction. BETTER FRUIT has repeatedly claimed that the years of low prices have been more a factor of lack of distribution than overproduction.

**Wormy Apples.**—The same old complaints are bobbing up this year about growers shipping wormy apples. However, BETTER FRUIT is glad to say the complaints have not been very extensive and the number of offenses comparatively few. The growers are not always to blame, particularly this year when they have had to put up with a great deal of inexperienced help, and help is inclined to be more or less careless and extremely indifferent. There is only one way in which a grower can prevent this—that is by always being on the alert and continually watching the packers, and if not always present in the packing house instructions should be issued to the foreman of the packing house to guard against wormy apples going into any of the boxes.

**Good Prices.**—It usually follows when the movement of apples is active in the early part of the season and prices reasonable that consumption is greatly increased, and a good fair average price obtained for the grower throughout the season. On the other hand, when the opening prices are unnecessarily high consumption and activity in the trade is prevented in the first half of the season,—the result being that too many apples are held for the last half of the season and a slump occurs. The average price is always bad under such conditions. If the grower will accept and the dealer will pay a reasonable price at the opening and continue on this basis throughout the season, then there will be no more complaint of the growers getting low prices for their apples.

**Movement of the Northwestern Apple Crop.**—The movement of the Northwestern apple crop to date amounts to a little more than half of the quantity shipped up to date last year, largely due to the fact that the Northwestern apple crop is about two weeks late. Selling has been comparatively active, although it is claimed by some that speculators who bought at reasonable prices are prohibiting apples going into consumption at figures higher than the trade will justify at the present time. Growers have been disposed and ready to accept a reasonably good price for their apples. Large quantities have been disposed of at satisfactory figures by the growers and at a figure which would afford the dealer a fair profit at the same time.

**Small Apples.**—The sizes of the apples in the Northwest are smaller than usual this year, due to several causes, mainly the continued long dry spell throughout the entire summer, and also due to the lack of pruning. It is generally more or less true throughout



the United States that too little pruning has been done, consequently the tree has too much top and sets too many fruits for the root system, consequently apples are small. The great trouble seems to be the average fruit grower puts off pruning until spring instead of beginning early enough in the winter to prune the whole orchard thoroughly. I think there are very few of us, if we are frank, who will decline to admit this is the case.

**San Jose Scale** continues to be more or less prevalent all over the Northwest. Growers who are seriously affected should use sulphur sprays this fall, particularly if the pest is serious, and again next spring.

**Fungus.**—The Northwestern apple crop is comparatively free from fungus this year for the first time in many years. Never before in the past history of the business have growers sprayed so thoroughly or so effectively for fungus as in the year 1917. Their excellent success in not only controlling but practically eradicating this pest this year ought to be sufficient evidence, consequently it is hoped that every fruit grower will begin spraying for fungus in the semi-dormant and omit none of the applications of the sulphur sprays in the spring of 1918.

### Storage-in-Transit

The following special announcement in reference to storage-in-transit speaks for itself, and is certainly appreciated by the fruit growers of the Northwest, as well as the dealers in Central Freight Association territory. This announcement is very significant inasmuch as it affords the Northwest an opportunity to store apples close to the large consuming centers in the large manufacturing districts, where there is an immense trade for Northwestern apples. By storing Northwestern apples close to consuming centers in readiness for supply as consumption requires, the trade can be increased and greater consumption created. Equally if not more important is the fact that this additional storage-in-transit territory opens up a new field for storage, enabling the Northwest to store large quantities early in the season, thus avoiding the dangerous cold weather that occurs later in the year:

#### SPECIAL ANNOUNCEMENT Storage-in-Transit.

Rochester, N. Y., October 20, 1917.

We take pleasure in announcing that the Storage-in-Transit Tariffs on Box Apples will become effective in Central Freight Association territory (Illinois, Indiana, Michigan and Ohio) on and after October 27th on shipments from Montana, Idaho, Oregon and Washington. The tariffs will go into effect on the transcontinental basis of five (5) cents per hundred over the through rate.

We hope to be able to make a definite announcement the first of the week with reference to the effective date of tariffs in Trunk Line territory.

Very truly yours,

R. G. Phillips, Secretary,

International Apple Shippers' Association, 522 Mercantile Building, Rochester, New York.

R. S. French, General Manager,

National League of Commission Merchants, 90 West Broadway, New York.

W. D. Tidwell, Secretary,

Western Fruit Jobbers' Association, P. O. Box 1349, Denver, Colorado.

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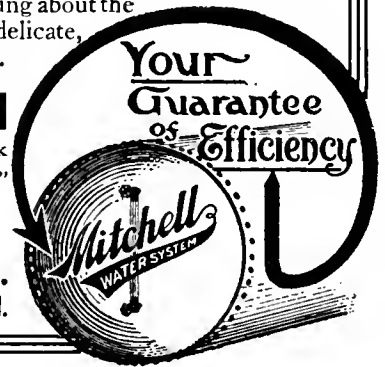
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Keep your harness oiled. Leather is so porous that unless you protect it, sweat, moisture and dust attack the fibre and your harness gives out years before its time. The preservative oils in Eureka protect your harness. Keeps it jet black.

## Eureka Harness Oil

Standard Oil Company  
(California)

Further recognition for motor oil made from California asphalt-base petroleum was brought to light recently when a prominent Peerless dealer showed a group of newspaper men a letter from the Peerless factory. This letter stated that after testing sev-

eral kinds of oil, the technical department was able to secure uniformly better results with a certain widely-known advertised motor oil made here on the Pacific Coast from California asphalt-base petroleum, than from any of the oils which they tested.

# Professional Knowledge

By Professional Knowledge we mean exact information, the kind that is gained by scientific research, by laboratory experiments, by proving theories in practice.

Success in fruit raising demands professional knowledge. So much depends upon exact and positive information. Guess-work is expensive anywhere. It is particularly so for the fruit raiser.

We maintain a department for the dispensing of professional knowledge, of scientific information. It is in charge of Mr. S. W. Foster, an entomologist of eleven years' practical experience, six of them in the United States Bureau of Entomology, stationed on the Pacific Coast.

We know of no man better equipped by thorough college training, and wide experience, to counsel the fruit grower. He is at your service. He travels extensively in orchard sections to keep informed, and to ascertain the best methods of insect and fungus control.

Definite and reliable directions for treatment of your trees no doubt will be of great value to you. The results obtained by the use of different spray materials, and under varying conditions, are yours for the asking. The time and method of applying spray materials are all-important. If you are uncertain what to do, or when to do it, write to us and Mr. Foster will reply.

We publish from time to time bulletins giving the best available information concerning insects and diseases. Write for the one in which you are interested.



ORCHARD BRAND SPRAY MATERIALS are scientifically prepared. There is one for each purpose required on the Pacific Coast. Write for bulletin:

- (1) How to control the principal insect enemies and fungus troubles on deciduous fruit trees during the growing period;
- (2) The dormant spraying of deciduous fruit trees west of the Rocky Mountains;
- (3) Orchard Brand spraying materials.

ORCHARD BRAND SPRAYING MATERIALS are warehoused by the following distributors, who can supply dealers and fruit growers:

- GILBERT & DEWITT,  
Hood River, Oregon.
- C. J. SINSEL,  
Boise, Idaho
- ROGUE RIVER CO-OPERATIVE  
FRUIT GROWERS' ASSOCIATION,  
Medford, Oregon.
- MORGON, McKAIG & CO.,  
North Yakima, Washington.
- WELLS & WADE,  
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- SAMUEL LONEY & CO.,  
Walla Walla, Washington.
- McGOWAN BROTHERS  
HARDWARE COMPANY,  
Spokane, Washington.

Insecticide Department,  
General Chemical Company,  
Dept. G-1, San Francisco, Cal.  
Please send me free bulletins regarding the control of orchard pests and diseases. I have

..... acres apples ..... acres peaches  
..... acres pears ..... acres apricots  
..... acres prunes ..... acres cherries  
..... acres grapes ..... acres almonds

Name .....

Address .....

Mail this Coupon to Dept. G1

**General Chemical Company**  
**San Francisco, California**

## Tenth National Apple Show

War posters and relics will be shown in great numbers on "Liberty Street" at the coming National Apple Show in Spokane, November 19 to 24. Through the assistance of the War and Navy Departments and by appeal to United States consuls in foreign ports, the management has received the biggest collection of war posters ever gathered. Every week new consignments arrive, and what was originally intended to occupy a small corner of the buildings has now been changed, and a large department to be known as "Liberty Street" will be used to show these posters and relics. Every feature of war service is depicted in brilliant pictorial issues.

\* \* \*

The woman who can prepare the best, well-balanced meal composed of from five to ten dishes, for one person, all made wholly or in part from apples and carrying out the Hoover idea of food conservation as far as possible, will be awarded \$50 in gold at the National Apple Show in Spokane, November 19 to 24. This prize is the big feature of the women's department this year. It is open to any woman and no entrance fee is required. Each meal must be complete. Judging will be on food value, palatability, attractiveness and economy. The four women whose meals are rated second in value will each be given a \$10 prize.

\* \* \*

"Maiden Blush" and "Col. Newtown Pippin" will be joined in wedlock on the opening night of the Tenth National Apple Show in Spokane, November 19. The ceremony will be performed by the "Rev. Ben Davis." The bride will be given away by her father, the "Senator," while her mother, the "Duchess," is expected to mourn. The bride will be attended by "Miss Delicious" and "Miss Rome Beauty." "Col. Newtown's" best man will be "Mr. Wagener." The groom's only relative, "Brother Jonathan," may be late in arriving, but his lifelong friend, "Mr. Winesap," is expected in plenty of time and in his customary inebriated condition. The wedding spectacle is a pantomime, planned on an elaborate scale. It will be staged by Miss Marguerite Motie, director of elocution and expression. Miss Motie is more generally known as "Miss Spokane," a title bestowed by civic bodies in recognition of her as the city's formal representative on many occasions. The many apple characters made famous by Morris' cartoons will be faithfully reproduced.

\* \* \*

Four big feature parades, each distinctly different from the others, will be the principal street attractions during the National Apple Show in Spokane November 19 to 24. A dominant note of patriotism, appropriate to the war-time spirit of the hour, will be emphasized in all of the street demonstrations. The biggest parade of the week will be Thursday night. It will be historic and patriotic, illustrating scenes from American history, beginning with the land-

ing of Columbus and extending through to the present day. Instead of soliciting floats to be prepared by the several stores and societies, the committee in charge has arranged that each line of business shall have a representative float, the various merchants pooling their funds for this purpose. All of the floats are being built under the direction of the parade committee, which assigns the subjects to be represented and takes full responsibility for construction. The result expected is a beautifully harmonious spectacle. Only organizations in complete costumes or uniforms will be permitted in this procession.

**What Your Are Asked to Do for Your Country**

THE men of the Allied Nations are fighting; they are not on the farms. The production of food by these countries has therefore been greatly reduced. Even before the war it was much less than the amount consumed. The difference came from America and a few other countries. Now this difference is greater than ever, and, at the same time, but little food can be brought in from the outside except from America.

Therefore, our Allies depend on America for food as they have never depended before, and they ask us for it with a right which they have never had before. For today they are our companions in the great war for democracy and liberty. They are doing the fighting, the suffering, and dying—in our war.

Why we must send more wheat.—England, France, Italy and Belgium, taken together, import in peace time 40 per cent of their breadstuffs. But now, with their reduction in harvest, they must import 60 per cent. We must increase our normal export surplus of 88,000,000 bushels to 220,000,000 bushels. It can be done but in one way: by economizing and substituting. The people of the Allies cannot substitute corn alone for bread, as we can. They are using other cereals added to wheat flour to make war bread, and can thus use up to 25 per cent of corn for wheat. We have plenty of corn to send them, but, except in Italy, whose people normally use it, our Allies have few corn mills, and corn meal is not durable enough to be shipped by us in large quantities. Moreover, the Allied peoples do not make their bread at home; it is all made in bakeries, and corn bread cannot be distributed from bakeries. There is but one way: we must reduce our use of wheat. We use now an average of five pounds of wheat flour per person per week. The whole problem can be met if we will substitute one pound of corn or other cereal flour for one pound of wheat flour weekly per person; that is, if we reduce our consumption of wheat flour from five pounds a week to four pounds a week.

Why we must send more meat.—The food animals of the Allies have decreased by 33,000,000 head since the war began; thus the source of their meal production is decreasing. At the same time, the needs of their soldiers

SAVE TIME, LABOR, MONEY  
**Makes the Biggest Power Sprayer a One-Man Outfit**

*Simple, Efficient, Dependable*

Takes entire capacity of the largest sprayer through one line of hose. One man with this Spray Gun does the work of two or three men with ordinary nozzles.



Full Solid Fog to Long Distance

**SPRAY**

Tops same trees as 10 or 12 foot bamboo extension or sprays full solid fog by half turn of handle.

Made in Two Sizes

**Bean Giant Gun**  
 Capacity 8 gals. per minute  
**Bean Pony Gun**  
 Cap. 4 gals. per minute

BEAN SPRAY PUMP CO.,  
 213 W. Julian St., San Jose.  
 Please send me literature describing the Bean Giant Gun and other spray accessories.

**Bean Spray Pump Co.**

213 W. Julian Street SAN JOSE, CALIFORNIA

Name.....  
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Your horses are glad when you use Mica Axle Grease. The powdered mica makes a smoother spindle. The wagon pulls twice as easy, and the grease lasts twice as long.

STANDARD OIL COMPANY (California)

**MICA AXLE GREASE**

**APPLES PEARS ORANGES**

For European Distribution.  
 Boxed Apples and Pears a Specialty.

**GERALD DA COSTA**

100 & 101, Long Acre, Covent Garden, London, W. C. 2, England

Cables: "Geracost, London." Codes: A. B. C. 5th Edition and Private.  
 Shipping Agents: LUNHAM & MOORE, Produce Exchange, New York.

**MYERS SPRAY PUMPS**



**ARE THE SEED FOR BETTER PROFITS**

Profits. Profits. Profits.  
It's profitable to do things well, and especially your spraying, for who sprays unless there is to be ample returns.

Where spraying is done with a **MYERS BUCKET, BARREL or POWER SPRAY PUMP** there are always profits sooner or later. Big fruit growers tell you this as will gardeners and others who use them. They are "The Seed for Better Profits" from spraying because they are designed, built and equipped for efficient spraying work.

Many spray in November. The bright, crisp fall days are ideal for spraying. If you spray during this period, or next Spring, write us about **MYERS SPRAY PUMPS**, and make them your "Seed for Better Profits" through larger and better crops.

Catalog mailed free to anyone.

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120 ORANGE ST. ASHLAND, OHIO.

**Attention, Fruit and Vegetable Growers**

CAN your Fruits, Vegetables, Meats and Fish in Sanitary Cans, with the H. & A. Steam Pressure Canning Outfits, built in Family, Orchard and Commercial size; seal the cans with the H. & A. Hand or Belt Power Double Seamer; they will save your perishable fruits and vegetables at ripening time when nothing else will. Write for descriptive matter.

**Henninger & Ayes Mfg. Co.**  
47 S. First St., Portland, Ore.

**THE BEST Walnut Trees**

Pay Best in the Long Run.

Don't plant low grade trees when good ones are available. Our trees often make as much growth in one year as others do in two. This is due to our superior root system. Write for prices.

**GRONER & McCLURE**  
HILLSBORO, OREGON

and war workers have increased the necessary meat consumption. Our meat exports to our Allies are now already almost three times what they were before the war. The needs of the Allies will steadily increase, because their own production of food animals will steadily decrease because of lack of feed for them. If we will save one ounce of meat per person per day we can send our Allies what they need.

Why we must send butter and milk.—The decreasing herds and the lack of fodder mean a steady falling off in the

dairy products of our Allies. They have been asking for larger and larger exports from us. Last year we sent them three times as much butter and almost ten times as much condensed milk as we used to send them before the war. Yet we must not only keep up to this level, but do still better.

Why we must send sugar.—Before the war France, Italy and Belgium produced as much sugar as they used, while England drew most of its supply from what are now enemy countries. France and Italy are producing less than they need, while England is cut off from the source of 70 per cent of her usual imports. These three Allied countries must now draw 2,000,000 pounds more of sugar than they did before the war from the same sources from which we draw our supplies. We must divide with them. We can do it by economizing. The usual American consumption per person is just double that of France.

Let us remember.—Let us remember that every flag that flies opposite the German one is by proxy the American flag, and that the armies fighting in our defense under these flags cannot be maintained through this winter unless there is food enough for them and for their women and children at home. There can only be food enough if America provides it. And America can only provide it by the personal service and patriotic co-operation of all of us.

The small daily service in substitution can be done by all; the saving in waste by the majority, and the lessening of food consumed by many. This individual daily service in 20,000,000 kitchens and on 20,000,000 tables multiplied by 100,000,000, which is the sum of all of us, will make that total quantity which is the solution of the problem.

**Storage-in-Transit Privilege**

Mr. J. Curtis Robinson, chairman of the Transportation and Storage Committee of the Fruit Growers' Agency, was this morning in receipt of a telegram from R. G. Phillips, secretary The International Apple Shippers Association, with headquarters at Rochester, New York, reading as follows: "Storage transit box apples from Northwestern States just granted official classification territory which includes central freight association trunk line and New England territories, effective soon as tariffs can be published. Privilege granted on transcontinental basis five cents per hundred advance over through rate. Advise all parties possible your territory."

"While this new privilege will undoubtedly accord to fruit shippers in New York and Michigan," states Mr. Robinson, commenting on this wire, "it will be of inestimable value to a great many fruit shippers in the Northwest. Many shippers have heretofore engaged storage facilities at Niagara frontier and paid a proportional rate of ten cents per hundred pounds from there to New York City. This new privilege will mean that shippers in the Northwest who desire to store in transit at Buffalo, New York; Indianapolis, In-

**Let'er Rain**



**FISH BRAND SLICKERS**  
will keep you dry as nothing else will

**FISH BRAND POMMEL**, the best Saddle Coat in the world.

DEALERS EVERYWHERE  
A. J. TOWER CO. — BOSTON.

**Wanted** Thoroughly competent working foreman, single man preferred, for large orchard and vineyard property. Must be able to run all branches of business with economy and snap. Address with full particulars as to age, training, experience, personal data and salary expected.

**GROWER, care Better Fruit.**

**10 Years experience in the use of**



**Ortho Sprays**  
CALIFORNIA SPRAY CHEMICAL CO.  
ATTEST ITS absolute Superiority

Mr. George Bird, Watsonville, California, says: "I have used Ortho Sprays for ten years and have had great satisfaction with them."

diana; Pittsburg, Pennsylvania, or points in New England territory, or even New York itself, may hereafter divert the shipments on the through rate to ultimate destination beyond the point of storage by paying a penalty of five cents per hundredweight additional to the present through rate. This should mean a saving of many hundreds and perhaps thousands of dollars to some of the shippers in the Northwest and afford them a much wider privilege of distribution for their apples. The Northwest is to be congratulated in having such men as Mr. Phillips, who has spent so much time and taken so much pains in pointing out to the carriers the need for this storage-in-transit privilege."

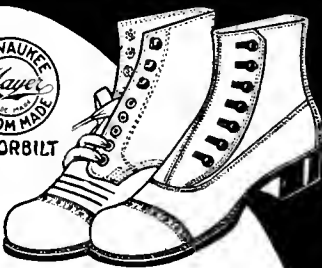
**The Walnut — Cultural Methods**

Continued from page 7.

Grafting old walnut trees in order to form a top of some more desirable variety than the original has long been practiced in a small way in California, but has been confined mostly to black-walnut stocks. Roadside trees and small orchards have been worked over at various times, running back as far as 1893 at Vacaville and 1891 at San Jose. Some of these trees now have a spread of branches of 60 to 80 feet.

The average seedling walnut orchard is not satisfactory for several reasons; the nuts are uneven in size and form and the trees are neither even in size nor equal in production. It may be said that about one-fourth the trees produce but few walnuts, another one-fourth produce about enough to pay their own expenses, leaving the other half to make whatever profit is obtained. When the orchard is of grafted trees, grown from scions which came from trees that produce large crops, each tree will produce nuts like every other tree, and if the selection of nursery stock has been properly done the trees will be very uniform in all respects. Several styles of grafting have been practiced and all have had a fair degree of success, but modifications of the cleft graft have been most generally used, each operator making changes as he thought best. If the trees are from two to three inches in diameter they may be cut off at about four feet above the ground, and below the branches, then three or four scions may be placed in one stock, or three or four of the branches may be cut off at ten to twenty inches from the body and the scions inserted.

It is seldom profitable to top graft very old trees because of the amount of work, and the care which is neces-



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They wear like iron—

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Ask your dealer for Mayer Shoes. Look for the trade-mark on sole.

**F. Mayer Boot & Shoe Co.  
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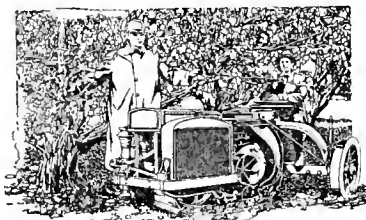
never spend all they earn. They save not occasionally but regularly. Start a savings account now or add to your savings account regularly from now on. It will give you a new lease on life.

**This Pioneer Bank  
invites you to  
make this your  
banking home**

**LADD & TILTON BANK  
PORTLAND, OREGON**

**Great Little Tractor  
For Orchards and Vineyards**

Here is the tractor that the owners of orchards and vineyards have wanted to buy for years.



It is the lowest-priced track-laying tractor manufactured. It weighs but 3100 lbs. and costs less to operate than wheel-type tractors of equal power. Note how the track grips the ground, and compare that contact with the wheel-types. No other tractor can work so well in light soil.

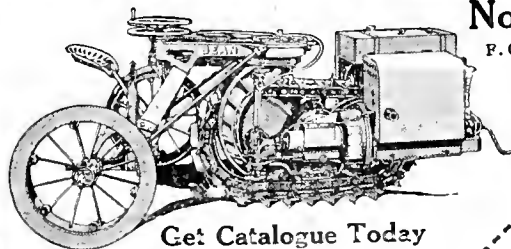
turns the same as on straight-aways.

This Tractor will pass under tree branches only 4 feet off the ground, plowing close up to the trunks. It works between 7-foot rows in vineyards, and cultivates right up to the vines without breaking off young shoots.

The Bean TrackPULL Tractor pays for itself in what it saves its owner. It is simple and strong and durable. Every part is over-strength. The motor is an automobile type, so you know how to care for it. The Tractor is rated at 6 h. p. at drawbar, and 10 h. p. at the belt. On account of the patent front drive principle and simple transmission the fuel consumption is far less than other types doing the same amount of work.

You can turn it all the way around inside a 10-foot circle (5-foot radius); and it pulls with its full power on these

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Now \$1150  
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Spray  
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Get Catalogue Today

Send the coupon for our new catalogue. Send it today, for the price of this Tractor may have to be raised without notice. The increasing cost of materials, due to the war, make a permanent price impossible.

Please send me your Tractor Book with full information about the Bean TrackPULL Tractor.

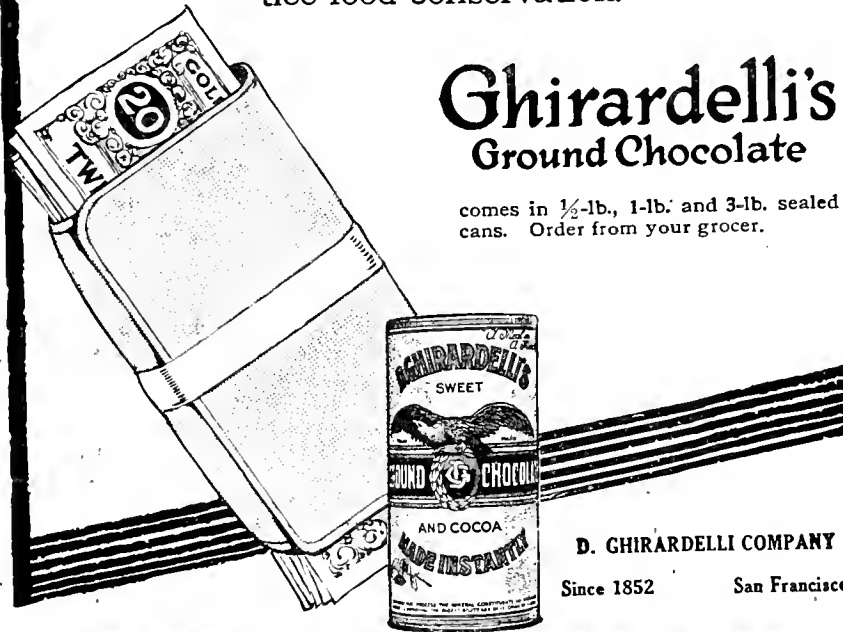
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# The test of to-day is the Pocket Book test

Today home management is on a war, not a peace basis. "How much am I getting in nutriment for what I pay?" is the home manager's problem.

In peace or war Ghirardelli's Ground Chocolate makes good as an economical and appealing food. A blend of pure cocoa and sugar, two of the most nourishing foods known, it supplies energy and resupplies waste tissue at lowest cost. Use it freely as a food and you will practice food conservation.



## Ghirardelli's Ground Chocolate

comes in 1/2-lb., 1-lb. and 3-lb. sealed cans. Order from your grocer.

D. GHIRARDELLI COMPANY

Since 1852

San Francisco

# Mileage

Because of its continuous chain of boiling points, Red Crown gives you more miles to the dollar.

Standard Oil Company  
(California)



The Gasoline of Quality

sary to prevent decay in the trunk where large branches have been taken off. Trees of ten to fifteen years' growth should have the branches cut at places where they are not more than three inches in diameter, taking out all the branches which are not necessary for the top. This necessitates going well out on the branches and a large number of scions. Having determined the trees which are to be top grafted by the records of previous years, the operator marks the stubs that are to be left by a small notch out of the bark at the place where the cut is to be made. All other branches are cut close to the body of the tree. The operator places the scions and an assistant follows with hot wax covering all cuts on both scions and stock. In cutting large branches it is necessary to make two cuts, the first being some distance outside the final cut to prevent splitting the stub or the trunk. Scions should always be of mature wood, with as small pith as can be had readily, and must have good living buds, though not necessarily those of the last year nor from any particular part of the growth. They may be from one-fourth to one-half inch in diameter but should have at least two buds. The growth having buds close together is best as shorter scions can be used, and as these are not so much exposed to evaporation are more sure to grow. When the tree is prepared use a heavy butcher's knife and mallet to split the stubs, placing the knife across the stub as if a chip one-half to five-eighths inch thick was to be split off. Then depress the handle of the knife to an angle of 30 to 45 degrees and split the edge down to two and one-half to three inches, allowing the knife to reach the farther side of the stub but not making the split entirely across the stub. Open the cleft with a steel wedge one-half to five-eighths inch wide and thickest on one edge, placing the thickest edge toward the outside. Trim the cleft smooth with a sharp knife. Then cut the scion so as to have perfect joints inside as well as along the inner bark and place it so the inner bark (the cambium layer) of both will be on the same line, or at least will cross twice, then remove the wedge and put hot wax over all the cuts on both scion and stock at once, being careful to pour hot wax in the cleft until full.

The work should be examined every three or four days until an inch or more growth has been made on the scions, and if thread-like cracks are found they should be closed with hot wax so the scion will not be exposed to the air until a callous has formed. Any cuts on the tree not covered by wax should have a coat of heavy mineral paint and the body and stubs a coat of whitewash. The wax is made of one pound beeswax, five pounds resin, one pint flaxseed oil and one ounce lamp-black, melted together. The object is to get a wax that will not run in the heat nor crack in the cold, and a little practice will soon show whether the wax needs more or less oil. A convenient furnace can be made for heating the wax in the orchard by taking a coal-

oil can, cutting out the top, placing four wires across, two each way, four inches from the top, and cutting an opening to use in placing fuel in the lower part of the can. A wire bail completes the furnace. A three-quart saucepan is large enough to hold the wax which may be made as needed.

If there is an excessive flow of sap which loosens the wax on the ends of the stubs it should be controlled by boring some one-fourth inch holes in the body of the tree near the ground. Do not bore more holes than are needed, as three or four holes four inches deep will control the sap flow of the largest tree. When the flow has been controlled wipe the stub dry and wax again. After the scions have made one foot growth it will be necessary to nail laths, one inch by two inches by eight long, Oregon pine, on the tree in such a manner that the shoots can be tied to them and the new tree formed as desired. Leave the laths on two years.

Do not take off any of the sprouts at first, except such as may be near the scions, until the scions have started, then take off those within six to twelve inches of the scions. When the sprouts reach a length of two feet they should be headed back but not removed, as they are needed to keep the roots in good condition and to protect the body from sunburn. After the scions are firmly established the sprouts can be thinned to advantage, but it is best to leave some on the south and west sides to protect the body from sunburn until the following winter. Keep all the scions that will grow the first year and do not head back a scion while it is growing. If more scions have grown than is needed they can be thinned the next winter, and if some scions should fail so as to leave a stub without growing scions a sprout may be trained and budded the following August or September, or may be grafted the following spring.

The principles of nursery grafting are the same as in top grafting, though tongue grafts are commonly used and the scions strongly tied in place. The soil is removed from the stocks to a depth of several inches and the cut made just under the soil line but not low enough to be in the soft or root part of the stock. After the scions are in place, tied and waxed, the soil is carefully heaped over them to a depth of several inches. Strong laths are used as stakes, to which the young growth is tied to keep it erect and straight.

Modern warfare consists of united, co-ordinated effort on the part of entire nations. If the present war teaches Americans to co-operate it will not have been entirely wasteful.

**Boys You Can Earn Money**  
rifle, skates, sweater, tool kit, etc., taking subscriptions for America's greatest fruit paper. Every fruit man should read it. Your neighbors will want it. Write today for sample copy and illustrated list of Rewards full of Christmas suggestions.  
Address: **Green's American Fruit Grower**  
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**Specialize in Box Apples  
and Other Western Fruits**

WE'RE READY TO TALK BUSINESS WITH THOSE  
HAVING GOOD FRUIT

*Write or wire us what you have to offer*



## Turn stump land into Money

Increase your acreage and thereby increase your income.

Clear your stump land cheaply. No expense for teams or powder.

One man with a can outpull 16 horses. Works by leverage—same principle as a jack. 100 lbs. pull on the lever gives a 48-ton pull on the stump. Made of the finest steel—guaranteed against breakage. Endorsed by U. S. Government experts.



Works equally well on hillsides and marshes where horses cannot operate

Write today for special offer and free booklet on Land Clearing

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**SAVE MONEY** Take advantage of low clubbing rates. **\$1.50**

Better Fruit . . . \$1.00  
Western Farmer 1.00  
Today's Housewife .75

We offer these **3 Magazines for \$1.50**

**BETTER FRUIT—One full year.**

Better Fruit is devoted exclusively to the fruit growing industry of the Northwest, containing valuable information on cultivation, irrigation, spraying, pruning and every feature of production, dealing especially with information on marketing, distribution, advertising and selling. No fruit grower can afford to fail to get the news relative to the selling end of the business.

**WESTERN FARMER—One full year.**

Western Farmer, edited for the farmer and his family, treats of every branch of farming, livestock, dairying, poultry raising, trucking, floriculture and the home. It is the one big constructive farm journal of the Rocky Mountains, catering to the real interests of the farmer, and contains many interesting articles for the family.

**TODAY'S HOUSEWIFE—One full year.**

Today's Housewife contains excellent advice for every household. The Home-makers' Bureau is equivalent to a complete course in the best schools of domestic science, free from technical detail. Seven courses: (1) Cookery, foods and nutrition; (2) Household management and sanitation; (3) Home decoration; (4) Financial management and budget-making; (5) Home Nursing and infant care; (6) Home dressmaking; (7) Home millinery.

This offer is good for new or renewal subscriptions. If you are already a subscriber to any of the above your present paid date will be extended one year.

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HOOD RIVER, OREGON.  
Send me Better Fruit, Western Farmer and Today's Housewife for one year, for which I enclose \$1.50.  
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Route ..... Box .....  
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Three Splendid Magazines for **\$1.50**

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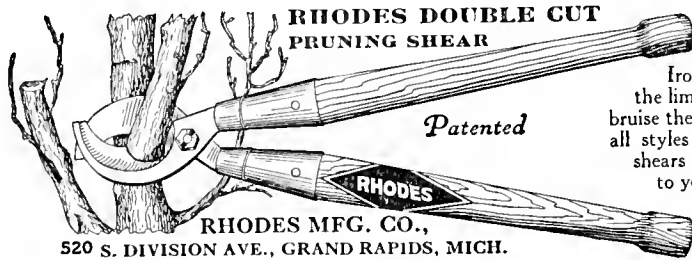
# Fruit Labels

When packed in a plain box or crate, fruit is fruit. It does not mean apples or other fruit until you label it properly and just as good clothes make a favorable impression—give distinction—so well designed and printed labels dress your package, appeal to the eye and help the sale.

*Our Lithographed Labels will advertise your brand and help the dealer sell your apples.*

## THE UNITED STATES PRINTING & LITHOGRAPH CO.

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**RHODES DOUBLE CUT PRUNING SHEAR**  
*Patented*  
THE only pruner made that cuts from both sides of the limb and does not bruise the bark. Made in all styles and sizes. All shears delivered free to your door. Write for circular and prices.

## OUR 1917 CLUBBING OFFER

BETTER FRUIT offers the following clubbing lists to its subscribers. If any of our subscribers desire different clubbing arrangements we shall be pleased to quote them from this office.

Western Farmer .....	\$1.00
Country Boy .....	.25
BETTER FRUIT .....	1.00
<b>Total .....</b>	<b>\$2.25</b>
<b>All for .....</b>	<b>1.25</b>

Girls' Companion .....	\$0.50
Boys' Companion .....	.50
Today's Housewife .....	.75
BETTER FRUIT .....	1.00
<b>Total .....</b>	<b>\$2.75</b>
<b>All for .....</b>	<b>1.50</b>

Western Farmer .....	\$1.00
Today's Housewife .....	.75
BETTER FRUIT .....	1.00
<b>Total .....</b>	<b>\$2.75</b>
<b>All for .....</b>	<b>1.50</b>

Weekly Oregonian .....	\$1.00
BETTER FRUIT .....	1.00
<b>Total .....</b>	<b>\$2.00</b>
<b>All for .....</b>	<b>1.25</b>

Hoard's Dairyman .....	\$1.00
BETTER FRUIT .....	1.00
<b>Total .....</b>	<b>\$2.00</b>
<b>All for .....</b>	<b>1.30</b>

Twice-a-Week Spokesman-Review .....	\$1.00
Mothers' Magazine .....	1.50
BETTER FRUIT .....	1.00
<b>Total .....</b>	<b>\$3.50</b>
<b>All for .....</b>	<b>2.00</b>

Delineator .....	\$1.50
BETTER FRUIT .....	1.00
<b>Total .....</b>	<b>\$2.50</b>
<b>All for .....</b>	<b>1.80</b>

Rural Spirit .....	\$1.00
McCall's Magazine .....	.75
BETTER FRUIT .....	1.00
<b>Total .....</b>	<b>\$2.75</b>
<b>All for .....</b>	<b>1.50</b>

### Apples vs. Potatoes

THE Federal Food Administration is placing great emphasis on the importance of the American public consuming greatly increased quantities of fruits and vegetables, and decreased quantities of wheat, meat and other exportable articles. The press has been doing a valuable national service in disseminating this propaganda. A very intelligent educational article appears hereunder, which you are urged to read because it is of national interest.

An excellent paper was read before the National Apple Growers' Association Convention held at Niagara Falls by Mrs. H. M. Dunlap, wife of the president of the association. It was entitled "Apples as a Food and Its Dietetic Value." We quote the following interesting portion of the address which ought to be circulated in every home where apples are not a regular part of the diet. There is a movement on foot to induce the people of this country to eat more apples and save the nonperishable foods for the armies at the war front. The lady said:

"In the apple grower's profession I see great opportunities for good, because I know of no one food that can do so much towards helping to produce and maintain health as the apple. It is called 'The King of Fruit,' and the little book that has been edited under that title giving 209 ways of preparing it has the effect of making one realize how valuable it is as a food for man.

"With cold storage facilities, it becomes possible to have an apple every day in the year, which I think is equally, if not more important from a health standpoint for the individual, than a potato a day. Great sympathy and solicitation has been manifested the past year because the price of potatoes were beyond the economic possibilities of some of our people, but a scarcity of apples is never considered as a dietetic calamity. Why? Because an apple for lo these many years has been considered a luxury and never a necessity, like the potato. An apple is said to contain only about one-fourth less solid matter than a potato; it contains elements of equal or more value, in maintaining a balanced ration for man than the potato.

"I am sure for the improved health of mankind it might be well to every

**THE ORIGINAL CHEMICAL**

## Indoor Closet

**30,000 SOLD—FIFTH YEAR**

**More Comfortable,**

**Healthful, Convenient**

Eliminates the out-house, open vault and cess-pool, which are breeding places for germs. Have a warm, sanitary, odorless toilet right in your house. No going out in cold weather. A boon to invalids. Endorsed by State Boards of Health.

**ABSOLUTELY ODORLESS**

Put It Anywhere In The House

The germs are killed by a chemical process in water in the container. Empty once a month. No more trouble to empty than ashes. Closet absolutely guaranteed. Guarantee on file in the office of this publication. Ask for catalog and price.

**ROWE SANITARY MFG. CO. 1411 6th ST., DETROIT, MICH.**

Ask about the Ro-San Washstand—Hot and Cold Running Water Without Plumbing

day substitute at one meal at least an apple for a potato. As often as possible have the raw apple served. I know a family where the year around raw apples together with some form of dairy products are the principal articles of their evening meal. They are positive that it has added, in a large measure to their good health and therefore enjoyment of life.

"The chemical constituents of the two foods are something like this: Potato, water 62.2, protein, 1.8, fat 0.1, carbohydrates 14.7, ash 0.8, fuel value per pound 295; apple, water 84.6, protein 0.4, fat 0.5, carbohydrates 14.2, ash 0.3, fuel value per pound 285. As you see, a large per cent of the bulk of both is water. The apple lacks only five-tenths of 1 per cent as much carbohydrates as the potato and only ten less in fuel value than the potato.

"Now let us see what these elements do for us. I can not give it to you in any better way than by reading an article written by Dr. Benjafield, Hobart, Tasmania, which clearly shows its dietetic importance to man.

"As a food and medicine an apple is a wonderful example. Suppose an apple to be the size of a large breakfast cup and into this cup you put nearly half a pint of water and stir into it of concentrated food like that contained in an egg, half a teaspoonful; of fatty stuff like butter, a little less than half a teaspoonful; of sugar, both cane and grape sugar, two tablespoonfuls; of mineral matter as much as will lie on a sixpence of acids, a little more than a teaspoonful; of skin and core, a little more than two-thirds of a teaspoonful."

"From a medical point of view we look upon each of these elements as follows: The food of protein is pure and strengthening and exists in the apple, combined with sugars and acids, and when taken enters rapidly into the muscles, where it is readily broken up, impairing heat and strength, so that the athlete under great exertion soon gets the stimulus.

"The fatty matters are so beautifully combined with acids that even the most delicate child does not recognize that he is taking fat when he is eating an apple.

"The sugars of carbohydrates form the most attractive element as they are the most nourishing part of the fruit. And these sugars are just crystalized sunshine and are far more digestible than any ordinary sugar. The child, from babyhood just loves it and it is excellent food for him. In the adult, especially in advanced age, ordinary chemically prepared sugar when taken freely produces rheumatism, gout and such like diseases, but these sugars never set up any of these troubles; indeed gouty people get relief from eating fruit.

"The mineral matter in the apple is one of nature's wonders. The blood must keep its red color or it cannot do its work in the body and we die and this red color depends on the presence of iron. When we eat an apple we eat just the right dose of iron,

## Do You Want to Sell for Spot Cash— F. O. B. Loading Station?

Did it ever occur to you that the Cash Buyer's salary and expenses come out of you? Well, they do—you will (as a rule) get a lower price than if you were to keep in touch with the markets and sell direct to reliable dealers in the **highest market.**

Ever figure it out? Well, you can generally get anywhere from 10 to 25 cents a box more by selling direct. Watch the market, and judge for yourself. **Sell by wire.**

10 cents more per box on a minimum car of 630 boxes would give you \$63.00 more per car profit—on 10 cars \$630.00—on 20 cars \$1,260.00, and so on.

In this year of unusually high prices, don't make the mistake of being satisfied with what may look like a high price to you —**GET THE LAST CENT POSSIBLE OUT OF YOUR SHIPMENTS!**


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Don't let that bother you any more! Get the **BLUE BOOK** and see who they are! There are plenty of reliable Commission Merchants and Jobbers who will be glad to purchase by wire, or **send their buyer if you prefer**, but you can't expect them to pay as much when they do so.

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It is that knowledge which has taught them to make certain parts of the "Caterpillar" Tractor steel, certain parts of special alloys, some surfaces chilled and some surfaces case-hardened.

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Reg. U.S. Pat. Off.

**The Holt**  
MANUFACTURING CO., INC.  
Stockton, Cal. Peoria, Ill.  
Los Angeles, Cal.  
Portland, Ore.  
Spokane, Wash.  
San Francisco, Cal.



which the blood needs, and the invalid with poor blood will get iron in the apple which is far more easily absorbed by the blood than in any preparation of iron compounded by the chemist.

"Lime is found in the apple in the same form as found in our bones, and in the apple the lime is so beautifully combined with phosphoric acid, that when an apple is eaten the bones of the body are nourished by these lime salts, and by these additions of lime the child is able to build up the young growing bone. Ricketty children have bones deficient in lime. I have never seen Ricketts or soft bones in a Tasmanian orchard.

"Magnesia—yes, nature has placed in the apple quite a nice little dose of magnesia and it helps to keep off rheumatism by purifying the blood and assisting the bowels.

"Phosphorus—Professor Schaffer told us recently, in the great scientific lecture of the year, that life could not exist without phosphorus, and in the apple this great nerve tonic exists in most soluble form as phosphoric acid. Sulphur as sulphur acid also is a great blood purifier and has an especial effect on the skin and skin diseases.

"There is just one more thing which science has not explained and that is the wonderful life process by which all these tasteless (some even nasty) elements were blended together into a beautiful fruit and a perfect food.

"The sailor who lives a long time on salt meat and biscuit alone will rot with scurvy, and if he takes the sugars, acids, etc., contained in an apple every day separately he will still die, but if he takes an apple a day his blood will keep perfectly right."

The editor of BETTER FRUIT takes some satisfaction in calling attention to the fact that one of the main references in Mrs. Dunlap's most excellent address was to the "209 Ways of Preparing the Apple," which was first published in BETTER FRUIT in October, 1912, five years ago, and was the first move made for increasing consumption of apples by using them for cooking and for dessert. This book of receipts, "209 Ways of Serving Apples as Dessert," has been re-published in different forms—by the International Appie Shippers' Association, which is-

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sued 500,000 copies: by many of the railroads and many of the fruit concerns in United States. It is also interesting to note that the other principal reference to the dietic value of apples, refers to an article by the late Dr. Benjafield, Hobart, Tasmania, which was first published in BETTER FRUIT August, 1916, the original article being sent by Dr. Benjafield to BETTER FRUIT. And, by the way, the editor of BETTER FRUIT had many exceedingly pleasant and instructive letters from the late Dr. Benjafield. The editor also desires to say it was with much sorrow he received a letter from Dr. Benjafield's son advising him of the death of his father, and enclosing a partially written letter from the Doctor to the editor.

**Food Value of Apples**

**I**N the early weeks of the war I gave an interview to one of the London dailies and ventured to prophecy that the end of the contest would be influenced largely by dietary problems, and in these problems I did not consider that the question of protein and scale calorific values for muscular substance would be of so much importance as those of foods which supply nerve nutrition; i. e., fats and salines. It is very difficult to deprive any besieged country—or even besieged city—of all sources of muscular nourishment so long as any other cellulose remains to be transformed by chemical agencies into a more digestible form of carbo-hydrate. The difficulty for Germany as a beleaguered country was therefore not really meat, or cereals, or potatoes, but fats and fruits and salads.

The joining up of Turkey threw my prophecy out of gear as to time, because it opened up the great stores of oil and figs and other fruits of Asia Minor. This source is slowly failing, and today, in spite of a complete calorific dietary the people of Germany are beginning to develop the disease of mal nerve nutrition. There are beginning in Germany already grave manifestations of the basic origin of many diseases. The latest is a wide spread of oedema in the legs and feet and face, of which particulars are given in a late issue of "The Lancet." This will steadily get worse and worse

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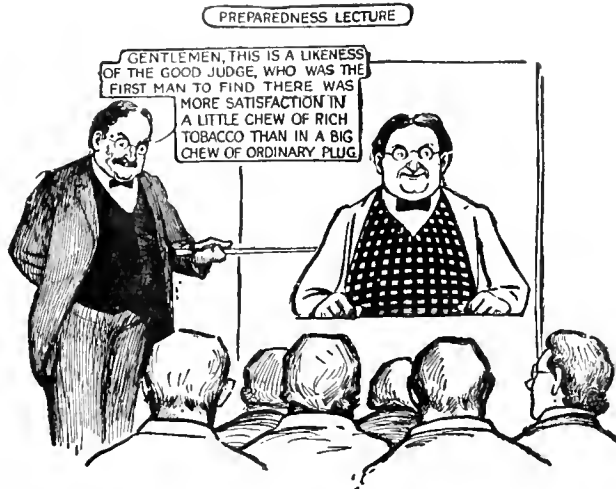
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**T**HIS war is awakening men to the truth about a lot of things besides Preparedness—and chewing tobacco is one of them. Soldiers are strong for W-B Cut and the facts are right before you. These shreds are *all* tobacco, no gummy sweetening—*rich* tobacco—more sap in the leaf than in ordinary tobacco by a long shot. That's why it's so satisfying and so economical—a little bit goes a long way.

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"We use Zerolene extensively. It is giving entire satisfaction."

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Points to remember when consigning  
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- 1.—We Specialize in Apples
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Personal Attention
- 3.—The Fruit is Sold by  
Private Treaty

CABLE ADDRESS: BOTANIZING, LONDON

as another winter comes on unless fresh fruit and salads and seed oils can be introduced largely into Germany.

I have dealt at length with Germany and her fate, to emphasize the great importance of avoiding a similar catastrophe for England. English stamina, courage, endurance and heart for the war, depend on complete nerve nutrition. Now for this the calorific values of wheat, or beans, or beef, affords no criterion. The danger is that laboratory scientists will measure the comparative importance of cargoes by calorific values, and will on this ground tend to debar juicy fruits as being very light cargo compared with legumes or cereals.

Every effort should be exercised to prevent this, or else, when the mischief is done, there will be a panic importation of anti-scorbutic fruits. I note that a small number of ships are still allowed to run to the West Indies for bananas, and this is excellent, but weight for weight and bulk for bulk, the most important fruit to be imported during the winter and early spring of 1918, is apples. Were I Food Controller of Germany and allowed the choice of free import of one article of food from November to April, I should select the apple. So, in England, while for importation purposes legumes and peanuts are the most concentrated form of protoid; rice, and wheat, and maize, the most important of the cereals; olive oil, sesame oil, peanut oil, and almond oil, the finest forms of fat; apples, lemons, oranges (and onions) are immeasurably the most important of fruits, which are nerve foods, and without the presence of whose salts, physiological functions fail. It will be a grave risk to England's home stamina if her supply of apples is cut off, because during the winter conditions in this climate they are superior to either lemons, or oranges, and cannot be replaced by any other fruit.

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CORNER FIRST AND OAK STREETS  
PORTLAND, OREGON

### \$100,000 Apple Sale Closed.

One of the largest apple deals of the season was closed in Lewiston on Monday, when the entire output of the orchards of the Lewiston Land & Water Company was sold to Haley-Neeley Company of Sioux City, Iowa. The sale was negotiated by the Northwestern Fruit Exchange. Frank Robertson, of Portland, one of the receivers of the Lewiston Land & Water Company, and H. L. Powers, manager of the Lewiston Land & Water Company, represented the sellers; W. G. Haley and Roy Matthews represented the buyers, while the Northwestern Fruit Exchange was represented by its field manager, J. B. Adams. The terms of sale are cash acceptance shipping point, and the price, while not disclosed, was said to be eminently satisfactory to the sellers.

Forward-looking farmers are making necessary repairs on their machinery before putting it away for the winter.

# Be Loyal! Save Your Fruit!

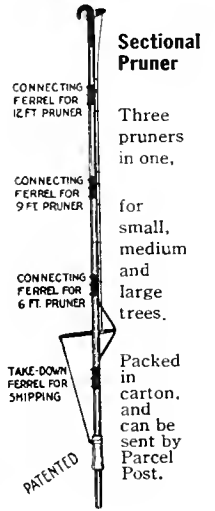
- 1st. Prune your trees properly.
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**A**DHESIVENESS or holding power is the reason for PEARSON nails. For twenty years they have been making boxes strong. Now, more than ever.

**R**ELIABILITY behind the goods is added value. You can rely on our record of fulfillment of every contract and fair adjustment of every claim.

**S**ATISFACTION is assured by our long experience in making nails to suit our customers' needs. We know what you want; we guarantee satisfaction.

**O**RIGINALITY plus experience always excels imitation. Imitation's highest hope is, to sometime (not now) equal Pearson—meantime *you* play safe.

## NAILS

A  
I  
L  
S

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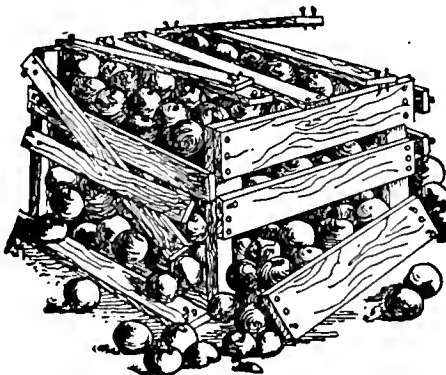
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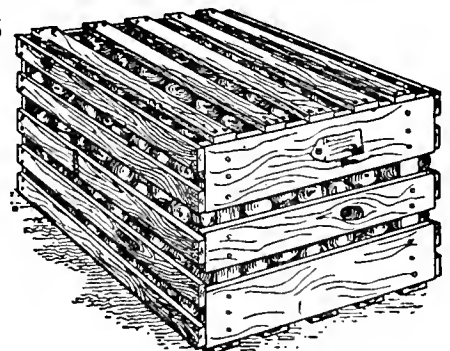
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Write for Growers' testimonials.

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# BETTER FRUIT

VOLUME XII

DECEMBER, 1917

NUMBER 6



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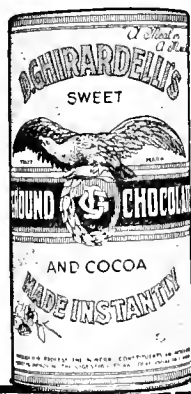
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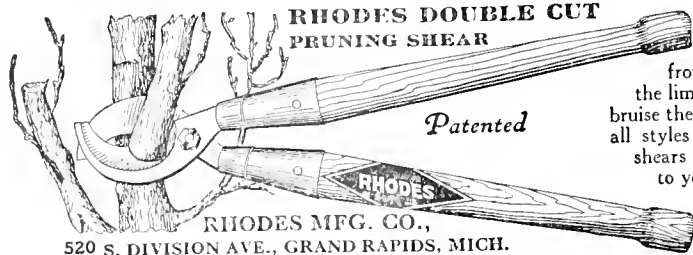


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# BETTER FRUIT

AN ILLUSTRATED MAGAZINE PUBLISHED MONTHLY IN THE INTEREST OF MODERN, PROGRESSIVE FRUIT GROWING AND MARKETING

## Pruning for Size

By V. R. Gardner, of Experiment Station, Corvallis, Oregon—Address Delivered at Fruit Growers' Conference, Tenth National Apple Show, Spokane

THE intelligent fruit grower is interested not only in what constitutes good orchard practice,—not only in what are the various operations that should be performed, the things that should be done, and in how and when they should be done,—but he is interested also in how these practices operate, in how each and every one of them influences the growth of the tree itself and the development of its fruit. At least this is the attitude of the modern scientific fruit grower—the one who regards his work as something more than simply a trade. If the question under consideration is that of irrigation he is not satisfied simply with a knowledge of how frequent and how heavy applications are required for his conditions, but he is interested in the role that water plays in the normal functioning of the tree and in the normal development of its fruit, in the minimum as well as the optimum water requirements of the plant, and in many other related questions. It is only as he possesses this general, and at the same time specific, information regarding his various orchard practices that he is able intelligently to modify them to meet emergencies. That the grower today really is interested in these more serious, more scientific, phases of orchard management, is evidenced by the demands that continually are being made upon college experiment station men for information upon such subjects as the one announced as the topic of this article, "Pruning for Size." It is true that there is still a great demand for empirical knowledge,—as rules for pruning, formulae for fertilizers, definite spraying calendars; and information of this type will probably continue to be of great use. Today the demand is for a pruning method or pruning system that will increase size; tomorrow it may be for a method that will heighten color; still later it may be for a method that will help control fruit pit or rosette. It is well that this information be made available in the form of rules or directions if it is to be had. It is better if there comes to be a more general understanding of growth processes and of the ways in which they may be controlled or modified. With these general considerations in mind let us make a somewhat careful analysis of pruning practice to see in what way or ways it most directly affects the growth of the tree and the development of its fruit. Incidentally we shall see whether it directly or indirectly influences size.

In the first place it may be well to call attention to the fact that, broadly speaking, the object of any and all of

the orchard operations is: (1) to increase yield, (2) to improve quality or grade, (3) to lower cost of production. It is evident that certain orchard operations contribute almost exclusively to a single one of these general objects. For instance, orchard heating is practiced not to lower cost of production, nor to increase the grade of fruit, but primarily to increase yield—or at least to make yields more certain. On the other hand, certain other orchard operations contribute to the realization of two or more of these general objects of all orchard practice. Irrigation is plainly not employed to lower cost of production, but in the first place to improve grade through increasing size, and in the second place to increase total yield. Now the question arises, "Is pruning a practice whose aim is mainly to lower production costs, to increase yield, or to improve grades?" Increase in size is apt to involve some increase in yield, but primarily it effects an improvement in grade; hence we are mainly interested in the way in which pruning may help us attain that general object.

There is little, if any, doubt as to the available water supply in the soil being the factor most directly bearing upon the proper sizing of fruit. The apple averages about 85 per cent water in composition, and this, coupled with the fact that water is found in the soil in the same form as in the fruit, would lead us to assume that there is a very direct relation between the factors of soil moisture and fruit size. That there is a close correlation between water supply and size not only of fruit but of other plant parts as well, is taught by plant physiology. Furthermore, tillage and irrigation practice for centuries furnishes an abundance of evidence upon the subject. If, then, available water supply is the most important factor influencing size, the question may now be raised as to how, if at all, pruning affects the available water supply. Obviously it cannot influence appreciably the water supply in the soil. Can it then affect the water supply available for particular fruits on the tree? It is evident that pruning may result in a thinning of the crop through the removal of more or less bearing wood. This would automatically make available for the rest of the tree a relatively larger water supply and at least theoretically contribute to increased size on the part of that which remains. However, this assumes that the intake of the roots would not be reduced by the removal of a part of the top and also that the remaining vegetative portions of the tree would not have an increased water requirement.

But these are two assumptions that may not be warranted. Evidence on the first assumption is limited, but we are not without evidence on the second. Under normal conditions the leaves use much more water than the fruit. Pruning that would materially thin the fruit crop through a reduction in bearing wood would also tend to stimulate an increased vegetative growth that in turn would make still further demands upon the water supply available to the tree. It is easily conceivable that this greater leaf surface might more than counterbalance in its water demands the amount theoretically released to remaining fruits through a removal of a part of the bearing surface. Exact evidence on this question is limited in amount, but it is sufficient to warrant questioning the practicability of employing pruning as a means thus indirectly to improve size. At least it is uncertain to what extent pruning is efficient in diverting water from a large number of fruits to a smaller number on the same tree. Experimental results obtained at the Missouri Experiment Station indicate that medium late or late-summer pruning that removes vegetative growth (leaves and shoots) only may be a means of diverting a larger proportion of the total water intake to the developing fruits and thus directly aiding in their sizing; but even in that case it is seriously questioned if such a pruning practice accomplishes enough to be really practicable.

Another factor of probable importance in determining size of fruit is the available food supply in the soil. This can be of influence only indirectly, as the mineral foods of the soil cannot enter into the composition of the fruit at once, but first must be manufactured into elaborated foods (starches, sugars, proteins, acids, etc.). Obviously again, pruning cannot modify the supply of food in the soil and probably only to a limited extent the intake of food by the roots. To the extent that pruning thins the crop through reducing the bearing surface, it makes available, theoretically, a larger supply of raw food for each developing fruit. But since this raw food first must be worked over into elaborated foods before the fruit can store and use it, it is necessary to consider the influence of pruning upon leaf surface and leaf activity. These are influences about which comparatively little is known at the present time. Some types of pruning result in an increase in leaf surface, others result in a decrease. Whether or not there are corresponding increases and decreases in the manufacture of starches, sugars,

proteins, etc., that go into the fruit is not known. In other words, while pruning may be, and probably is, a means of indirectly modifying the food supply available to individual fruits on the tree, we do not know at the present time in what way or ways different pruning practices act in this respect. This is a question, or rather a series of questions, upon which evidence is badly needed. In the meantime, it is unsafe to make any specific recommendations for the influencing of food supply of fruit through special pruning practices.

Mention has been made of the fact that pruning is often a means of thinning the fruit through reducing bearing area. Thinning itself is an operation performed especially with the object in view of increasing size. Therefore it would seem that pruning would in this way lead to an increase in size—presumably the same increase in size that would be effected by an equally severe fruit thinning. However, a more careful study of the question leads to the belief that such an assumption is hardly warranted. A pruning that effects, we will say, a 50 per cent thinning of the fruit crop, likewise causes a very material reduction in leaf area, and probably a very material (though not necessarily the same) reduction in elaborated food that is available for the development of the fruit. Thus it would seem that thinning of fruit by means of pruning would tend to increase size through indirectly increasing the water supply of the fruits that remain and at the same time would tend to decrease to a certain extent their available food supply, and hence their size. Probably the first tendency would much more than outweigh the second; but it is evident that the ultimate effect of pruning upon size of fruit is uncertain; and quite opposite results might be obtained from different kinds or degrees or seasons of pruning.

There is another, and very important, question to be taken into consideration in this connection. Pruning will effect an increase in size of fruit only as it reduces the present (or future) bearing area. This means a more or less permanent loss to the tree—perhaps impairing productiveness for many years to come. Few growers would care to sacrifice the prospect of future crops in order slightly to improve the marketable grades of the current season. Whatever the orchard practice involved, any far-seeing policy considers very carefully the permanent welfare of the tree. This is not stating that increase in size of fruit is not or cannot be effected by certain pruning practices. Almost any pruning practice materially altering either the form or functions of the tree as a whole or of its parts is almost certain in some way to modify size of fruit. The point to emphasize is that such influences are indirect rather than direct and relatively small rather than relatively large. Furthermore, they are uncertain—that is, our present knowledge of pruning practices and of the responses that trees make to them does not warrant making specific recommendations for “pruning

for size.” We cannot say that a certain kind or a certain amount of pruning will be followed by a certain increase in size. Size of fruit is much more directly under control of the grower through tillage, cover crop, fertilization, irrigation and thinning practices.

What, then, it may be asked, is the role of pruning as an orchard practice? If it is not a certain means of contributing to the sizing of the fruit, is it to be regarded mainly as a means of increasing number of fruit and perhaps also as a means of lowering cost of production. In other words, what are the fundamental reasons for pruning? What object or objects may the grower confidently expect to realize through pruning?

A careful study of the whole question would seem to indicate that its first and foremost object is to provide year after year for a heavy crop of blossoms. Before fruit can develop flowers must be produced, and before there are flowers there must be fruit buds. Probably no cultural practice affords such a direct means of influencing fruit and fruit-spur formation as pruning. It is possible so to prune trees that there will be relatively few fruit spurs and fruit buds. It is likewise possible so to prune them that there will be many strong, vigorous spurs and an abundant annual production of fruit buds. This does not mean necessarily that there will be heavy crops annually, for frost, insect or fungus attack, etc., may serve to ruin occasional crops and a failure otherwise to properly care for the orchard may tend to bring about alternate fruitful and unfruitful conditions in the tree. But with good care in other respects pruning is an efficient means of regulating the number of fruit buds produced.

Of course, it would be possible so to prune as each year to provide for only a limited number of fruit buds and fruit and thus indirectly aid in sizing. Within certain limits this is to be regarded as good practice; but it would seem the part of greater wisdom so to prune as always to insure a supply of fruit buds considerably in excess of that actually needed so as more nearly to insure a good crop even in the face of conditions unfavorable for fruit setting. Other orchard practices, such as thinning of fruit, can then be depended upon to reduce numbers when necessary, and still other practices such as cultivation and irrigation can be depended upon to take care of size.

It should not be inferred from what has been said that because pruning is not a very reliable means of increasing size, it is not a means of improving grades. Color is an even more important factor than size in determining the grade of apples. While the red colors apparently are dependent upon sunlight more than upon other factors, pruning affords us our best means of withholding light from, or admitting it to, the ripening fruit.

There are other indirect ways in which pruning contributes to improved grades. It should be a means of opening up the tree so as to render possible

more efficient spraying, thus reducing scab and other infection. It should practically insure against limb rub. Furthermore, pruning is one of our most efficient means of lowering production costs. This it does mainly through rendering easier many orchard operations, such as thinning, spraying, cultivating, harvesting. These, however, are to be regarded more as incidental or secondary objects of pruning rather than primary objects.

It is realized that this may be considered a rather peculiar way to treat such a topic as that announced on the program—“Pruning for Size.” We generally look for suggestions as to what may, rather than what may not, be accomplished. But whenever a condition arises like that presented this last season—a large percentage of the fruit running in the small sizes—there is at once a demand for information relating to the bearing of each and every orchard practice upon its treatment or correction. To find out that improvement is not to be sought through some particular practice is really of nearly as much use as to find that it is to be sought through some other practice. It is well that the grower study carefully each of his orchard operations in their relation to the various functions of the tree, for only by so doing can he more nearly approach the ideal in orchard management. If the discussion which this article arouses will lead to a better understanding of the true role of pruning in orchard practice, its object will have been realized.

#### Storing Vegetables.

By storing, it is comparatively easy to keep such vegetables as beets, carrots, cabbage, celery, dry beans, dry lima beans, onions, parsnips, potatoes, sweet potatoes. With the exception of beans and turnips, these crops may be stored in the cellar, in pits or banks, or in caves and outdoor cellars. Pits or banks should be made in a well-drained location. A shallow excavation some 8 or 10 inches deep and of suitable size, should be made. This is lined with straw or leaves and the vegetables placed in a conical pile on this material. The vegetables are then covered with straw and then earth, the depth depending upon the severity of the winter. The pits may be covered with additional straw, corn stover or manure during very severe weather. The outdoor cellar or cave is even more satisfactory but the entailed expense is greater. Beans may be kept in any dry place such as the attic or pantry. Now is the time of the year to care for these crops so that they may be made available during the winter and early spring.

“Eat less candy; the allies need the sugar,” says the Food Administration. “All right,” our patriotic farm boys and girls are saying; “nuts and popcorn are better, anyway.”

Tool sheds haven't risen in price nearly so fast as farm machinery.



# Distribution of the Famous Northwest Apple

455 Towns Shipped November 1-24, 1916—550 Towns Shipped November 1-22, 1917  
95 Towns More over 20 Increase in 22 Days in November, 1917

IN the December, 1916, issue of BETTER FRUIT we published a list of towns to which shipments were made in carloads from the Northwest from November 1 to 24, inclusive. The number of towns reported shipped to was 455. In this issue we publish a list of towns receiving Northwestern apples in carlots direct from the Northwest, showing 550 towns, which shows the excellent and wonderful results achieved by increasing the number of towns receiving Northwestern apples in carlots. The period is for two days less. However, 95 more towns have been shipped direct—over 20 per cent increase. However, the list does not show the full amount of increase, for the reason that apparently a greater number of carloads have gone to diversion points this year than in previous years. It is hoped and believed that the list of towns shipped will afford the fruit growers and shipping concerns some valuable information. On the 1916 crop 611 towns were reported as shipped direct for approximately two months. Your particular attention is called to the fact that in 22 days in 1917, 550 towns have been shipped, which shows a mighty good record and wonderful improvement.

The Editor of BETTER FRUIT has been preaching wider distribution of the apple crop for many years. A pretty good effort was made last year, and the increased activity on the part of the shipping concerns, and the splendid results, are already a matter of record. In two months of 1916 611 towns were shipped apples in carlots direct from the Northwest. In 22 days during the month of November 550 towns were shipped direct. In connection with this statement it must be borne in mind that apparently a great many more apples were shipped to diversion points this year than last. The Editor feels very much gratified over the results, firmly believing that every fruit grower and shipper in the Northwest will feel a great degree of satisfaction over the remarkable improvement in the increased distribution. The list of towns shipped is published elsewhere in this edition and is worthy of consideration, thought and careful study.

The sales managers of every concern and many fruit growers can study the list with much profit. If the sales managers will give the matter still further attention, checking up in the Produce Reporter or some other directory the list of towns that have been sold and studying those not sold, making a special effort to connect up with the towns not sold and endeavor to do business in them, the distribution can further be increased this season and undoubtedly will be.

In conclusion, the Editor wishes to express his gratification over the splendid results achieved and to convey his thanks to every sales manager of the Northwest for the splendid efforts made, and equally important with this

are the good prices being realized and the splendid increase in prices over last year.

Aberdeen, S. D.	14	Charlestown, W. V.	1	Hinton, W. Va.	1	Oklahoma City	3
Akron, Ohio	3	Coffeyville, Kan.	1	Hugo, Wash.	1	Oshkosh, Wis.	1
Altus, Okla.	1	Central City	2	Huntington, W. V.	1	Ottumwa, Ia.	1
Anaconda, Mont.	1	Council Bluffs, Ia.	2	Indianapolis, Ind.	6	Oklmulgee, Okla.	1
Agra, Okla.	3	Cereal, Canada	1	Idaho Grove, Ia.	1	Oakland, Cal.	20
Albertlea, Canada	1	Comanche, Okla.	1	Indian, Wash.	1	Owatonna, Minn.	1
Aldersyde, Canada	1	Chattanooga, Tenn.	1	Independence, Kan.	2	Oakley, Kan.	1
Amer. Lake, Wn.	1	Dallas, Tex.	19	Ithaca, N. Y.	1	Orville, Ohio	1
Anderson, Tex.	1	Dayton, Kan.	1	Jamestown, N. D.	6	Orland, Cal.	2
Arkansas City, Ok.	6	Decatur, Ill.	2	Joliet, Ill.	1	Osceola, Ia.	1
Alexandria, Minn.	6	Deuver, Col.	116	Judith Gap, Mont.	1	Oronaque, Kan.	1
Aberlind, Kan.	3	Des Moines, Ia.	18	Jacksonville, Fla.	1	Ottawa, Canada	1
Alger, Wyo.	3	Detroit, Mich.	29	Jackson, Mich.	3	Owensboro, Ky.	1
Alliance, Neb.	1	Duluth, Minn.	29	Knoxville, Tenn.	3	Osnabrack, N. D.	1
Almont, N. D.	1	Davenport, Iowa	13	Kansas City, Mo.	48	Ocean Park, Wash.	1
Amer. Falls, Ida.	2	Danville, Ill.	3	Keene, N. H.	3	Odesa, Wash.	1
Almena, Kan.	3	Dodge City, Kan.	6	Klamath Falls, Or.	4	Pillsfield, Mass.	1
Atlanta, Ga.	3	Dickenson, N. D.	5	Kimmerer, Wyo.	2	Pecos, Tex.	1
Ashtabula, Ohio	3	Dumee, Minn.	5	Kilderer, N. D.	1	Prussia, Canada	1
Astoria, Oregon	1	Deadwood, S. D.	5	Kirchoff, Canada	1	Peoria, Ill.	3
Ardmore, Okla.	1	Drum Centre, Ky.	1	Kinsall, N. D.	1	Pensacola, Fla.	2
Albion, Neb.	1	Deming, N. M.	1	Kulm, N. D.	1	Poplar, Mont.	2
Alder, Minn.	1	Douglas, Ariz.	2	Keokuk, Ia.	1	Pocatello, Idaho	8
Ann Arbor, Mich.	1	Dayton, Ohio	2	Kimberly, Idaho	1	Pueblo, Col.	1
Armour, Neb.	1	Drake, N. D.	1	Kingston, Idaho	1	Palestine, Tex.	1
Aurora, Ill.	1	Devils Lake, N. D.	1	Laramie, Wyo.	2	Paris, Ill.	1
Baker, Oregon	2	Dauphin, Canada	1	Lemmon, S. D.	8	Pasadena, Cal.	1
Bellefourche, S. D.	2	Dillon, Mont.	1	LeRoy, N. Y.	88	Pr. Albert, Canada	1
Bellingham, Wash.	33	Elmira, N. Y.	71	Lewiston, Mont.	4	Puyallup, Wash.	1
Billings, Mont.	33	El Paso, Tex.	12	Livingstone, Mont.	4	Payette, Idaho	5
Birmingham, Ala.	7	Everett, Wash.	13	Los Angeles, Cal.	57	Parkers Prairie, Ia.	1
Boston, Mass.	28	Enia, Okla.	11	Lake Charles, La.	1	Parker, S. D.	2
Bridgeport, Conn.	7	Ely, Minn.	1	Lethbridge, Can.	2	Parkston, S. D.	1
Baltimore, Md.	16	Eliano, Tex.	1	Lincoln, Neb.	17	Phoenix, Ariz.	3
Bismarck, N. D.	19	Easterhazy	1	Louisville, Ky.	16	Pittsburgh, Pa.	54
Buffalo, N. Y.	13	Elkhorn, Wash.	1	Letcher, S. D.	1	Portal, S. D.	10
Burlington, Ia.	2	Ely, Minn.	1	Leonard, N. D.	1	Portland, Oregon	61
Butte, Mont.	23	Ellsworth, Minn.	1	Lerado, Tex.	2	Philadelphia, Pa.	60
Bayfield, Wash.	1	Estuary, Canada	1	Long Prairie, Minn.	1	Peterborough, Can.	1
Beaumont, Tex.	7	Evansville, Ind.	1	Laurel, Mont.	8	Palisade, Wash.	2
Benedict, Kan.	2	Euclat, Canada	1	Lead, S. D.	1	Pg. La Prairie, Can.	1
Blue Island, Ill.	2	Edmonton, Canada	1	Lavina, Mont.	1	Pipestone, Minn.	2
Brandon, Canada	7	Eau Claire, Wis.	1	Lawton, Okla.	1	Prelate, Canada	1
Buffalo, Wyo.	1	Euphrata, Wash.	2	Lima, Ohio	1	Providence, R. I.	9
Bloomington, Ill.	3	Fargo, N. D.	29	Laurel, Miss.	2	Roundup, Mont.	1
Bottineau, N. D.	1	Farrell, Mont.	2	Lake Preston, S. D.	1	Rawlins, Wyo.	2
Battleford, Canada	1	Forsyth, Mont.	21	Las Animas, Col.	1	Roy, Mont.	1
Beulah, Wash.	1	Fort Worth, Tex.	21	London, Ont.	2	Regina, Canada	15
Bakersfield, Cal.	1	Frazier, Mont.	1	Liberal, Kan.	1	Rochester, N. Y.	1
Brookings, S. D.	1	Farrell, Pa.	2	Long Island, N. Y.	2	Red Lodge, Mont.	3
Brenhan, Tex.	1	Fairfield, Wash.	2	Lakewood, Ohio	1	Rock Sp'gs, Wyo.	7
Brairnerd, Minn.	1	Fort Clark, N. D.	1	Madison, N. Y.	9	Raymond, S. D.	2
Beaver City, Neb.	1	Freeport, Ill.	3	Meridian, Idaho	17	Rapid City, S. D.	4
Beatrice, Neb.	1	Fort Wayne, Ind.	3	Milwaukee, Wis.	30	Rudcliffe, Ia.	1
Ballard, Wash.	1	Fresno, Cal.	2	Minneapolis, Minn.	30	Ritzville, Wash.	1
Byrum, Tex.	1	Faulkirk, Pa.	1	Manhattan, Kan.	1	Rockford, Ill.	2
Burley, Idaho	2	Federal, Ill.	1	Marion, Ohio	2	Rossell, Canada	1
Buffalo Sp'gs, N.D.	1	Frederick, Neb.	2	Mart, N. D.	32	Reed Point, Mont.	1
Brownwood, Tex.	3	Fullerton, N. P.	1	Marysville, Wyo.	8	Riverton, Wyo.	1
Broadhead, Wis.	1	Fort Smith, Ark.	1	Moline, Ill.	2	Ramsen, Iowa	2
Bisbee, Ariz.	3	Five Points, Utah	1	Moore, Wyo.	21	Rochester, N. Y.	1
Bozeman, Mont.	2	Fairfield, Neb.	1	Mooseville, Kan.	1	Rock Valley, La.	1
Bedford, Oregon	1	Faith, S. D.	1	Manchester, Mont.	1	Red Deer, Canada	1
Braunford, N. D.	1	Florence, S. D.	1	Mussoula, Mont.	3	Rock Island, Ill.	1
Bowman, S. D.	2	Forestburg, S. D.	1	Muskogee, Okla.	5	Roston, Wash.	1
Bellefontaine, Ohio	1	Faultkstone, S. D.	2	Marion, Ohio	2	Quinter, Kan.	1
Brookings, S. D.	2	Fowler, Ind.	1	Marshall, Minn.	3	St. Louis, Mo.	106
Bluefield, W. Va.	1	Graybull, Wyo.	1	Mpls Trans., Minn.	3	St. Paul, Minn.	57
Baucroft, Wis.	1	Grand Forks, N.D.	1	Moorecraft, Wyo.	1	Sacramento, Cal.	23
Brush, Col.	1	Grand Jct., Col.	1	Middleboro, Mass.	1	Salt Lake City, Ut.	16
Basin, Mont.	1	Grimsley, Canada	2	Montpelier, Idaho	1	San Antonio, Tex.	20
Berlin, Wash.	1	Grand Island, Neb.	10	Montpelier, Wash.	1	San Diego, Cal.	7
Bison, Mont.	1	Grand Jct., Idaho	1	Mahscott, W. Va.	1	San Francisco, Cal.	56
Camoose, Canada	2	Graceville, Minn.	1	Montgomery	1	Saskatoon, Canada	7
Canada, Kan.	5	Geneva, N. Y.	1	Moccasin, Mont.	1	Seattle, Wash.	121
Casper, Wyo.	6	Galveston, Tex.	1	Milner, N. D.	2	Shreveport, La.	13
Charlestown, S. C.	2	Globe, Ariz.	3	Memphis, Tenn.	2	Sioux City, Ia.	28
Cheyenne, Wyo.	119	Graton, S. D.	1	Marysville, Wash.	1	Sioux Falls, S. D.	9
Chicago, Ill.	449	Graham, Wash.	1	Miles City, Mont.	1	Spokane, Wash.	105
Cleveland, Ohio	27	Galveston, Tex.	1	Monitor, Wash.	1	Spirit, Ill.	1
Crawford, Neb.	7	Golden Valley, N.D.	1	Mott, N. D.	1	Sunnyside, Wash.	1
Columbus, Ohio	10	Great Forks, N. D.	3	Mitchell, S. D.	3	Susp. Bridge, N. Y.	71
Cresco, N. M.	1	Grand Jct., Col.	1	Marion, Ia.	1	Swift Current, Can.	3
Cutbank, Mont.	22	Gravelton, Tex.	1	Moulton, Ia.	2	Sheridan, Wyo.	5
Chateau, Mont.	1	Glenrock, Wyo.	1	Malvern, Ia.	2	Sweetwater, Wash.	1
Calgary, Canada	13	Granville, N. D.	1	Malvern, N. Y.	1	Stockton, Cal.	1
Cincinnati, Ohio	11	Hellinger, N. D.	1	Mandan, N. D.	1	South Bend, Wash.	1
Crete, Neb.	1	Hood River, Oregon	7	Montpelier, Minn.	1	Stettler	1
Corburg, N. D.	1	Houston, Tex.	22	Minden, Neb.	1	Soda Springs, Ida.	1
Cozad, Neb.	1	Hilton, N. Y.	5	Mongelia City, Pa.	1	Shawnee, Okla.	1
Carlton Sta., Mich.	1	Huron, N. D.	2	Muscatine, Ia.	1	Sulphur Spr., Tex.	1
Creston, Wash.	1	Humphrey, Neb.	1	Marshallow, Ia.	1	Superior, Wis.	1
Chadron, Neb.	1	Hartford, Conn.	2	Mason City, Ia.	1	Sykeston, N. D.	1
Centralia, Wash.	1	Helena, Mont.	5	New York	309	Secoward, Neb.	1
Canby, Minn.	1	Henderson, Mont.	1	North Platte, Neb.	60	Sumus, Mont.	1
Correccionville, Ia.	1	Hanna, S. D.	1	Nashville, Tenn.	13	San Bernardino, Cal.	1
Cody, Wyo.	1	Hillsdale, Wyo.	1	Nekoma	1	Salesville, Mont.	1
Clayton	1	Heaton, N. D.	1	Nampa, Idaho	2	Superior, Wis.	2
Clarendon, Tex.	1	Hurdtsfield, N. D.	1	New Castle, Wyo.	1	Sepeter	1
Clarendville, Ia.	1	Hutchinson, Kan.	1	New Salem, N. D.	7	Scotts Bluff, Ia.	2
Carlton Sta., N. Y.	3	Hamilton, Canada	1	New Orleans, La.	1	Santa Barbara, Cal.	1
Corsicana, Tex.	1	Havana, Cuba	1	New Bedford, Can.	1	San Marcus, Tex.	2
Canda, N. D.	1	Henryetta, Okla.	1	Northwood, N. D.	1	Stockton, Kan.	1
Champaign, Ill.	1	Harden, Mont.	1	Northberg, Oregon	2	Sidney, Neb.	1
Cascade, Mont.	1	Hoxie, Ark.	1	N. Battleford	2	San Jose, Cal.	1
Cedar Rapids, Ia.	3	Holley, Idaho	1	Sacogloches, Tex.	1	Saco, Mont.	1
Council Bluffs, Ia.	2	Hastings, Neb.	3	New England	1	Sumner, Wash.	7
Chippewa Falls, Wis.	2	Heglar, Idaho	1	New Haven, Conn.	1	Shephard, N. D.	1
				Olympia, Wash.	1	Starkwater, N. D.	1
				Omaha, Neb.	218	Sykeston, S. D.	1
				Ogden, Utah	4	Stanley, N. D.	1
						Shelby, Mont.	6
						Selah, Wash.	1
						St. Cloud, Minn.	4
						San Angelo, Tex.	2
						St. Marie, Idaho	1
						Sheboyan, Wis.	1
						Sherbrook, Canada	1
						Sperryville, Kan.	1
						Springfield, Ill.	12
						Springfield, Mass.	1

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sible after it is harvested. The warehousemen should then hold the fruit at as low a temperature as possible without subjecting it to the danger of freezing and should carefully watch it so that it may be disposed of while in good condition.

The factors making for successful storage are discussed in detail in Department Bulletin No. 587, "Storage of Apples in the Pacific Northwest," recently published by the United States Department of Agriculture.

It was found in the investigations, in regard to the factor of health and soundness, that apples from orchards badly infested with Northwestern anthracnose are likely to decay early in their storage life, and that well colored portions of the skins of apples seldom if ever develop scald. These facts indicate the desirability of proper care of the orchards, including spraying and pruning. Keeping the trees open by pruning will admit the sunlight more freely and so facilitate coloring. The fact that scald develops generally on uncolored portions of the apple emphasizes the importance of allowing fruit to develop high color before it is picked for storage. Only gross negligence on the part of the shipper or warehouseman can nullify the effect of good color and sanitary orchard practices, the specialists point out. On the other hand, if fruit is poorly grown or diseased, the utmost care on the part of the warehouseman cannot prevent the development of storage troubles.

Apples were stored under similar conditions when picked immature, mature and overmature. In all cases the apples picked at maturity kept best. The best degree of maturity, it was found, was somewhat short of eating ripeness.

The importance of keeping the skins of apples unbroken was demonstrated. Every bruise and scratch furnishes a possible point of entrance for fungous organisms causing decay.

The promptness with which the fruit is stored and cooled after it is picked is the most important single factor in retarding natural decay, it was found. The more or less common practice of permitting the fruit to remain out of storage for several days in the orchard or packing house may shorten its cold storage life considerably, especially if the weather is warm. In the experiments, apples stored immediately kept in good condition in storage one month longer than apples held two weeks in packing houses before storage.

In the temperature experiments, some apples were held at 31 to 32 degrees F., and others at 35 to 36 degrees F. In all these experiments the fruit held at 32 degrees was in better condition and could be held through a longer storage period than that held at the higher temperature. The practical effect of the higher temperature was the same as that of delay before storage. The life activities of the fruit advanced with greater rapidity than that stored at 32 degrees, and all fruit taken out of storage from time to time was found to be duller, yellower and riper than that held at 32 degrees. Thirty-two degrees

Syracuse, N. Y. . . . .	5	Tremonton, Can. . . . .	2	Wabpeton, N. D. . . . .	4	Wheatland, N. D. . . . .	1
Stanton, N. D. . . . .	1	Terry, Mont. . . . .	1	Wallula, Wash. . . . .	1	Wilwood, Canada. . . . .	1
Stearnsville, Wash. . . . .	1	Thief River Falls. . . . .	1	Whitefish, Mont. . . . .	57	Wichita Falls, Tex. . . . .	7
Stockton, Cal. . . . .	3	Three Forks, Mont. . . . .	1	Winnipeg, Canada. . . . .	15	Warato, Wash. . . . .	1
Texarkana, Tex. . . . .	4	Tyler, Minn. . . . .	1	Wilson, N. Y. . . . .	12	Wilson, N. Y. . . . .	1
Toppenish, Wash. . . . .	6	Tucson, Ariz. . . . .	1	Waldram, Kan. . . . .	1	Willsal, Mont. . . . .	1
Tacoma, Wash. . . . .	13	Thompkins, Can. . . . .	1	Weatherford, Tex. . . . .	1	Waco, Tex. . . . .	10
Toronto, Canada. . . . .	19	Temple, Ariz. . . . .	2	Weyburn, Canada. . . . .	9	Worcester, Mass. . . . .	5
Trinidad, Col. . . . .	5	Terrell, Tex. . . . .	1	Whitewater, Wis. . . . .	1	Walla Walla, Wn. . . . .	2
Tulsa, Okla. . . . .	16	Townsend, Mont. . . . .	1	Wolcott, N. D. . . . .	1	Washington, D. C. . . . .	25
Topeka, Kan. . . . .	2	Utica, N. Y. . . . .	2	Whitehorst, Can. . . . .	2	Williston, N. D. . . . .	4
Tyler, Wash. . . . .	1	Vancouver, Can. . . . .	10	Wallace, N. D. . . . .	1	Wing, N. D. . . . .	1
The Dalles, Oregon . . . . .	18	Vermillion, S. D. . . . .	1	Wahoo, Neb. . . . .	1	White, S. D. . . . .	1
Tyler, Tex. . . . .	8	Vern, Okla. . . . .	1	Wamego, Kan. . . . .	1	Yakima, Wash. . . . .	73
Toledo, Ohio . . . . .	1	Valley City, N. D. . . . .	3	White River Sp'gs. . . . .	1	York, Neb. . . . .	1
Trair, Ia. . . . .	1	Vetrain, Canada. . . . .	1	Wehlen . . . . .	1	Yorkton, Canada. . . . .	1
Terry, Mont. . . . .	1	Vancouver, Wash. . . . .	10	Winfield, La. . . . .	1	Yellow Grass . . . . .	1
Toledo, Ohio . . . . .	1	Volga, S. D. . . . .	1	Willmar, Minn. . . . .	1	Yoakum, Tex. . . . .	1
Twin Falls, Idaho . . . . .	1	Watertown, S. D. . . . .	2	Wolfpoint, Mont. . . . .	1	Yenia, Ohio . . . . .	1
Turtle Lake, N. D. . . . .	3	Warm Sp'gs, Mont. . . . .	1	Winfield, Kan. . . . .	1	Zillah, Wash. . . . .	12
Twin Bridges, Mt. . . . .	1	Waterloo, Ia. . . . .	1	Wynne, Ark. . . . .	1	Zanesville, Ohio. . . . .	3
Tiffin, Ohio . . . . .	1	Wellsville, N. Y. . . . .	1				
Trenton, N. J. . . . .	2	Wichita, Kan. . . . .	1				
Taft, Mont. . . . .	1	Weiser, Idaho . . . . .	1				

Total number of towns supplied 550.  
Total number of cars 4,280.

## Cold Storage of Apples in Pacific Northwest

More Satisfactory Keeping of Fruit Discussed by Specialists of U. S. Department of Agriculture

THAT the responsibility for the keeping qualities of Northwestern apples must be shared practically equally between growers and handling organizations on the one hand, and cold storage warehousemen on the other, is the conclusion reached by specialists of the United States Department of Agriculture as a result of investigations to determine the factors of greatest importance in successful storage of the fruit.

The investigations disclosed that if the fruit is to be stored most satisfac-

torily, and is to be got into the hands of the consumer in excellent condition, the grower's part should be, first, to produce the healthiest possible fruit, sound, well colored and free from decay or skin blemish; and second, to have it carefully harvested at just the proper degree of maturity. The handler's part should be to so handle the fruit in harvesting, hauling, grading and packing that it will not be bruised, scratched or injured. Growers, shippers and warehousemen should co-operate to get the fruit into cold storage as soon as pos-

# Five Books Free

DO YOU WANT your fruit trees to grow faster, yield sooner and bear bigger crops. Our Tree book, "Better Orchard Tillage" shows how you can secure these results by blasting when planting.

OR DO YOU want to save money on your stump blasting? Do you want to get the stumps out cleaner—split them up better—and cut down the quantity of powder required? Our Stump book, "Better Stump Removing," tells and shows how to do it.

IF you want to save fertilizer and grow bigger crops, send for our Crop book, "Better Farm Tillage." It tells how blasting will make the subsoil mellow several feet deep and release new plant food for your crops.

ARE there rocks on your farm? Our folder, "Better Boulder Breaking," shows how a few minutes' work will get them out of your way forever.

DOES your farm need draining? Our Ditch book shows how to blast clean, smooth ditches of any size—the easiest, quickest way of making them.

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STUMPING — AGRICULTURAL

made in two brands—Eureka Stumping and Giant Stumping—are used by thousands of farmers and fruit growers in Pacific Coast States because:

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4. They will not freeze at ordinary temperatures.
5. Thousands of farmers state that the Giant brands "give better results"—"save money"—"have wider breaking power"—"shoot the roots"—and "are always uniform in action."

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To make it easy for you to secure Giant Farm Powders, we print a trial order form in the coupon at the right. Fill it out, and we will have our nearest distributor supply you with a trial case at the lowest market price.

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was found to be a safe temperature, since the freezing point of apple juice is several degrees lower.

The experiments showed the Rainier apple to be the best keeping variety. It remained in prime condition for market until May or later. In length of time in which they could be kept in such condition the remaining varieties tested ranked as follows: Hyde King and Arkansas Black, May; Winesap and Yellow Newtown, last of April; Rome (Rome Beauty), Northern Spy and Missouri, middle of April; Delicious, last of March; York Imperial, Ben Davis, Winter Banana and White Pearmain, first of March; Esopus (Spitzenburg), last of February; Gano and Black Ben, Stayman Winesap and Salome, middle of February; Ortley, February; King David, first of February; McIntosh, middle of January; Tompkins King and Wagener, January; Jonathan, first of January; Arkansas (Mammoth Black Twig), January; and Grimes, middle to last of December.

**Southern Pacific Adopts "Hoover Corn Cake"**

The Southern Pacific Railway sends a menu for corn-meal cakes, made according to this recipe: 4 cups of corn-meal, 3 cups of boiling water, 1 cup of cream, 3 eggs, 1 tablespoon of sugar, 2 teaspoons of baking powder; salt to taste. Mix well meal and water (do not let it lump), add the cup of cream, into which the three eggs have been beaten; then add sugar, and last, the baking powder. Bake on hot griddle.



*Mission San Buenaventura, Ventura, California. Founded 1782*

# CALIFORNIA

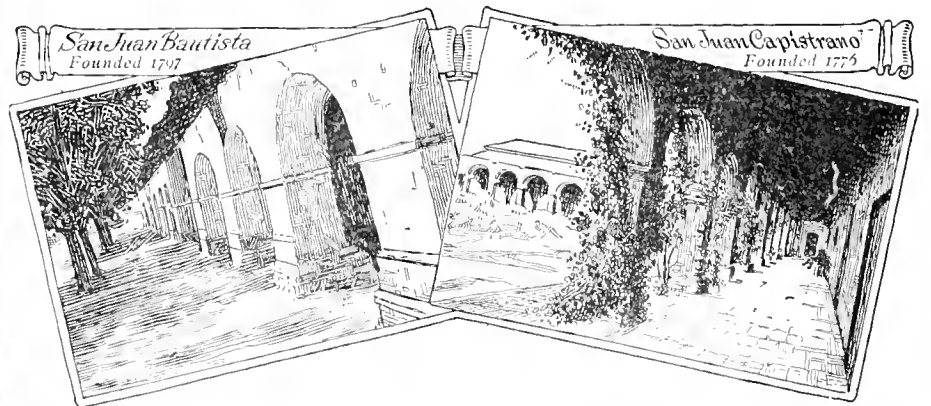
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## Union Pacific System

*or write WM. McMURRAY, General Passenger Agent, Portland*



## Apple Scald a Preventable Disease

Department of Agriculture Discovers that Occasional Renewal of Air in Storage Houses Is An Effective Remedy

APPLE scald of green and ripe fruit in storage can be entirely and easily prevented by an occasional renewal of the air of the storage room, according to a discovery of the United States Department of Agriculture, just reported by Charles Brooks and J. S. Cooley in the Department's Journal of Agricultural Research. The basis of the discovery is the fact the apples are living organisms which breathe and, like other living things, have ventilation requirements which if not met lead to other smothering.

The report states that accumulations of carbon dioxide (carbonic acid gas) produced by the apples in storage, the lack of air movement in the storage rooms, and the depositing of moisture on the fruit, are all factors that may play a part in the production of scald. The relative importance of these factors is a matter for further investigations. The experiments indicate that high humidities may be maintained in storage without the development of scald, and prove conclusively that an occasional remedy of the air of the

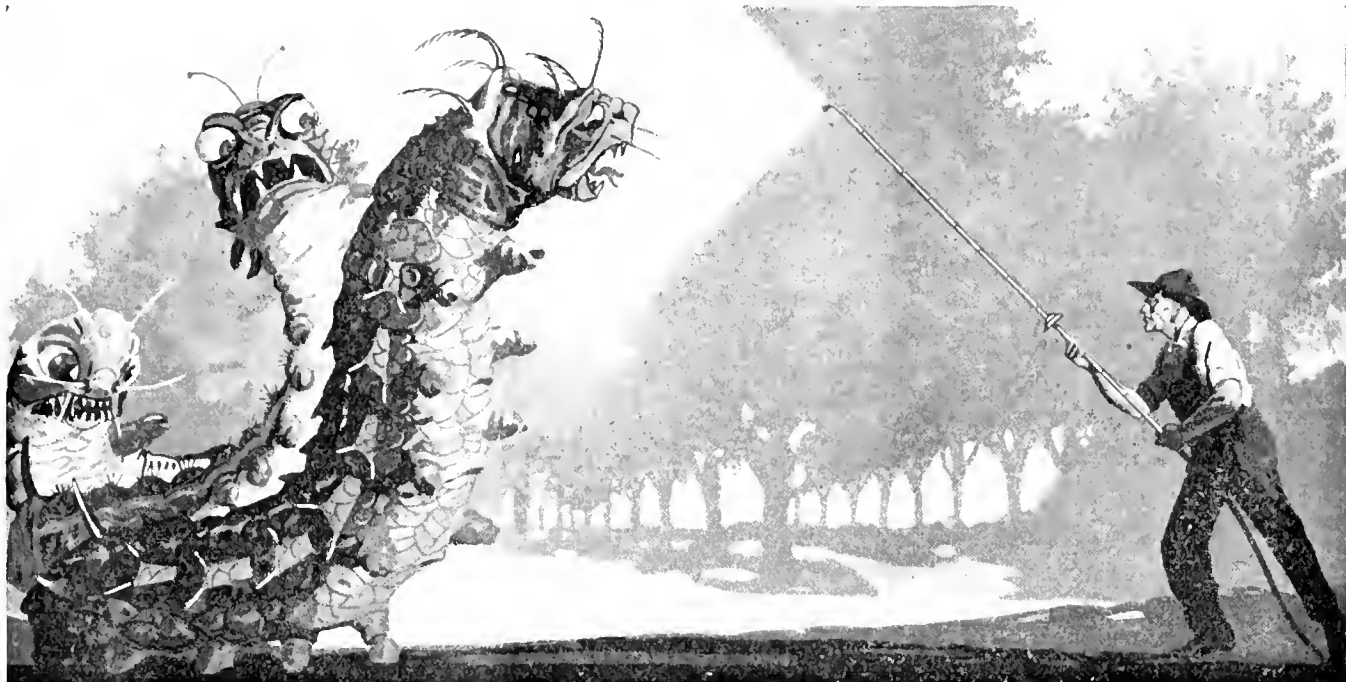
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# Drive Out Vicious Pests with FRUIT-FOG

*Protect your Fruit! This Super-fine Spray adds thousands of dollars to fruit crops!*

If you want a big yield, drive out all the vicious pests and diseases that invade your orchard! Ordinary spraying, which merely controls the *outside* pests is *not enough* to insure a maximum yield. Millions of eggs and germs infest the microscopical niches and crevices in your trees, *where no ordinary, coarse spray can reach them.*

Thousands of growers now credit their clean orchards and bountiful yields to the thoroughness of this remarkable fog-like spray which controls *all* diseases and pests.

*These are the pests that destroy millions of dollars worth of fine fruit each year! These are the vicious hidden pests which Fruit-Fog, the scientifically atomized Super-spray, seeks out and kills.*

Read below why Fruit-Fog will help *you* harvest a wonderful crop of clean high-priced fruit.

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We manufacture over 50 styles of Hand and Power Sprayers and a complete line of fittings. Hayes spraying equipment is the accepted standard of thoroughness, speed in application and low solution cost, on thousands of orchards and farms. There is a Hayes outfit especially designed for any of the following uses:

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|-------------|--------------|
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Whether you own a few trees or a large commercial orchard there is a Hayes outfit for you. Find out about Fruit-Fog Sprayers at once.

**FRUIT-FOG** is produced from any solution by the 300-lb. pressure of Hayes Fruit-Fog Sprayers and the Hayes Nozzle. Its thoroughness is due to vapory fineness and adhering power—*not to force.* Fruit-Fog seeps into the most minute niches and crevices—most dense foliage; reaches under sides of leaves; works under bud scales and beneath fleshy stamens of apple blossoms. Positively will not knock off buds of leaves like coarse, heavy sprays.

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**FRUIT-FOG** no solution is wasted. It is so fine of texture that no drops form. Thus the usual heavy loss of solution is saved.

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ORCHARD BRAND SPRAY MATERIALS are scientifically prepared. There is one for each purpose required on the Pacific Coast.

We maintain a department for the dispensing of professional knowledge, of scientific information. It is in charge of Mr. S. W. Foster, an entomologist of eleven years' practical experience, six of them in the United States Bureau of Entomology, stationed on the Pacific Coast.

We know of no man better equipped by thorough college training, and wide experience, to counsel the fruit grower. He is at your service. He travels extensively in orchard sections to keep informed, and to ascertain the best methods of insect and fungus control.

Definite and reliable directions for treatment of your trees no doubt will be of great value to you. The results obtained by the use of different spray materials, and under varying conditions, are yours for the asking. The time and method of applying spray materials are all-important. If you are uncertain what to do, or when to do it, write to us and Mr. Foster will reply.

We publish from time to time bulletins giving the best available information concerning insects and diseases. Write for the one in which you are interested.

(1) How to control the principal insect enemies and fungus troubles on deciduous fruit trees during the growing period;

(2) The dormant spraying of deciduous fruit trees west of the Rocky Mountains;

(3) Orchard Brand spraying materials.

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Dept. G-2

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storage room will completely prevent the disease. This had been demonstrated in repeated experiments with several varieties of apples. Well aerated apples remained free from scald, while in all cases poorly aerated ones handled in the same way from the time they left the tree, throughout storage, became badly scalded.

Scalded fruit was found to be more mealy and poorer in flavor than unscalded. Scald, in addition to rendering the fruit unsightly and reducing its market value, rendered the apples extremely susceptible to storage rots.

Apples were apparently little harmed by several weeks' storage under poorly ventilated conditions if better aeration was provided before the fruit reached a certain critical period in its storage ripening. The maximum length of time that the fruit can remain in poorly ventilated storage without incipient injury, however, has not been determined for many varieties. Final recommendation in regard to the frequency of ventilation, therefore, cannot be given as yet, but the investigators state that the fundamental fact that ventilation will prevent disease has been established, and advise storage men to avoid taking chances of smothering the fruit.

Scald, it was found, increased with an increase in temperature from 41 degrees F. to 68 degrees F. Higher temperatures were unfavorable to the development of the disease, and with certain varieties such as Grimes Golden 32 degrees F. was more favorable to the development of the disease than 41 degrees F.

Investigations of this disease by the department specialists are still going on, but the facts already obtained indicate the necessity of important changes in storage methods.

#### Savory Potatoes for Home Supplies

When all the family gathers around the comfortable supper table every housekeeper takes pride in the substantial hot dishes she places before them. Nowadays an all-meat dish is out of the question, but a combination with potatoes will stretch the meat flavor and make an equally satisfactory offering. Here are some potato combinations that will please a hungry supper crowd:

**Potato Pie**—To one quare of hot boiled potatoes add enough hot milk to moisten. Season with butter and salt. Mash in kettle in which they were boiled and beat with a fork until light. Stir in half cup of minced ham. Have ready four hard-boiled eggs and half cup of stock or gravy. Arrange potatoes and sliced eggs in dish in alternate layers with potatoes forming top and bottom layers. Moisten with the gravy. Brush over the top with milk or egg and brown in hot oven. This dish can be arranged in three layers with the middle layer some kind of meat hash bound together with egg or thickened gravy.

**Potato Turnovers**—Boil and put through the ricer enough potatoes to measure a pint. Add one well-beaten



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Higher and higher go fruit prices. Greater and greater becomes the demand for it. More and more the importance of spraying is brought home to everyone, for marketable fruit must be perfect fruit and perfect fruit must be sprayed fruit.

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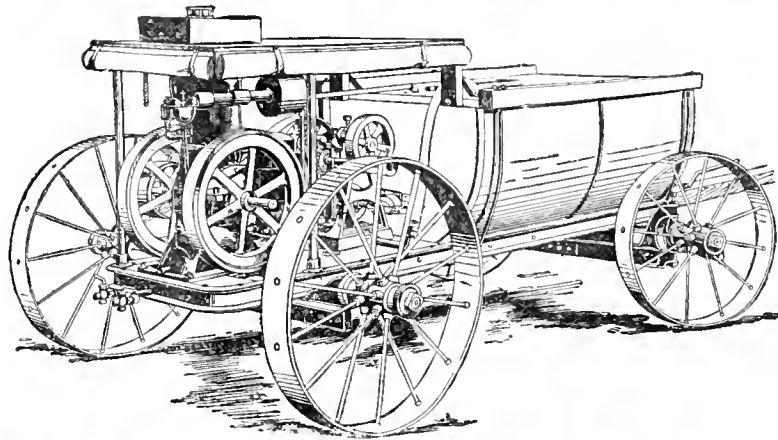


egg, one tablespoon of flour and season with salt. Turn on floured board, roll out and out in circles size of saucer. Place on each a large spoonful of dry hash seasoned with onions and parsley chopped fine. This hash should be dry or bound together with thickening. Double over and pinch together like a turnover. Place on greased baking sheet and brown in hot oven. Serve with a thickened sauce made from the gravy in which the meat was cooked or with a tomato sauce.

**Family Potatoes**—Use six cold or freshly-boiled potatoes. Cut into quarters and put in saucepan with a pint of gravy or soup stock. Add one chopped onion, salt and a little red pepper. Simmer on back of stove half an hour before serving.

Red pepper, or paprika, is preferable to black pepper in these potato dishes.

# TO EVERY ORCHARDIST!



## The Hardie Hillside Triplex

The choice of a power sprayer is of the utmost importance to your success in fruit raising. The Hardie Triplex is full of essential features which insure proper spraying to every user. Among them are:

- First*—**EFFICIENCY**—This being its ability to always do effective spraying which will produce a good clean crop.
- Second*—**RELIABILITY**—The ability to do first-class spraying continuously day after day.
- Third*—**OPERATING COST**—A design and construction which enables you to run your machine at the lowest possible cost.

By incorporating in the Hardie Triplex, the manufacturing experience of years, a thorough knowledge of orchard requirements, together with the necessary skill and energy, we give you the very utmost of power spray value for your money.

You should send today for our latest catalog. This will give you all the details of the pump, engine and other parts of the complete machine.

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Entered as second-class matter December 27, 1906, at the  
Postoffice at Hood River, Oregon, under Act  
of Congress of March 3, 1879.

**Fruit Products.**—BETTER FRUIT has been advocating for years past, editorially and otherwise, the value of canneries, evaporators and by-product factories. "Fruit products" is a name that has recently been coined, which should always be used instead of by-products. By-products has a suggestion of something made from waste material, whereas fruit products indicates something more wholesome and far more attractive. The Northwest in 1917 for the first time made wonderful advances in the by-product business. All of the old canneries and evaporators have been busy—many new ones have been built and are running to the full limit of capacity, most of them working overtime. A new field is being developed for the fruit grower. Apples below grade, which have only realized \$4, \$5 or \$6 per ton for the fruit grower in the past, this year have been selling pretty generally at the following prices: Culls for vinegar, \$8 per ton; all apples below C grade, \$10 to \$13.50 per ton; apples below C grade, not too small in size, in good condition, suitable for canning or evaporating, have sold for \$12.50 to \$15. We are advised that Idaho growers were offered \$9 per ton f.o.b., with freight rate to factory of \$9 per ton, making the price equivalent in districts where any factories are located of \$18 per ton. In Watsonville, California, a few years past, evaporators have paid for good stock frequently as high as \$18 to \$20 per ton. It looks as if the fruit growers of the Northwest had developed a new business in one year that will take care of all apples below grade at a price that will pay the grower some profit. And equally, if not more important, is the fact that canneries and evaporators will this year establish a business that will enable them to take care of all the surplus of perishable fruits. In California fruit growers have been growing

peaches, apricots and pears and making big money at prices paid by the canneries, frequently selling all their crop in this way without shipping any fresh.

**Pruning for Size.**—The Northwest fully realizes that in competing with other apple sections, particularly in the East, it is necessary to produce a high-class product in every respect. That the Northwest can do this is beyond question or argument. They grow a great many varieties to perfection, which are not equalled in other sections of the United States, for which there is always a good demand for a reasonable quantity. It is generally admitted there is no question about the fact that consumption can be largely increased on Northwestern apples by proper diversity, salesmanship and publicity. But the very small apple can never be expected to pay a profit worth while on top of the freight charges that all apple produced in the West have to bear that are shipped to Eastern markets, consequently it is up to the grower to do away with the excess in small sizes. It is found upon a very thorough investigation that pruning is one of the most important factors in connection with the small apple. Professor V. R. Gardner of the Experiment Station, Corvallis, has given the matter of pruning for size special attention, and for the benefit of the fruit growers delivered and address on this subject at the Tenth National Apple Show in Spokane, which is produced in this edition. The article is so valuable and instructive that every fruit grower should read it carefully and learn how to decrease the amount of small apples produced in his orchard.

**Size and Yield.**—The apple crop of 1917 ran more largely to small sizes than usual, probably due to a number of causes. The season was not a rapid-growing season—the weather unusually dry. A great many fruit growers have allowed their trees to become too thick with limbs, consequently the tree sets too many fruits—too much of a top for the root system, which has a tendency to make small apples. The proper supply of plant food is also a large factor to be taken into consideration. Growers of strawberries and vegetables and all kinds of products that root very shallow find the yield continually decreasing. They are able to maintain a fair yield usually by two methods—fertilizing and subsoiling. Cover crops are also helpful inasmuch as they root deeply, bringing up the soil fertility from below, which can be cultivated into the top soil by plowing under. Cover cropping has been found very helpful to orchardists in increasing production by size. In addition the cover crop has an additional advantage of putting additional humus in the soil, which is quite a necessity. Roots from apple trees will go down several feet. It is a well-known fact there is a sufficient supply of plant food in the lower depth to supply an apple orchard for a great many years if made available. Blasting is reported very helpful by

many growers. It loosens up the soil down to a depth of several feet, permitting the roots of the apple trees to go down. In loosening the soil it also makes better drainage. Some orchardists who have been troubled with winter kill seriously in past years, by blasting under the roots of the trees in connection with the use of tile draining and cover cropping have eliminated practically all winter kill. A little common sense on the part of the fruit growers—a little more careful attention in regard to pruning and the condition of the soil will result in a splendid improvement in increasing size, increasing productivity. Fair-sized apples is a mighty important factor in returns on the apple crop—the larger the apples the less the cost of harvesting, sorting and packing, and the larger the apples the better prices obtained.

**The Liberty Loan.**—The complete success of the Second Liberty Loan, although expected, is an indication of the wealth of the United States and the patriotism of its citizens. The excellency of the selling organization is beyond praise, but more important than this is the cheerful and ready manner in which the bonds were bought. Capital and large business concerns subscribed liberally, but the most important factor in connection with the sale of Liberty bonds is the fact they were bought by millions of people in moderate circumstances. Many people have become bond owners who were probably never investors before the war. Great good will come out of all this in the future in making the working people more saving and creating in them a desire for investment. The Third Liberty Loan will probably be offered early in 1918, and we must all make ready to assist the government and the administration in every way possible to the fullest extent.

**Increasing Farm Products.**—The United States, during the war and for several years afterward, will have to supply the world with an increased percentage of food. The reasons for this are generally well understood. There are two ways—to increase our output, by intensive cultivation and by increased acreage. Every fruit grower and farmer who has uncleared land should clear all the additional land possible this winter to help feed those whom we will have to take care of in the future. In doing this you will be doing a humane act, and will also contribute to the prosperity of the country, and at the same time will improve your own financial condition and bank account.

**Small Apples.**—Small-sized apples this year may prove a blessing to many consumers, for the reason that the purchasers of a box of small sizes can supply all of his family, give each of the children an apple for their lunch basket, at a very small cost, which is quite important in these days of advanced prices on nearly all food commodities.

**California Fruit Growers' Exchange.**—Elsewhere in this edition is published an article which relates briefly to the achievement of this fruit growers' organization. It is very convincing and proves the value of fruit growers' associations, where properly organized and ably managed. It is pretty generally known that the orange growers of California were in despair about the future when the California Fruit Growers' Exchange was organized. The first mission of the Exchange was not so much to obtain increased prices for the fruit as to find the necessary markets to consume the quantity produced, which was necessary to save the industry. As everyone knows, the Exchange has been successful. While the condition of the fruit growers of the Northwest has shown much improvement in the last few years, there is still room for more improvement. The article referred to shows pretty conclusively the value of organization, also what organization can do. In "Union there is strength,"—organization can accomplish wonders, individuals can do but little.

**Purchasing Equipment.**—The war has caused unexpected and unusual conditions, for the reason that exports have increased, and for the further reason that many factories now are making munitions and war material and army supplies, consequently many manufacturers are unable to take care of their regular business. Many are unable to secure sufficient raw material. The condition has every indication of becoming even more stringent, consequently it seems wise to suggest to every fruit grower the advisability of purchasing and securing what additional equipment he will need for the coming year at as early a date as possible. There is not very much prospect of prices going down, with every reason to expect that prices will increase; and there is every reason to expect some articles may be very difficult to obtain if purchasing is deferred too long.

**Y. M. C. A.**—The subscription to the Y. M. C. A. fund for war purposes is exceeding the quota—surpassing expectations, which shows the splendid appreciation on the part of the people of the good work that is being done for the benefit of our soldiers at the front, in providing comforts for them, an appreciation of the splendid service they are rendering their country.

**Strikes.**—The November 10th edition of the American Industry in War Time has some interesting articles on strikes in connection with business prosperity and war conditions. The leading article is headed "Stop the Strikes or Lose the War." A map is published showing that important strikes have occurred in thirty-four states since the outbreak of the war. The United States has gone into the war, which everyone must concede, for the purpose of winning for reasons too well known to be necessary to explain in a brief editorial, and in order to win the war there must be

the fullest co-operation in every respect. The armies of the United States and of the Allies cannot win unless properly supplied with food, ammunition and equipment. In order that these supplies may be available to the fullest extent it is necessary to have the fullest co-operation of the entire population of capital and labor must co-operate and the United States. All lines of business, make many sacrifices. No differences should be permitted to arise if possible to avoid that will interfere with the success or postpone success.

#### Canadian War-Cake

No recipe has been more popular than the one for Canadian war-cake. Many people like this plain cake better than the cakes that call for butter, eggs and milk: 2 cups of brown sugar, 2 cups of hot water, 4 tablespoons of lard, 1 teaspoon of salt, 1 teaspoon of ground cinnamon, 1 teaspoon of ground cloves, 1 cup of raisins. Boil all these ingredients for five minutes after they begin bubbling. When cold add three cups of flour and two teaspoons of soda, dissolved in one teaspoon of hot water. Bake in two loaves in slow oven an hour and a quarter.

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A  
MONTH**

## RUNNING WATER IN THE COUNTRY HOME For Less Than City Rates

A man told us at the State Fair that his cost of operating his MITCHELL PNEUMATIC WATER SYSTEM was about \$2.00 per year. We were surprised, but upon further inquiry among owners found that the operating cost of the average Mitchell System, using the Stover Engine for power, is 25c per month. Can YOU afford to let this small sum stand between you and the comfort and convenience of water under pressure in your home and about the place?

*Mitchell* Water Systems  
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because simple, dependable, easy to operate.

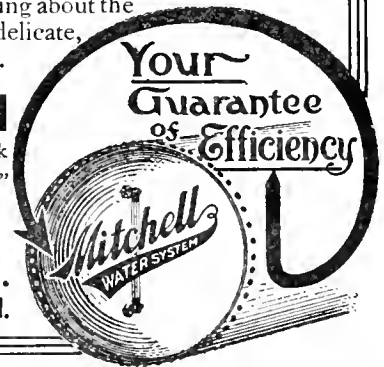
There is nothing about the Mitchell System that is complicated, delicate, or that will cause trouble and expense.

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**MITCHELL, LEWIS & STAVER CO.**  
PORTLAND, OR. SPOKANE, WN.



### Tasmanian Apple Crop

By S. O. Krantz, Manager School of Commerce, U. of O.

**W** E are informed that the apple crop in Tasmania for the present season was the smallest in recent years. It is reported that this year's exports will not exceed one million cases, while exports for last year aggregated two million cases. The cases contain about a bushel of fruit. England will take about 150,000 cases this year, and on account of the shortage in the crop the prices have advanced to \$2.25 per case at the home markets.

As you know, the producing season in Tasmania comes at a time of the year when it is spring here, so this shortage it seems has left that country without sufficient apples for its own use, and reports from there indicate that there will be a demand now for American apples.

The growers, however, are expecting a big increase in the crop next year and already are trying to arrange with the government to finance schemes for drying and preserving the surplus.

The University School of Commerce is in touch with the markets in all parts of the world and will be pleased at all times to furnish information on this subject.

# ALPHA POWER SPRAYERS

## For Quick, Effective Spraying



THE experienced orchardist, the man who understands the difficulties ordinarily encountered in efficient spraying work will appreciate the practical, sturdy construction of the Alpha Power Sprayer. Your careful analysis of the operation of each feature will show why the Alpha is a dependable HIGH PRESSURE spraying machine and a safe, permanent investment.

### BUILT IN FIVE SIZES

#### THE PUMP

Equipped with the Alpha Automatic Pressure Regulator, which holds the pressure steadily at the desired point and relieves the engine and pump of unnecessary strain when nozzles are closed. All parts of pump are readily accessible and interchangeable.

#### THE ENGINE

The power behind the pump is the dependable high class Alpha Engine. When spraying you have no time to lose tinkering with an unreliable engine. Intelligent handling of the Alpha guarantees you freedom from troublesome delays. No cranking necessary; no batteries. A vigorous, full-powered engine that will last for years.

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61 Beale Street, San Francisco, Cal.

Your horses are glad when you use Mica Axle Grease. The powdered mica makes a smoother spindle. The wagon pulls twice as easy, and the grease lasts twice as long.

STANDARD OIL COMPANY  
(California)

# MICA AXLE GREASE

## Potash and Plant Diseases

IT is a well known fact that all plants, including apple and other trees, are more subject to the attacks of fungus diseases and even of insects when not plentifully supplied with potash. This is particularly true when the nitrogen supply is kept up while the potash supply becomes exhausted. The present situation, therefore, may be studied from this angle with a good deal of interest.

For several seasons now potash has been almost impossible to obtain on an economical basis for fertilizing purposes. Little advance has taken place in the price of phosphorus-bearing fertilizers. Nitrogen, though high in price, has been continued in fertilizers to as large an extent as ever. Viewed hastily, the results over the country in crops grown have called out remarks to the effect that potash may not be of so

much importance as a fertilizing element after all. Observed with more care, new phases of the matter present themselves.

In many places crops apparently continue to grow well without getting much new potash, which goes to prove only that they are securing a liberal amount from the native and usually insoluble supply in nearly every soil. Elsewhere, or on other farms not so well taken care of, the crops seem to start well, but to pause in their growth when nearly matured, and from then onward to become stunted. Rust of wheat and grasses, and many other troubles, have been noted with increasing frequency. The various fungus diseases of fruits certainly have shown an increase in those orchards which formerly had applications of potash along with other plant foods. The connection between potash and the resistance of plants and trees to disease is easily seen, as also is the fact that an excess of nitrogen at the same time tends to decrease resistance to the troubles and to make the plants and trees more liable to them.

The fertilizer situation still is as badly out of balance as ever, for there seems to be no immediate relief in sight respecting a potash supply. The only thing that can be done is to give thorough, deep cultivation, and to provide plentiful supplies of organic matter in the lower soil. If this is done moisture and heat conditions will be good, and bacterial activity will liberate much insoluble potash.

Those fruit growers who recently blasted their orchard ground are fortunate, as they probably are experiencing less trouble than others. Good orchards that have not been subsoiled should be treated to that kind of intensive tillage just as soon as the ground is dry enough, and in preparation for it heavy-rooted cover crops might be sown at once. The later blasting will not hurt the plants, while the roots will be ready to penetrate the loosened and crumbled lower soil at once.

A quantitative analysis of almost any ordinary soil in a recognized orchard section will show many thousand pounds of actual potash in each acre to a depth of four feet. Most of it is of the native supply, dissolved out of minerals present in the original rock from which the soil is derived. Some of it, however, is simply potash that was applied in commercial fertilizers, and which reverted to insoluble forms owing to improper or unfavorable soil conditions prevailing at the time.

There is enough in the top foot of ground to last many years—if it would by any means be released fast enough to supply trees properly. As it cannot be, a second and third and fourth foot of soil must be put to work and subjected to the action of the right amount of moisture, to heat, to the effect of organic matter decaying, and to bacterial activity. Enough potash then



may be derived from the soil to keep the trees going.

There is no practicable way of getting organic matter deeply into the soil of an orchard except through roots that grow down. Annuals—plants which live one year and then die—have masses of roots, some of which penetrate several feet. The breaking up of the soil is only the beginning of the process of liberating unavailable food elements. It must be followed by the penetration of these roots, so that each succeeding season, as a crop dies and another comes, there will be more and more vegetable matter accumulating and decaying.

Even the best informed agriculturists as yet understand too little about the feeding of plants. It seems to be well established, however, that the lack of any one of the three important foods will cause troubles, and that these troubles may not take the form of simple starvation or refusal of plants to grow. Perhaps some day we may be applying fertilizer and giving intensive tillage as a partial substitute for spraying, just as fresh air and exercise sometimes may be substituted for medicine in the treatment of a sick man.—Contributed.

#### Breakfast Fillers—The Potato Leads

Count over your breakfast fillers—hominy, potatoes, apples. Cross off hominy for the present. The new crop of corn is not yet hominy, and when it is, it will keep for winter and spring. That leaves you apples or potatoes or both. The big crop of potatoes calls for the service of all housekeepers. The growers stood by the flag, and now—the housekeepers must stand by the growers. That is their service. Fried potatoes, hashed brown, creamed? Cross off fried potatoes. Try some new ways. Frying means fat, trouble, and often a poor food product. And fats must be conserved carefully. Hashed-brown potatoes please everyone, and, though they are usually regarded as a hotel luxury, you can turn out a better dish at home.

**Hashed-Brown Potatoes**—Chop six boiled potatoes and season with butter, salt, and onion and parsley chopped fine. Moisten with milk and mash lightly. Place in a hot greased pan, preferably an iron skillet. Spread potatoes evenly over the pan. Cook until golden brown. Fold over like an omelet and serve.

**Savory Potato Loaf**—Three cups hot riced potatoes, half cup of sausage meat, two tablespoons of milk, one teaspoon chopped parsley, half teaspoon salt, half teaspoon grated onion. Mix together all ingredients. Place in a baking dish, and bake half an hour. Serve from dish.

**Red Cross.**—The very generous subscription to the Red Cross fund is splendid evidence that our people are eager in their desire to give our boys who happen to be wounded or sick at the front the very best care possible.

When made into apple butter, even the ugly windfall has a glory of its own.



## Be "U. S. Protected" For Winter Barnyard Tasks

When the ground is shrouded in deep snow and the thaws bring ankle-deep, oozy mixtures of mud and slush, keep your feet warm, dry and comfortable in

## U. S. Rubber Footwear

Built for heavy service, double duty, this rubber footwear is impregnable to assaults of wet and cold—made to defy storm, sloughs and snags. Not only does greater comfort make this footwear most desirable, but sturdiness and long wear mean money saved.

Every pair bears the U. S. Seal—the trade mark of the largest rubber manufacturer in the world. Look for this seal, it is your protection. "U. S." is for sale everywhere. Your dealer has just the style you want or can quickly get it for you.



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New York

# U. S. Rubber Footwear



**And Now  
You Can Plow  
and Disc Around  
The Hilly Places**

**\$1285 f.o.b. Portland, Oregon**

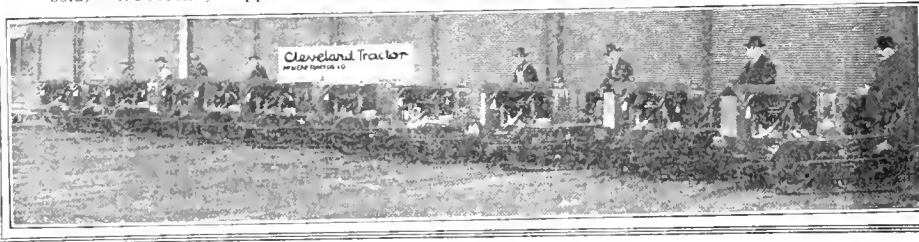
Here is a tractor that is small enough to go under your orchard trees, yet so powerful that it does the work of 10 horses in any weather, on any soil—the **Cleveland 12-20**. It goes anywhere in all soils, because it **crawls on its own tracks**.

Cultivate more of your land—do it all quicker and cheaper with a **Cleveland**. This wonderful little tractor plows 8 to 10 acres a day—the work of two to three 3-horse teams and three men.

**SERVICE**—We maintain a service department that starts you right with your **CLEVELAND** and is forever after at your service.

**Cleveland Tractor** **McNeff Tractor Company**  
Geared to  the Ground 226 Pittock Block, Portland, Oregon

Unloading one of the four carloads of **CLEVELAND TRACTORS** at Portland, Oregon. (They are all sold) We recently shipped a carload into Hood River. Order yours now—we have some on hand.



**Markets Opened by Advertising**

In a circular sent out last year the Northwestern Fruit Exchange called attention to the fact that new apple markets were being opened in the United States and Canada, Northwest apples being taken hold of by jobbers and retailers in communities which had in a sense never before heard of the wonderful fruit of this section. It appears that this season this process has further developed in a remarkable degree. In a word, scores of new markets, many of course of limited capacity, have this season placed their orders for Northwest apples for the first time. In examining this situation the Northwestern Fruit Exchange calls attention to an effect of it that might ordinarily be overlooked, namely, that the wider distribution of Northwest apples in smaller markets takes off the pressure of oversupply from the larger markets.

Thus not only is there a larger demand, an outlet for a larger output, but the result is also steadying as to prices, and withal an important factor in obtaining full or higher prices.

"This is undoubtedly a very salient feature of the Northwest apple deal this season, and it is a very important one," states W. F. Gwin, manager of the Exchange. "It is primarily due to advertising. The "Skookum" national campaign last year is having further effect this year; our this year's campaign, just now getting under way, will be heard of as much next year as this, and in coming years. We anticipate that when other Northwest apple growing and shipping interests get together and advertise, as undoubtedly they will, the effect will be of almost incalculable economic benefit. Northwest apples were at one time known only in the big markets, New York, Chicago, Boston, and so forth. If some means had

not been taken to remove this or improve this condition, there would have been congestion. Advertising tied to necessary proper selling and transportation effort has made innumerable rivers of apples flowing from this great Northwest to innumerable markets, when before we had a few large rivers flowing only to a few large centers and threatening to flood them."

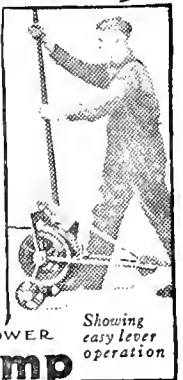
Use the soft-shelled eggs at home. They ship poorly and may lower the grade of the others.

Tractors are the busy Berthas of agriculture.

**Pull Big Stumps  
by hand**

Clear your stump land cheaply—no digging, no expense for teams and powder. One man with a **K** can rip out any stump that can be pulled with the best inch steel cable.

Works by leverage—same principle as a jack. 100 pound pull on the lever gives a 48-ton pull on the stump. Made of the finest steel—guaranteed against breakage. Endorsed by U. S. Government experts.

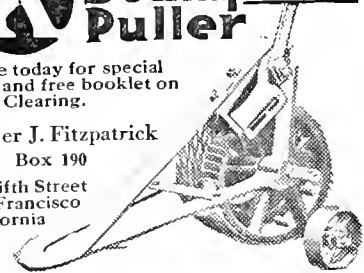


**K** HAND POWER **Stump Puller**

Write today for special offer and free booklet on Land Clearing.

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**130-Acre Orchard**

Practically immune from frost, principally

**Winesaps, Jonathans, Y. N. Pippins and Rome Beauties, with Elberta and Salway Peach fillers.**

One and a half miles average distance from depot, packing house, school, church and stores. The land is platted park style and can be sold in tracts of one acre and upward.

**S. J. HARRISON**  
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**Nice Bright Western Pine  
FRUIT BOXES  
AND CRATES**

Good standard grades. Well made. Quick shipments. Carloads or less. Get our prices.

**Western Pine Box Sales Co.**  
SPOKANE, WASH.

**Boys You Can Earn Money**

rifle, skates, sweater, tool kit, etc., taking subscriptions for America's greatest fruit paper. Every fruit man should read it. Your neighbors will want it. Write today for sample copy and illustrated list of Rewards full of Christmas suggestions. Address: **Green's American Fruit Grower** 312 Plymouth Court Chicago, Ill.

# The Farmer's Responsibility of the Great War

By Clarence Dubose, Department of Agriculture

THE war has given to the American farmer the greatest responsibility, the greatest privilege and the greatest task any man or any class of men have ever known. The American farmer in large degree will determine the trend of human history for all time to come, because the enormous ultimate consequences of this conflict rest primarily upon the farmers' production of food and feed to sustain the fighting forces. They might fail even with an adequate food supply; without it they are certain to fail. But in his field, far from the fury of battle, far from either the adventures or the horrors of the firing line, the American farmer will say whether autoocracy or democracy shall rule the world during the seasons that are to come.

In a sense the war will be won or lost in the fields, gardens, orchards, pastures and hog lots of the American farmer. The hope of the American citizen, not a farmer, also hinges upon adequate agricultural production. Our aeroplanes are useless, our guns are spiked and our rifles jammed, our shells are but as harmless baubles, if the farmer fails. This must be understood in all its grim force by every man, woman and child in America; by farmers and by those who are not farmers.

With food we can win the war. Lack of food will lose the war. Whether or not we produce the food depends upon whether or not each and every individual farmer does his level best on his farm—produces its maximum.

But the "agricultural problem" means not merely the production of food-stuffs and feedstuffs and live stock. It means the conservation of the food after it is produced. That puts the "agricultural problem" squarely up to everyone from the man on a forty-acre field to the man whose fertile lands run farther than he can see; from the tenement cave-dweller to the occupant of the costliest mansion.

The agricultural problem today means to every American, and indeed to every civilized person on earth, simply whether he shall, when this strife ends, be a free person in a free land or whether he shall be bossed from Berlin. That is the precise interest that you, now reading these lines, have in the agricultural problem in America today. You may have been a farmer all your life or you may not know the difference between a straight furrow and a threshing machine—no matter what your condition may be, one of the two divisions of the agricultural problem is yours: to produce food or to conserve food.

Many people have thought of the war as "far away," as a remote, impersonal thing, a sort of dreadful nightmare—but not as a spectre menacing our immediate persons and property. Our appreciation of the actuality is more poignant now, with our own flesh and blood upon the firing line. That firing line is in France today. It will come to America if the farmer fails. No mat-

ter what course military strategy may take, the final battlefield of the war is already fixed. The Waterloo of the Prussian autoocrat and all he stands for, or the Waterloo of American liberty—the end of autoocracy or the end of democracy—the end of Prussianism or the end of freedom—will be wrought on the battlefield of the American farm—every American farm.

But even victory there will not avail if we lose in another equally fateful battlefield—the American kitchen. If we produce to the limit of farm resources and energies and do not conserve what we produce we may lose

by waste. No conceivable responsibility could be more grave, no privilege more proud, no opportunity more rich for significant service than the American farmer has today. The war has sounded a call to duty to every individual throughout civilization. The course of the individual life is not now to be considered in terms of self. The question dominating every individual is for what service can he be used—what can he best do to help win the war. To some the call comes to march away with uniform and gun, to some it comes for the organization and administration of parts of the great war machine—to the American farmer comes the call to feed the forces fighting for liberty. To every other man, woman and child comes the call to save.

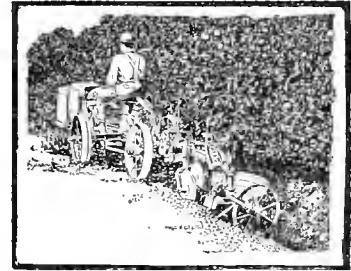
## This 15-Feature Tractor Will Almost Run Your Place

**15 FEATURES** — invaluable in orchards—make this the needed tractor.

No other tractor of the track-laying type sells at so low a price. And no other has such advantages as the patented front drive.

The Bean TrackPULL Tractor turns clear around inside a 10-foot circle (5-foot radius), and it has full power even on so short a turn. It plows and harrows close up in the corners, and right up to the tree trunks. It goes under branches only four feet off the ground. The fuel is far less than other types doing the same amount of work.

When not in the field this



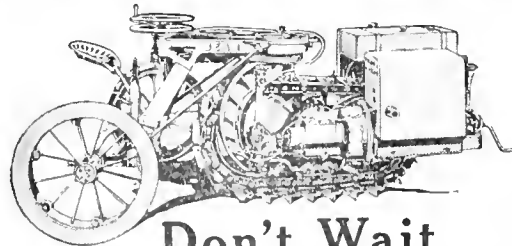
tractor's 10 h. p. pulley runs your stationary machines.

Sooner or later you'll decide, without doubt, that you want a tractor to do these things.

So don't buy a tractor until you know all the facts about this remarkable agricultural aid.

Before you turn this page send for full information about the Bean TrackPULL Tractor.

## BEAN TrackPULL Tractor 6 H. P. at Drawbar



**Don't Wait**

Material costs are rising every day because of the great demand for metals. Our low price of \$1215 may have to be again increased. So don't wait; send in the coupon now.

Sending it doesn't obligate you. It simply brings full information.

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Bean Spray Pump Co.

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Without any obligation on my part, send me Bean TrackPULL Tractor Book.

**APPLES                      PEARS                      ORANGES**

**For European Distribution.  
Boxed Apples and Pears a Specialty.**

**GERALD DA COSTA**

100 & 101, Long Acre, Covent Garden, London, W. C. 2, England

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Increase the value of your land.  
Every horticulturist on the Pacific Coast should have  
a copy of our new catalogue.

**WRITE FOR OUR CATALOGUE**

It contains information about all varieties of  
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**FRESNO NURSERY COMPANY**

Address Dept. H., Fresno, California

**Apples for America and Europe**

W. E. Aughinbaugh in Leslie's Weekly

[Editor's Note—This article, which appeared in Leslie's Weekly October 6, 1917, was submitted to BETTER FRUIT by the Service Department of Leslie's Weekly with permission to publish it, which we are glad to do for the valuable information it contains for the benefit of the fruit growers.]

**D**URING the season of 1914-1915, American apples to the extent of 2,667,873 barrels and 1,423,132 boxes were exported to Europe, Asia, Africa, and Latin America. In addition it is conservatively estimated that more than 500,000 boxes and barrels of this fruit went to such countries as Porto Rico, Hayti, Santo Domingo, Hawaii, the Philippines, Mexico and parts of Canada, of which no record was made. Since this date it has not been possible, due to the demoralized condition of shipping facilities, to obtain accurate data regarding this industry. These figures take no account of shipments of dried and evaporated apples, a special field of this business which is yearly increasing, the product being in great demand in Europe and Latin America.

Apple growing and shipping is properly entitled to be designated as one of the major industries of this country, involving annually from 50,000,000 to 75,000,000 of barrels, an output valued at approximately \$100,000,000. These figures relate only to apples handled in a commercial manner and do not take into account those grown and consumed otherwise. Some idea of the importance of this business may be formed when I state that at the last meeting of the National Apple Growers' Association a resolution was adopted urging the Government to devise some appropriate method for obtaining statistical

information on this young and important industry.

Apples are destined to form an important item in the diet of this and other nations. The present economic condition of the world is bound to give a great stimulus to the use of this fruit and its future as an article of export is assured. Mr. Louis B. Magid, president of the Appalachian Corporation, which operates the largest apple orchards in the world, having more than 350,000 trees in bearing, and an authority on apple shipping, expects that the next few years will see this industry develop materially, and believes that the foreign trade in this fruit will far surpass that of any similar line.

The war in Europe will benefit the American apple grower materially, due to the fact that the three years of hostilities have resulted in the destruction and neglect of apple orchards throughout that continent, with the obvious result that buyers can look only to this country for their needs. Northern France, for example, before the war produced fine apples, most of which were exported. Today that territory is virtually destitute of apple as well as other orchards. Such trees as were not blasted by gunfire, or ruined by poisonous gases and conflagration, have been cut down by the retreating Germans. The hills and mountains of northern Italy were prior to the conflict in that country productive of a high grade variety of apples, which were eagerly purchased by dealers. These orchards have suffered as have those of France. Russia was a producing power in the apple trade of Europe and its climate and soil are especially adapted to raising this fruit. Industrial and political

demoralization, together with a heavy depletion of the man power of this wonderful land, have eliminated Russia from this line of endeavor. China does not grow apples, neither is the fruit raised for commercial purposes in any parts of Asia. In the Latin-American nations Chile alone raises apples, but enough only for home consumption. Incidentally I may state that the Chilean apple is without a peer anywhere, and, being ripe at a time when our apples are out of season, the possibilities in this line alone are really wonderful, but up to the present no one has taken advantage of the situation.

As competitors in the apple industry the United States had only Canada and New Zealand to consider. The production of the former is small and railway freights from interior points are liable to prohibit the exportation of apples to a great extent, while the long distance that New Zealand has to bring her fruit to market militates against her ever being a serious factor in the trade. As a consequence our position today is ideal and if we take advantage of conditions there is no reason why this country cannot dominate this trade for years to come.

Through proper advertising and marketing campaigns, which should be started immediately, the entire world can be made to eat American apples. The nature of the fruit makes it an admirable article for exporting to any part of the globe, and American apples

**Attention, Fruit and Vegetable Growers**

CAN your Fruits, Vegetables, Meats and Fish in Sanitary Cans, with the H. & A. Steam Pressure Canning Outfits, built in Family, Orchard and Commercial size; seal the cans with the H. & A. Hand or Belt Power Double Seamer; they will save your perishable fruits and vegetables at ripening time when nothing else will. Write for descriptive matter.

**Henninger & Ayes Mfg. Co.**  
47 S. First St., Portland, Ore.

**Cherry Trees**

Fruit and Ornamental Trees, Shrubs, Vines, etc. *Free Catalog. Agents Wanted. Special Terms.*

**MILTON NURSERY COMPANY**  
MILTON, OREGON

**WALNUTS**

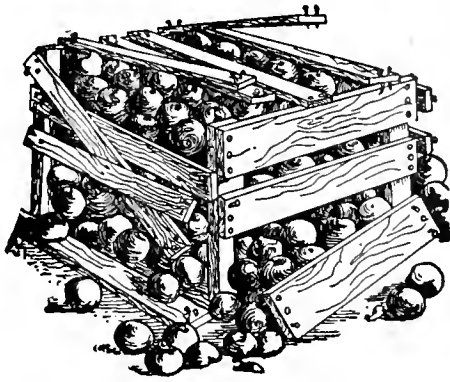
Can be grown on a great many farms in the Northwest. If you had planted grafted walnut trees a few years ago you could be selling the world's finest nuts today for from 25c to 30c per pound. Will you have any to sell a few years from now? Our grafted Franquettes are the best on the market and are sold as low as many seedlings.

6 to 10 ft. trees	.....	\$1.25 each
Dozen lots	.....	1.15 "
Hundred lots	.....	1.00 "
Thousand lots	.....	.90 "

Special prices to the trade.

**GRONER & McCLURE**  
Hillsboro, Oregon





BEFORE using Cement Coated Nails

## Western Cement Coated Nails for Western Growers

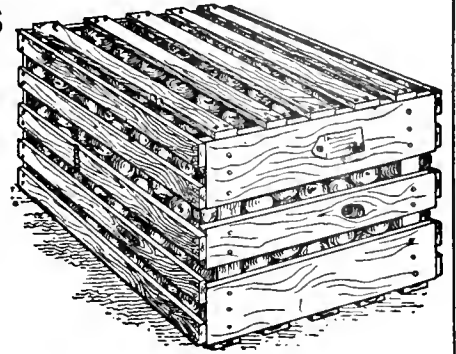
Our Cement Coated Nails are always of uniform length, gauge, head and count. Especially adapted to the manufacture of fruit boxes and crates. In brief, they are the Best on the Market.

Write for Growers' testimonials.

### Colorado Fuel & Iron Co.

DENVER, COLORADO

Pacific Coast Sales Offices  
Portland, Spokane, San Francisco  
Los Angeles

AFTER use of C. F. & I. Co.'s  
Cement Coated Nails

are accepted today as the standard for all purposes.

The possibilities for creating demands for dried fruits in overseas markets never were better, and excess crops could be conserved for future use, for the entire world is fruit hungry.

The great apple-producing states of the Pacific Coast and the Atlantic and middle sections of the country prior to the war developed a remarkable export trade for their choice fruit with the nations of Europe now engaged in the terrific conflict for supremacy. This trade has fallen off very materially because of the high freight rates, which have been almost prohibitory. But our apple growers, by turning their attention to the nearer markets on our own

continent, while the opportunity presents itself, can open a wider and perhaps a richer field for the enlargement of their trade. The one thing lacking, of course, is a mercantile marine, and most unfortunately this is lacking because of the anti-subsidy feeling on the part of some representatives in Congress from the Pacific Coast and the farming regions of the interior.

### Ways to Reduce Car Shortage

Office of Information, U. S. Dept. Agriculture

While much has been done to relieve car shortage, the fall movement of crops puts a heavy strain upon transportation facilities. Each autumn witnesses a sharp increase in rail tonnage, and the conservation of the country's transportation facilities and the most efficient use of cars by shippers of perishable farm products is just as important at this time as during the spring and summer, according to the Bureau of Markets of the United States Department of Agriculture. Between May 1 and September 1 of the present year the Special Committee of the National Defense of the American Railway Association succeeded in reducing the number of unfilled-car requisitions by more than 78 per cent, but there is still no surplus of cars.

Cars, packages, commodities, time in transit, and seasons are variable, and the department has no accurate data from which rules can be laid down as to the exact quantity of a given commodity of a certain degree of maturity which can be loaded into a car for a definite haul to a particular market; but cooler weather makes refrigeration less necessary and makes it possible to run more commodities under ventilation and to load cars more heavily than during the summer.

The following thirteen commodities are now moving to market in carload lots: Apples, cabbage, cantaloupes, celery, grapes, lettuce, onions, peaches, pears, sweet potatoes, tomatoes, watermelons and white potatoes. The movement covers thirty-two states, with an average of more than three of the commodities from each of the thirty-two states.

The transportation situation is still serious, and shippers of these commodities are reminded that patriotism

demands of them the heaviest loading possible consistent with the safe carriage of the goods. The failure of one shipper to load cars to the maximum may prevent other shippers from getting any cars at all, with a consequent loss of those foodstuffs on which the winning of the war depends.

The present is a time for the closest co-operation of all interests for the most efficient utilization of cars. Shippers also should load and unload cars promptly and should place diversion orders at diversion points before the arrival of cars to be diverted.

### LAND CLEARING

In an article on "Land Clearing," by Thos. Cunningham, farm manager for the Western Fuel Co., he says: "Taking up the question of stump-pullers. These are divided into several classes, gasoline, stumping outfits, steam donkey logging engines, horse-power stumping machines and hand-power stumping machines. Gasoline and steam donkey outfits have their use in sections where labor is not easily procurable, but I consider them to be costly. The cost of the outfit is heavy. Their bulk and weight makes their transportation from one point to another extremely costly. There are several hand-power stump pullers on the market that seem to answer every requirement and operate economically. I recently saw a demonstration of the "K" HAND-Power Stump Puller that was most interesting. It is manufactured by W. J. Fitzpatrick, of San Francisco, California, weighs 171 pounds and can be wheeled around like a barn truck. The agent attached it to a standing tree (fir) about 36 inches in diameter, placing the cable about 12 feet up the tree. I took hold of the lever and pulled the tree down myself in eight minutes. I bought the machine on the spot and have pulled the stumps from 30 acres of land with it since, the machine costing not one cent for repairs.—Adv.

### Portland Wholesale Nursery Company

Roms 6 & 7, 122½ Grand Ave., Portland, Oregon

Wholesalers of Nursery Stock and Nursery Supplies  
A very complete line of  
Fruit and Ornamental Trees, Shrubs, Vines, Etc.

#### SPECIALTIES

Clean Coast Grown Seedlings  
Oregon Champion Gooseberries and Perfection Currants  
Write Now — Write Now

### Wanted

Thoroughly competent working foreman, single man preferred, for large orchard and vineyard property. Must be able to run all branches of business with economy and snap. Address with full particulars as to age, training, experience, personal data and salary expected.

**GROWER, care Better Fruit.**

### FURS IN STRONG DEMAND

Coyotes, Moles, Lynx, Cats, Muskrats and Martins bringing record prices.

Send for Price List and Tags.

**OSCAR GARD**

75 Marion Street Seattle, Washington

### FARMING is PLEASANT

in the "Sunny South" for Natoro has blessed this favored section with mild, healthful climate, productive soil and all that makes life worth living. You can buy good farm land in Virginia, West Virginia and North Carolina at \$15 per acre and up. Fruit, truck, poultry and general farming will prove successful here. Write for information, illustrated literature, etc., today.

F. H. LABAUME, AGR. & INV. AGT.  
N. & W. Ry., 228 Ry. Bldg., Roanoke, Virginia

### Richey & Gilbert Co.

H. M. GILBERT, President and Manager

Growers and Shippers of

### Yakima Valley Fruits and Produce

SPECIALTIES:

Apples, Peaches, Pears and Cantaloupes

TOPPENISH, WASHINGTON



# Which is Yours?

Two great tasks stand out today: The FEEDING OF THE PEOPLE and the FEEDING OF THE GUNS.

Maximum food production is obtained by the use of

## Nitrate of Soda

which contains 15% of nitrogen immediately available. It is nature's indispensable plant food and energizer.

Information gladly furnished on request.

## Nitrate Agencies Co.

210 Leary Building, Seattle

Leather is honeycombed with pores. That's why sweat, moisture and dust so easily weaken your harness. Eureka Harness Oil prevents this - protects the leather fibre - keeps straps and tugs soft, pliable and strong. Keeps harness jet black.

## Eureka Harness Oil

Standard Oil Company  
(California)

### Making Old Trees Bear

A tree is simply a big plant. It is fed through its roots and leaves the same as the tiniest clover plant. The fact that it is large and sturdy looking leads many to believe a tree can be neglected; that it doesn't need the cultivation, fertilization and general care that must be bestowed on smaller species of plants to make it thrive.

However, this belief is fallacious. To be sure, many trees will do fairly well even if neglected. But the same is true

of more fragile forms of vegetation. Some will die, others will continue to live, but will not show healthy growth; nor will they bear well if they are fruit trees, unless they happen to be favored by especially favorable natural soil conditions.

Hard, impervious soil is the tree's greatest obstacle to maximum thriftiness.

Plowing the surface, between and around trees, helps some, but when a tree is eight or ten years of age or older its roots go down several feet.

The plow cannot break up the hard subsoil and thus little or no relief is afforded the feeding roots by plowing. In fact, surface plowing encourages shallow rooting, which every horticulturist knows is bad for a tree.

To date the only practical remedy that has been found for hard soil is blasting with dynamite. Its use enables the orchardist to deeply stir and break the subsoil.

The blasting is quickly and easily done. Usually an inch and a half soil auger is employed to put down holes to a depth of about three to four feet. One-quarter pound charge of a slow dynamite, five or six feet out from the trunk, is generally sufficient for a tree under five years old. For larger trees, from two to six charges, planted at different points around the trunk, will be required. The proper point to place the holes for the older trees is out at about the edge of the foliage line.

The effect of the blasting is to break up the hard soil, enabling the roots to advance easily into new feeding beds; also to increase the water-storage capacity of the subsoil so that the tree may not suffer from lack of moisture during periods of drought.

### Apple Shipments.

Up to November 26, this year, 13,129 carloads of apples had been shipped from the Northwest. Up to the same date in 1916 11,552 cars had been shipped.

The licensing of fruit and produce dealers will increase the confidence of producers as well as consumers. It will be an incentive toward greater production.

Fresh air and sunlight combat disease in the stable. Dairy barns should be airy barns. Ventilation is conservation.

Fly a flag on the farm and teach the children what it stands for.

## Throws a Cloud of Spray



**The Hardie Orchard Gun saves your time and muscle—no long, heavy rods to hold.**

Turns a big job into a little one. One man with a Hardie Gun will do more work and do it better than two men with the old-fashioned rods.

**Hardie Orchard Gun \$12**

Low price made possible by big production—send for the Hardie Catalog today. Hardie Sprayers and spraying devices standard for 18 years.

**THE HARDIE MFG. CO.**  
Hudson, Mich.  
Also Portland, Ore.

## Northwest Fruit in Brazil

Horace A. Cardinell, Department of Agriculture,  
Rio Janeiro, Brazil.

ON December 30, 1916, nine men, contracted by the Minister of Agriculture of Brazil, sailed from the port of New York, accompanied by Mr. A. V. d'Oliveira Castro, representing the Department of Agriculture of Brazil. Three of these men are under the Climatology Division, working mainly on deciduous fruits, which as yet are practically unknown to the fruit growers of this semi-tropical country. The Pomological Division is composed of O. T. Clawson, formerly inspector at large of the Wenatchee Valley; William Johnstone, of the University of Kentucky, and myself. As we stepped aboard the Lloyd Brazilian steamer "Minas Geraes" that cold December morning in New York we were greatly surprised to see several hundred boxes of Wenatchee Valley and Blue Diamond Brand Hood River apples being loaded into the hold.

Three days after leaving New York City we reached what would correspond to a typical middle of May day in the Northwest and two days more brought us to very warm weather at Porto Rico. I am trying to give comparative climatic conditions in order that Northwest growers may realize the extremes and sudden changes of temperature and humidity to which this fruit was subjected, for after accompanying this fruit to its destination we were all surprised at its condition, which I will describe later. Twelve days from New York we entered the Tocantins River, a branch of the Amazon, and after a half-day run up this jungle-banked river we came to the wonderful City of Belem, Para, the richest rubber center in the world.

That afternoon, ashore, we happened upon a prominent merchant of Para, and Mr. Castro learned for us, as none of the rest of us could speak Portuguese, that this merchant had purchased the larger part of this cargo of apples and pears. Learning our interest in this shipment of fruit, the owner volunteered to meet us the next afternoon in the customs house, where he would allow us to open several boxes. Also I might state that quite a friendly rivalry had occurred between Mr. Clawson and myself, for I had spent seven years in Hood River on my uncle's ranch, the late Mr. H. S. Butterfield. Hence Wenatchee and Hood River had it out twenty miles from the equator over the keeping quality of the fruit from the two districts. Much was the surprise of all concerned on opening many boxes of Spitzenbergs from Hood River and Rome Beauty from Wenatchee to find the Romes comparatively free from storage scald and only one specimen among the Spitzenbergs that showed any decay.

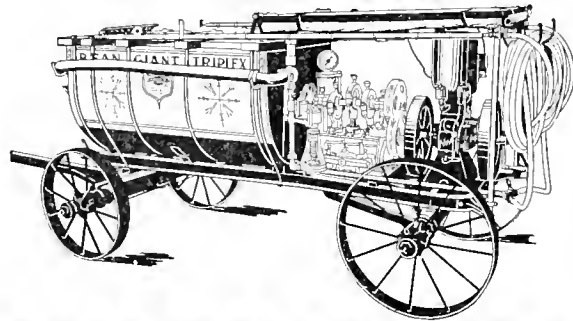
We reached Rio de Janeiro January 25, 1916, and on the 28th we were invited as a guest of Dr. Besara, Minister of Agriculture of Brazil, to attend the "Third Grand Horticultural Exposition," held in the capital. Here we saw displays of imported as well as native

# J. C. Butcher Company

HOOD RIVER, OREGON

MANUFACTURERS  
OF -

**Lime and Sulphur  
Bordeaux Paste  
Miscible Oil**



## ORCHARDISTS

Begin to investigate NOW the sprayer you are going to use this next season. When you decide, be sure you are making an investment of permanent value—that you will get an outfit that will do what others cannot do, and will save time and trouble, and make money for you for years to come. That is just what you get in the

**Bean POWER  
SPRAYER**  
*The 10-point sprayer*

You should know about Bean Porcelain Lined Cylinders, the Bean Pressure Regulator, the Pump without a stuffing box, Bean Underneath Suction, the Bean Refiller, Bean Eccentrics, the Bean Rocking Bolster, Bean interchangeable parts and Bean threadless ball valves.

You owe it to your orchard and to your pocket book to learn all about Bean Power Sprayers and the Bean complete line of hand and barrel pumps and accessories. You get Bean durability—reliability—efficiency—sturdiness in any Bean outfit you buy.

See your nearest Bean dealer at once or send coupon to us for the big Sprayer Catalog.

## Bean Spray Pump Co.

213 West Julian St.  
SAN JOSE, CALIFORNIA

Bean Spray Pump Co.  
213 West Julian St., San Jose, Cal.  
Send me the Bean Sprayer Catalog.  
I have \_\_\_\_\_ acres of \_\_\_\_\_  
I am interested in \_\_\_\_\_ hand pumps,  
sprayers, \_\_\_\_\_ accessories.  
Name \_\_\_\_\_ Address \_\_\_\_\_ power

Pacific Coast Agents  
**United States Steel  
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 Portland  
 Seattle



**J.C. Pearson Co., Inc.**  
 Sole Manufacturers

Old South Bldg.  
 Boston, Mass.

**PEARSON**  
**E**CONOMY in buying is getting the best value for the money, not always in getting the lowest prices. PEARSON prices are right.  
**A**DHESIVENESS or holding power is the reason for PEARSON nails. For twenty years they have been making boxes strong. Now, more than ever.  
**R**ELIABILITY behind the goods is added value. You can rely on our record of fulfillment of every contract and fair adjustment of every claim.  
**S**ATISFACTION is assured by our long experience in making nails to suit our customers' needs. We know what you want; we guarantee satisfaction.  
**O**RIGINALITY plus experience always excels imitation. Imitation's highest hope is, to sometime (not now) equal Pearson—meantime you play safe.  
**NAILS**

fruits and I read many familiar names of Northwestern growers on the labeled boxes. From my inquiries I learned that the above mentioned Brazilian merchant, last fall, paid the New York fruit exporter \$2.65 per box for first-grade (Blue Diamond) apples and it cost him \$1.05 per box transportation, and after he paid import duty, etc., he had to sell at \$7 to \$7.50 per box. Thus it is plain to see that the apple, and to a similar extent the pear, is a decided luxury in Brazil as yet.

I left Rio de Janeiro May 15, 1917, for the United States, representing the Minister of Agriculture, and at that late date hundreds of fruit stands and fancy grocers were daily displaying dozens of boxes of Northwestern fruit which had been taken out of storage in New York, placed in the common hold of an unrefrigerated ship, spent 28 days through the tropics and again placed in cold storage and still being sold on the market in sound condition, and from the appearance of said fruit I feel sure it was still being displayed as late as July, 1917.

Some of the Pacific Coast growers whose fruit I saw in South America were: Newtowns from George Galloway, Hood River, and V. A. Crow, Davidson Fruit Company; Newtowns, extra fancy, from the Del Rio Orchard, Devel Welks, and orchards of Gold Hill, Oregon; K. P. Keeble (half box pears), San Jose, California, and G. H. Anderson, half box E. Buerre pears, San Jose, California.

*The* **Real Test**

Not gravity, but boiling points, is the real test for gasoline. Red Crown has the correct boiling points in a continuous chain.

Standard Oil Company (California)

*The Gasoline of Quality*

**Homemade Fruit Butters**

As a final drive on fruit preserving the United States Department of Agriculture urges the making of homemade fruit butters. This is recommended not only to those who grow the fruit, but to those in the city who may take advantage of large supplies and cheap prices. In a great many cases it will be possible for city people to get from outlying farms fruit which might otherwise be wasted.

Various fruit butters recommended are apple butter with cider, apple butter without cider, apple butter with grape juice, apple butter with lemons, pear butter, peach butter, plum butter, and Garfield butter made with plums and peaches. With the exception of a good preserving kettle very little equipment is needed for the preparation of such butters.

**Apple Butter.**

There is no better way to use good apples, says the department, than to make them into butter. The sound portions of windfalls, wormy, and bruised apples may also be used. The better the apple the better the butter will be. In apple butter with cider either fresh sweet cider, or commercial sterilized cider should be used, after being boiled down to about half its original quantity. The peeled and sliced apples may be cooked in the boiled cider or they may be first made into apple sauce which is then cooked

**Pittsburgh Perfect Cement  
 Coated Nails** are of the highest standard

The Heads don't come off. Given Preference by Largest Pacific Coast Packers

MANUFACTURED EXCLUSIVELY BY  
 PITTSBURGH STEEL COMPANY, Pittsburgh, Pa.

A. C. RULOFSON COMPANY, Pacific Coast Agents  
 359 Monadnock Building, San Francisco, California

in cider. It usually takes about equal quantities of sweet cider and sliced apples to make butter of the right consistency. In other words, two gallons of sweet cider should be boiled down to one gallon, and two gallons of the prepared apples should be added to it either uncooked or as apple sauce. The two essentials of good apple butter are long, slow cooking—from four to six hours—and frequent stirring. If sugar is used, it should be added after the cooking is about two-thirds done. About one pound of sugar is the usual proportion for each gallon of apple butter but more or less may be used to suit the taste. The butter may be spiced with cinnamon, cloves and allspice, or with any one of the three, the spices being stirred in when the cooking is finished. While still boiling hot the butter should be packed in sterilized glass receptacles, or in stone jars, with thorough precautions against spoiling as with any other preserves.

#### Apple Butter Without Cider.

Good apple butter may be made without cider. In this case enough water is added to make a thin apple sauce. Brown sugar rather than white sugar is ordinarily used. If a grape flavor is desired, it may be obtained by the use of grape juice in the proportion of one pound to each gallon of the peeled and sliced apple. There should also be added a cup of brown sugar and one-fourth teaspoonful salt. When the desired thickness is obtained, one teaspoonful cinnamon is stirred in.

Pear butter is made like apple butter without the cider.

#### Distributing Fertilizer

Not enough attention is paid on the average farm or orchard to the matter of securing distribution throughout the lower soil of the commercial fertilizers that are applied. A careful examination of orchard soils which have had water applied in furrows or basins for several years will show an accumulation of nitrates especially, just under the surface at the points where the water stood last. If certain trees happen to stand with roots close under these areas, they probably are thrifty; if a little farther away, they may be starving.

The trouble is due to the fact that the pore spaces of the soil are clogged enough to cause the earth to act as a filter. The water which seeps and percolates slowly downward and in other directions is robbed of the plant food dissolved in it. In time the clogging may continue till an actual cementing takes place, and the soil, though mellow and open when the trees were planted, actually may take a hardpan condition.

Aside from the matter of distribution of fertilizer, such soils give trouble in the application of water. They will not take water as rapidly as they should, nor will they hold a sufficient supply in capillary form to



*Thirty-five Years of  
Experience Behind "Caterpillar"  
Tractor Construction*

Always the right material in the right place—that is one reason for "Caterpillar" Tractor superiority, developed by thirty-five years of Holt experience. Some parts of the Tractor must be hard-surfaced, to resist wear. Other parts must be tough, to withstand vibration, or must possess other special qualities. Holt experience of three and a half decades has given the expert knowledge of design and construction that makes the "Caterpillar" Tractor the longest-lived, most efficient tractor built.

Efficiency, low operating expense, low upkeep costs—these "Caterpillar" Tractor features bring bigger profits to "Caterpillar" Tractor owners. The "Caterpillar" Tractor is a tractor service—built for service, backed by service. The investment in such a machine pays liberal returns.

Complete information concerning the "Caterpillar" Tractor sent on request.

**The Holt**  
MANUFACTURING CO. Inc.  
Stockton, California  
Peoria, Illinois  
Los Angeles, California  
Portland, Oregon  
Spokane, Washington  
San Francisco, Cal.

**CATERPILLAR**  
Reg. U.S. Pat. Off.

## 4 Trains Daily PORTLAND TO SAN FRANCISCO

OFFER A VARIETY OF ACCOMMODATIONS

OVER THE

### Scenic Shasta Route

TO

### Sunny Southern California

A Six Months Round Trip Ticket with Stopover Privileges will enable you to visit all points of interest.

Ask any agent for full information or write  
John M. Scott, General Passenger Agent  
Portland, Oregon

## Southern Pacific Lines

# Ridley, Houlding & Co.

COVENT GARDEN, LONDON

Points to remember when consigning  
apples to the London Market

1.—We Specialize in Apples

2.—All Consignments Receive our  
Personal Attention

3.—The Fruit is Sold by  
Private Treaty

CABLE ADDRESS: BOTANIZING, LONDON

LESLIE BUTLER, President  
TRUMAN BUTLER, Vice President  
C. H. VAUGHAN, Cashier

Established 1900

## Butler Banking Company

HOOD RIVER, OREGON

Capital . . . \$100,000.00

4% Interest Paid in our Savings Department

WE GIVE SPECIAL ATTENTION TO GOOD FARM LOANS

If you have money to loan we will find you good real estate security, or if you want to borrow we can place your application in good hands, and we make no charge for this service.

THE OLDEST BANK IN HOOD RIVER VALLEY

# F. W. BALTES AND COMPANY

*Printers · Binders*



Unexcelled facilities for the production of Catalogues, Booklets, Stationery, Posters and Advertising Matter. Write us for prices and specifications. Out-of-town orders executed promptly and accurately. We print BETTER FRUIT.

CORNER FIRST AND OAK STREET'S  
PORTLAND, OREGON

last between irrigation periods for normal soil. In fact, the two troubles are related that wherever it is seen that water sinks slowly, or that areas tend to dry out too quickly, it may be taken for granted that the under-soil lacks its due share of fertilizer.

The remedy is deep tillage. That, and that alone, will open up and crumble the soil enough to permit the penetration of water and the carrying down of whatever else may be applied to the surface. Many orchards throughout the Northwest have been blasted, but only at the points where the trees stand. The blasting should be done along the rows between the trees, at least one way, and well may be done over all the space between the trees. And those orchards which have not been heavily cover-cropped should be rebasted now. Roots of annual plants penetrating in masses to the lower soil will keep it open and fine for years, but if the breaking is not accompanied with cover-cropping, the original clogging and compacting may occur again soon.

No fruit trees will thrive properly on plant food they must secure from the top eight or ten inches of soil, no matter how much is put on there. They must be able to get it down where most of the feeding roots are located. Surface cultivation is a mild and ineffectual treatment at best. Provision should be made for filling the under-soil with irrigation water, and for making the water carry down the materials needed by the trees.—Contributed.

### Potato "Don'ts"

Don't injure the selling and storing quality of your potatoes by careless digging.

Don't glut the fall market and injure your winter market by placing large quantities of ungraded stock on the market at harvesting time.

Don't ship any frost-damaged potatoes. It is disastrous.

Don't demoralize the already overburdened transportation facilities by shipping cull potatoes. Unless potatoes are extremely high in price, culls will not bring transportation charges.

Don't overlook the advantages of "machine sizers." They are proving of great value in many shipping sections.

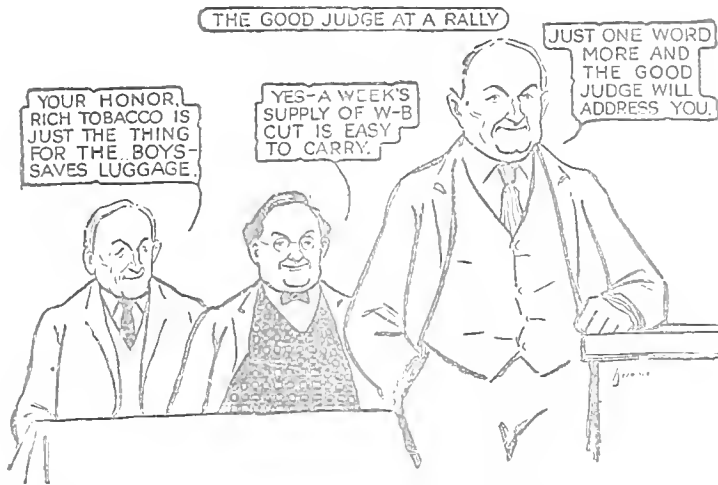
Don't expect machine sizers to grade for quality—only human hands can grade out the defective tubers.

Don't mix No. 1 and No. 2 grade potatoes. There are customers who desire each separately, but do not want them mixed.

Don't overlook the potato grades recommended by the United States Department of Agriculture and the United States Food Administration.

Farm boys should lay in plenty of nuts and popcorn. It's going to be patriotic to eat it instead of candy this winter.





THE Call to the Colors calls for thrift and common sense by everybody. A 10c. pouch of W-B Cut Chewing goes twice as far as 10c.'s worth of ordinary tobacco. That's the big point: W-B Cut isn't ordinary tobacco, it's *rich* tobacco and a lasting chew.

Made by WEYMAN-BRUTON COMPANY, 1107 Broadway, New York City

## TOWER'S FISH BRAND REFLEX SLICKER

Practical as a plow, and just as necessary. Make every rainy day count.

Waterproof's Absolute are Marked thus—



A.J. TOWER CO. BOSTON

### "A Most Satisfactory Motor Oil"

#### SAXON

Dubroy Motor Co., San Francisco

"From our own, and the experiences of Saxon owners, we know Zerolene to be a most satisfactory motor oil."

#### PACKARD

Cuyler Lee, San Francisco

"It has proven entirely satisfactory."

#### CHEVROLET

J. W. Leavitt & Co., Los Angeles

"Zerolene is our choice for use in Chevrolet cars."

#### FORD

The Universal Motor Co., Sacramento  
"have no hesitancy in recommending it to Ford owners."

Thus endorsed by Leading Car Distributors

—because the records of their service departments show that Zerolene, correctly refined from California asphalt-base crude, gives perfect lubrication—less wear, more power, least carbon deposit.

# ZEROLENE

## The Standard Oil for Motor Cars

Dealers everywhere and at our service stations.

STANDARD OIL COMPANY  
(California)

For tractors, Zerolene Heavy-Duty is especially recommended.



HONORBILT



For style and comfort wear

Mayer

### HONORBILT SHOES

For all the Family  
Ask your dealer for Mayer Shoes. Look for the trademark on the sole.

F. Mayer Boot & Shoe Co.  
Milwaukee, Wis.

## The First National Bank

HOOD RIVER, OREGON

A. D. MOE - - President  
E. O. BLANCHARD - Cashier

Capital and Surplus \$125,000  
Assets Over \$500,000

Member Federal Reserve System

In conformity with the suggestion and at the request of the National  
Food Administration under the direction of

**MR. HERBERT C. HOOVER**

ASSISTED BY

**Messrs. G. Harold Powell and E. W. J. Hearty**  
IN THE FRUIT DIVISION

## NEW YORK

desire to advise the trade in general, and their out-of-town customers in particular, that their entire holdings of purchased apples and other fruits, will, during the duration of this war, be only sold within the limits of the Metropolitan district for consumption and use by the people of Greater New York.

Under no circumstances will we allow any of our salesmen to sell to speculators, our sincere intention being to get as close to the actual consumer as legitimate business tactics will permit.

Being unquestionably the largest holders of box apples in the country, it will be our earnest endeavor to keep prices on an even, equitable basis of values and we will permit no manipulation of our holdings that might tend to create abnormal prices.

To prove our sincerity at this critical time in our country's history, we will not, during the war, allow a single car of our holdings, no matter where stored, to be diverted from New York to other markets for speculative purposes.

The pyramiding of prices as practiced in some industries at this time is a crime against the nation of which we trust no firm in the fruit and produce trade will be guilty.

We feel certain that our stand in this matter will result in stabilizing values, thereby bringing fruits, which are so necessary and healthful, to consumers at a fair and reasonable price.

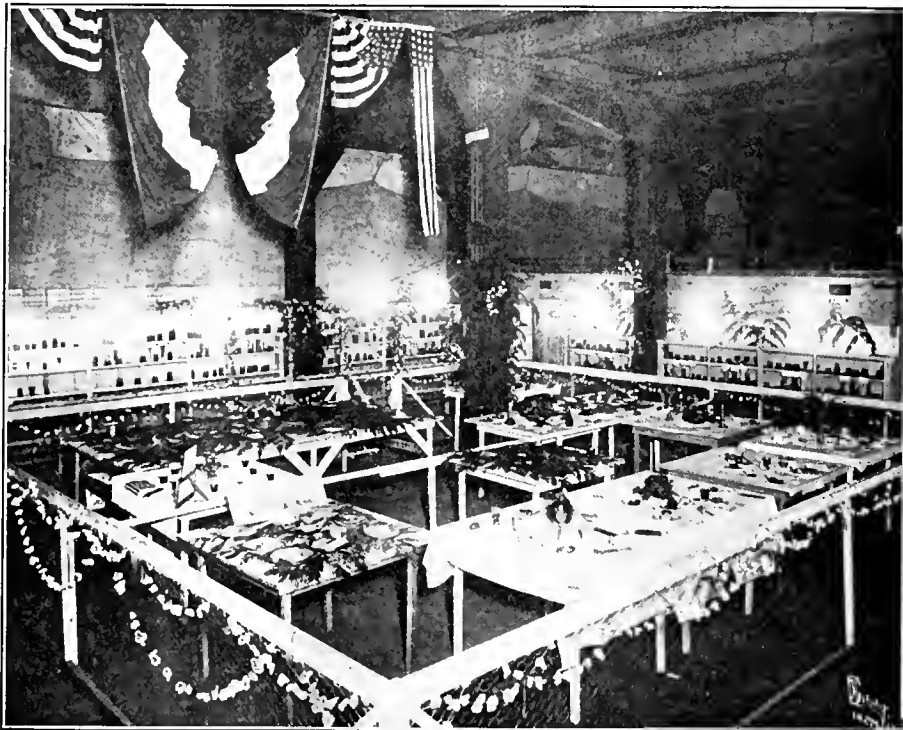
## NEW YORK

# BETTER FRUIT

VOLUME XII

JANUARY, 1918

NUMBER 7



HOOVER DINNERS AT NATIONAL APPLE SHOW, SPOKANE, NOVEMBER 19-24, 1917.

A most interesting feature of the Women's Department at the Tenth National Apple Show.

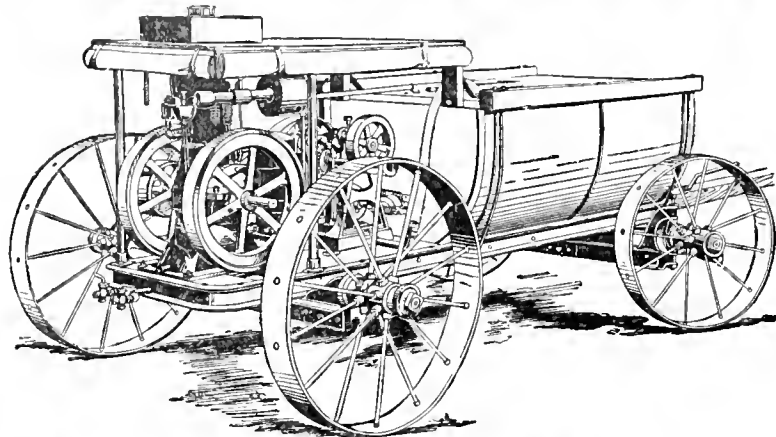
Every contestant was requested to serve an entire meal in which apple products were featured and Hoover conservation emphasized.

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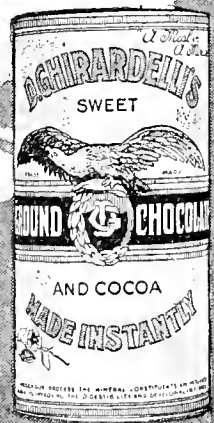
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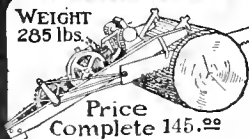
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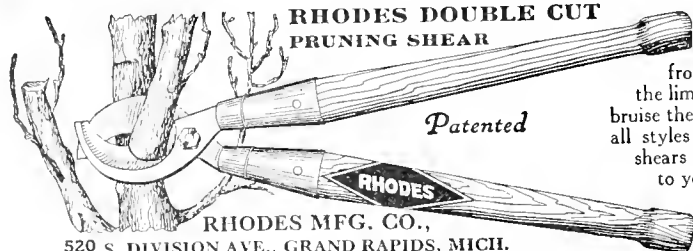


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TOPPENISH, WASHINGTON

# BETTER FRUIT

AN ILLUSTRATED MAGAZINE PUBLISHED MONTHLY IN THE INTEREST OF MODERN, PROGRESSIVE FRUIT GROWING AND MARKETING

## Food Value of Fruits

Address by E. S. Gill, Secretary Seattle Produce Association, Before the Seattle Rotary Club, December 5, 1917

**I**F this great war accomplishes nothing else of benefit for America, it will almost be worth its cost in what it is doing in teaching the people thrift. Americans have been known for years as the most extravagant people on earth and in no way is this extravagance more noted than in their waste of food. In any other nation, the American garbage can would have been a great source of wealth. Happily, we are beginning a reformation in our mode of living and are realizing that the words, Economy, Thrift and Industry have a very prominent place in our vocabulary. We have been a nation of meat eaters, eating more meat than any other people, with the result that we have been more subject to stomach and intestinal troubles and other diseases that are readily preventable than any other nation.

The Russian-Japanese war was a revelation to the world as to what people could do whose main sustenance consisted of a vegetable diet. Assisted by their splendid medical service, the Japanese suffered a less loss from sickness and disease during that war than any other nation had ever experienced in war in the history of the world. Their soldiers were free from disease and taints in the blood and could withstand hardships, exposures and strain as no other men had ever been able to do before.

With the necessity for practicing economy in our consumption of food in this country in order to furnish supplies to our Allies, people now realize that they can do with less meat than they have been accustomed to in the past. They are slowly learning to substitute fruits and vegetables for the meat and wheat diet. But scarcely any of us have gone as far in this direction as we should and ultimately will go. People do not eat as much fruits and vegetables as they should. In the war scare of one year ago, aided by short crops in many of the staples, prices went skyrocketing until people almost ceased using such staples as potatoes and onions, but there is no excuse for such action now with the moderate prices prevailing.

The human body is made up of millions of small cells, somewhat as the honeycomb is made up of great numbers of cells. The cells in the body are so very small that they cannot be seen without a powerful microscope, but each of these microscopic cells must be strong, if the whole body is to be a strong, healthy body.

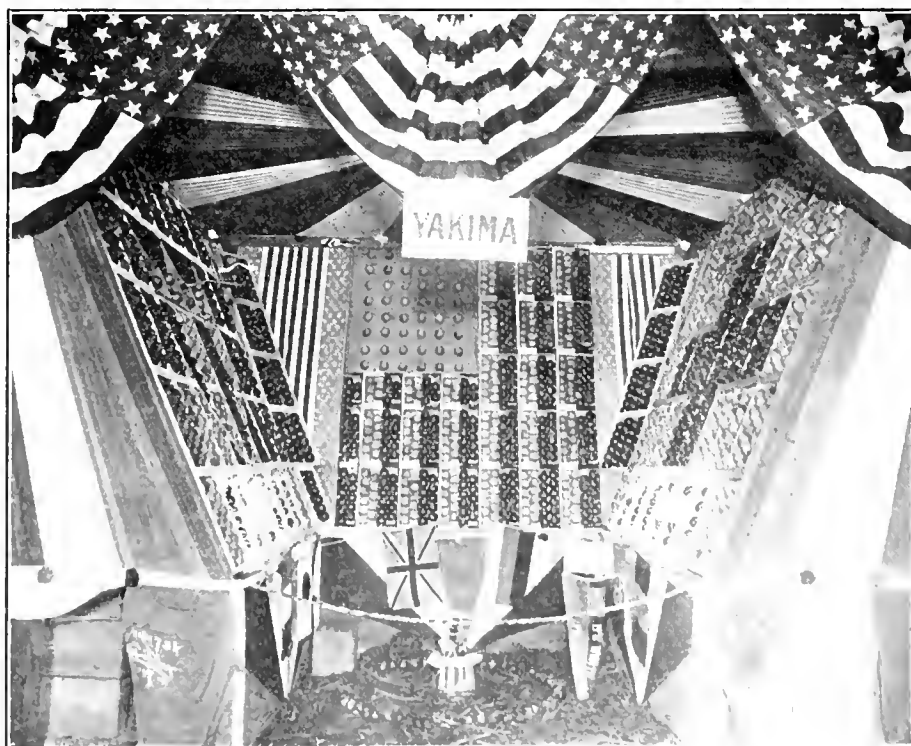
The American people have been especially neglectful in the use of fruit. Of course, while we were a pioneer nation

and the majority of our population were living upon the farm, engaged in pioneer work, they required a strong, heavy diet, but now that the conditions have changed, we have been slow to change our methods of eating and to adapt ourselves to the use of foods that are more applicable to the occupations in which we are now engaged. King of all the fruits is the apple. You are all familiar with the old saying, "An apple a day keeps the doctor away," and I want to tell you that I know from experience there is very much truth in this old saying. If people would eat apples, not simply one a day, but two or three or four a day, they would be very much healthier than they are and would not feel the need of so much of the heavier foods. The apple is a tonic as well as a nutrient. There have been many mystic traditions about the apple, which has been credited with varied potency. It is the healing fruit of the Arabian tales. Latin chronicles and institutes and early English poems contain many reference to it. Scientific analysis of late years has justified all the ancient glorifications of this fruit, which has been found to contain albumen, sugar, gum, malic acid, gallic acid, fiber, water and phosphorus.

Malic acid of apples neutralizes the excess of chalky matter caused by too much meat and thereby helps to keep us young. Apples are good for the complexion, as their acids drive out the noxious matters which cause skin eruptions. They are good for the brain, which those same noxious matters, if retained, render sluggish. The acids of the apple diminish the acidity of the stomach that comes with some forms of indigestion.

Apples should be used very freely, far more so than they are today. There is no cheaper food on the market than apples at the prevailing prices. Good cooking apples can be had at from 2½ to 3 cents a pound, while the best quality of eating apples can be had at 5 to 6 cents a pound, these being retail prices; at 3 cents a pound, apples cost but 1 cent per 100 calories, or 2 cents per 100 calories for the best variety of eating apples at 6 cents per pound, or 1.6 cents for the high quality apples at 5 cents per pound and the good old apple pie at 25 cents per pound costs but 2 cents per 100 calories.

Other fruits in the market at the present time, such as bananas, grapes and oranges cost more, but even these are not high priced considering their



District Display Prize Winner, Yakima Valley's district display at Tenth National Apple Show, Spokane, November 19-21, 1917. Various commercial packs were shown and all of the fruit on display scored unusually high.



Operating Packing House at Apple Show.

A complete apple packing house was in full operation at the Tenth National Apple Show in Spokane, November 19-24, 1917. The fruit was brought into the warehouse from several orchards and handled completely in the building before the spectators and turned out in commercial pack.

food value. Bananas at 7½ cents per pound cost 1.7 cents per 100 calories, and grapes at 20 cents a pound cost but 1.6 cents per 100 calories, less than the cost of round steak. Oranges cost 4.3 cents per 100 calories.

There is no reason why there should be so many oranges consumed in the City of Seattle or in the State of Washington when it is remembered that we produce the finest apples in the world, and that the apple possesses more than double the food value and tonic value of the orange. Instead of serving an orange on your breakfast table, serve an apple and help home industry as well as helping your stomach for its day's work. Eat another apple at night before you go to bed. It is the best thing you can do. Leave out the cake and the sweets and the coffee. Take an apple and a glass of water.

Even dried apples are not to be despised. I can remember when the average farm wife in the Middle West dried her own apples in the fall, and the family were very glad to have mother's dried-apple pie along in the late spring and early summer, and dried apples at 20 cents a pound, the present retail price in Seattle, cost 1.5 cents per 100 calories. Dried apricots at 25 cents a pound only cost 2 cents per 100 calories; prunes at 17½ cents per pound cost but 1.3 cents and raisins at 15 cents a pound cost but 1 cent for 100 calories, and that brings me to pointing out the value of nuts and fruits in your daily diet. Such nuts as peanuts, Brazil nuts, pecans, almonds, walnuts, hickory nuts, take the place of meat better than any other foods, not excepting beans, which hitherto have been the best-known substitute for meat. Have you ever been out on a hunting or fishing trip and noticed how well satisfied you felt after eating a few nuts to assuage your hunger. They contain the fats the body needs, in a condensed form, and even at the present prices, they are cheaper

than meats. Soft-shelled walnuts at 30 cents a pound cost but 2 cents per 100 calories and almonds at 25 cents per pound cost but 1.6 cents per 100 calories, while the humble peanut at 12½ cents per pound cost but .75 cent per 100 calories. Nuts and raisins make as fine a lunch as anyone could ask for because they possess all the nutritive elements of wheat and meats and fats combined.

Even canned fruits and canned vegetables are as cheap and in many cases cheaper than meats, particularly such vegetables as canned beans, corn, sweet potatoes and peas. Don't be afraid to use the humble prune either, and in so doing you are not only using a useful and healthful fruit, but helping a home

industry. Cherries in season are another fruit that should be used freely, even at the current prices of the last two years. Pears are next to the apple in their food value in proportion to prices. They should not only be used freely while fresh, but every family should eat plenty of them in season.

I hope I have not made this talk too technical. What I wanted to accomplish is to impress upon you the value of a fruit and vegetable diet; not only of its value as to health, but in its economical value from the pocket-book side. But above all else, I would say to you now, of the vegetables eat more potatoes, more carrots, more parsnips, more spinach, more celery than you have been in the habit of doing, and above all and everything else, eat more apples, then still more apples and you will be healthier, wealthier, wiser and more efficient mentally and physically in the future than you are today.

**Jams, Jellies and Preserves.**

Possibly the price of butter has already suggested the use of jams, jellies and preserves in larger quantities than usual. But aside from the saving in cost, there is a national service as well. Butter is readily transported and exported, whereas these other products, which are usually put up in glass jars, lend themselves best to home or local consumption. Eat as much as possible of the home-grown products, thus releasing foods which naturally flow in large commercial channels for shipment abroad. This policy has the endorsement of the United States Food Administration and is essentially sound. Jams, jellies and preserves do not have the same kind of nutriment as butter and are not a substitute, but the judgment of the American housewife and mother is sufficient safeguard against an excessive reduction of butter consumption.

**California Deciduous Fruit Shipments**

[From the Packer]

It now appears perfectly safe to place an estimate of \$35,000,000 on the deciduous fruit crop of California for 1917, shipped in the fresh state to markets outside of the state. Already the car-load shipments have passed 23,000 carloads, which is 3,000 carloads above early estimates.

It is figured roughly by local fruit men that these carloads of fruit should be placed at a value of \$1,500 each. The figure is not large for this season, though a definite check would require an enormous amount of bookkeeping,

for prices have been by far the best on record. A figure of \$1,300 a car was taken as a basis for the figures of last season, the total of which was some \$12,000,000 below that of this year.

A truly marvelous growth has taken place in the deciduous industry. For the sake of the comparison, the shipments for five years are given herewith. It must be remembered in glancing over this table that the 1917 season is not yet through. If rain holds off long enough it may be possible to ship 1,000 carloads of grapes yet. The table follows:

	Cherries	Apricots	Peaches
1913	231	158	2,359
1914	166	382	2,111
1915	205	392	1,689
1916	161	230	1,909
1917	295	103	2,131

Pears	Plums	Grapes	Misc.	Totals
2,196	1,706	6,363	19	13,332
2,725	1,907	8,773	49	16,116
2,646	2,225	9,563	58	16,778
3,701	1,999	9,722	107	17,891
1,766	2,651	12,319½	47	22,951

The following is a comparative statement of the deciduous fruit movement from the state, issued by Charles E.

	Cherries	Apricots	Peaches
1917	295	103	2,130¾
1916	161	289½	1,909½

Virden, general manager of the California Fruit Distributors, for the season up to and including November 10:

Pears	Plums	Grapes	Misc.	Totals
4,768½	2,650¾	12,600	61	23,209
3,699¼	1,998½	9,331¼	101¾	17,130¾

# Tenth National Apple Show, Spokane, Washington

By Ren H. Rice, Publicity Secretary, Spokane Chamber of Commerce

**T**WO big outstanding features marked the Tenth National Apple Show held in Spokane, November 19 to 24, 1917. Patriotism was the dominant note throughout all the plans for entertaining the big crowds, in the decorations and in the speeches delivered at the growers' conferences. Practical instruction for grower, shipper and user of fruit, along the latest lines, was the other big feature.

The show was a success in every way. In spite of the fact that nearly every section of the Northwest had a reduced crop; in spite of the fact that campaign after campaign had been carried on in Spokane for various war and civic purposes; in spite of the fact the show was held at a time when attention was universally focused on the war, still the apple show drew an attendance of 46,000 in six days.

So successful was the show from every standpoint that it is now regarded as certain that the big annual exposition will be continued from year to year without even a thought of its abandonment.

An example of the close competition is illustrated in the pictures shown in BETTER FRUIT of the exhibits made by the Yakima district and the Deer Park district. On quality, commercial value, pack and attractive arrangement, the judges were puzzled between the two exhibits. Eventually the prize was given to Yakima on the narrowest of margins, the second award, of course, going to Deer Park, with the frank admission by the judges that it was a hair-line decision.

The Yakima Commercial Club consequently carried home the gold medal banner and a check for \$125, and the Deer Park Commercial Club rooms are adorned with a silver medal banner and the treasury is enriched \$75.

In the feature displays wherein organizations were competing on uniqueness of design, originality of conception and attractiveness of display, the Hamilton Chamber of Commerce carried off \$125 and the gold medal banner for its exhibition of a Ferris wheel. The wheel was eighteen feet in diameter with the radiating spokes in alternate red and blue colors and each of the sixteen cars consisted of a box of McIntosh Red apples from the Bitter Root Valley, Montana. The wheel was constantly in revolution. The judges' award met universal approval, although the Walla Walla Commercial Club's flag, composed of apples, and the Spokane Valley growers' display in the shape of a Washington monument, were close contenders. The latter two were awarded second and third prizes, respectively.

The Upper Columbia Company of Marble, Washington, took first honors in the apple shippers' brand contest; the Arcadia Valley Fruit Growers' Association of Deer Park, Washington, won second; and the Entiat Fruit Growers' League of Entiat, Washing-

ton, won third. This contest was limited to bona fide shippers of apples, whose showing of brands were judged upon their effectiveness as worked out through the use of fruit. Each entry was required to be not less than 75 and not more than 100 boxes, with the addition of 30 boxes allowed for decorative purposes. This was another contest in which the judges grew a few more gray hairs in making their awards.

In the straight commercial exhibits by individuals the sharpest rivalry centered over the championship of \$50 in gold for the highest scoring box of apples and the \$100 gold champion for the highest scoring five boxes.

In the single-box classes 22 varieties were allowed, each one competing only against other entries of the same variety. H. S. Bugdell of Yakima won the single-box championship, scoring 95.7 on his box of Arkansas Blacks, which, of course, was also first-prize winner in the regular single-box Arkansas Black contest.

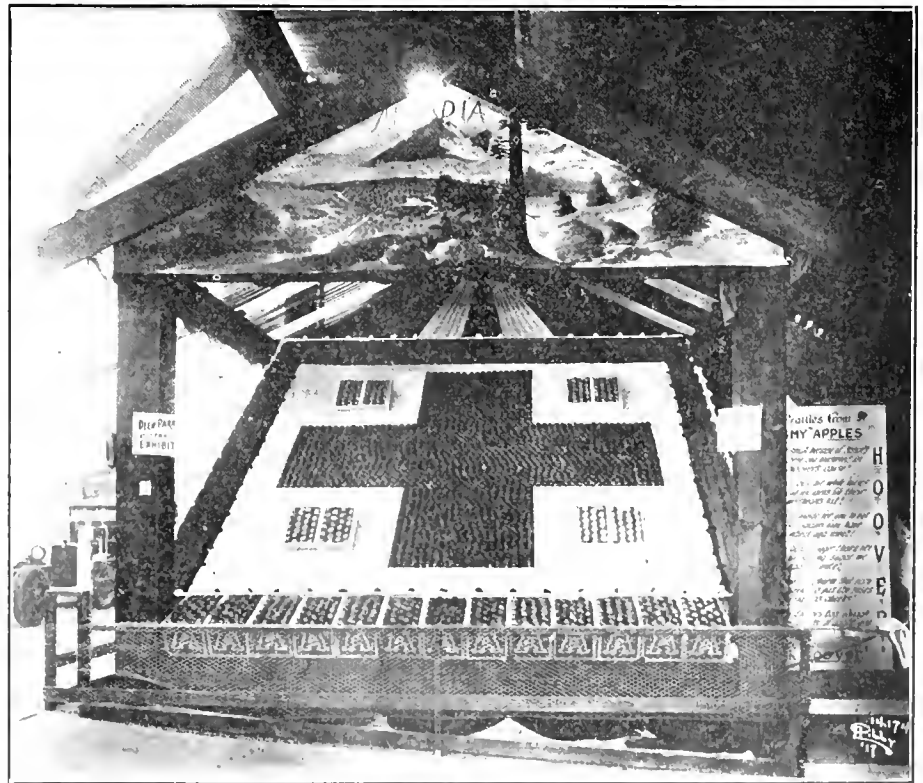
H. Van Marter of Opportunity, Washington, captured the \$100 championship in the five-box contest. By an unusual coincidence this contest was also won on Arkansas Blacks, Mr. Van Marter's entry scoring 95.9. This entry also won the first prize of \$25 in its class.

The exhibitor making the greatest number of entries in all classes was offered an "Exhibitor's Sweepstakes" of \$25. The same amount was also offered to the exhibitor who won prizes

in the one, three and five-box classes. A. L. Smith of Brewster, Washington, went home with both prizes in his pocket. He came to the show with all kinds of exhibits and announced his intention of giving every one a close run. He kept his word. He won first prize on five-box display of Spitzenbergs, Jonathans and Winesaps; first on three-box showings of Mammoth Black Twig and Spitzenberg; first on one-box displays of Grimes Golden, Mammoth Black Twig, Winter Banana and Winesap, and just to fatten up his average a little he grabbed second and third prizes in several other contests.

Unusual attention was attracted to the women's department this year, because in this was given the most practical lessons on food conservation, both from the standpoint of necessity to the nation during the war period and for general health and economical purposes at all times. Federal Food Administrator Herbert Hoover had given special approval of the plans for food conservation demonstrations and had made a number of suggestions which were faithfully carried out. He laid special emphasis on the value of contests in the home-made by-products classes, with particular emphasis on the desirability of illustrating the making of apple butter, apple syrup and apple cake.

The "Hoover Special Dinner" attracted more attention than any feature given of the women's department at



Huge Red Cross in Apples.

The Deer Park Commercial Club, of Deer Park, Washington, had a most effective display at the Tenth National Apple Show in Spokane. An enormous red cross was shown against a white field. In addition the display consisted of a quantity of apples from the Arcadia section at Deer Park, featuring the Big "A" brand.



ITS ALL IN THE WRINKLE

ITS ALL IN THE WRINKLE

cooking were given in a lecture room adjoining the women's department. These lectures and demonstrations were given by representatives of the Washington State College faculty and of the United States Board of Food Economy.

A new and highly appreciated educational feature was the showing of an accounting department run in connection with the daily demonstrations of a packing house. The accounting department was under the supervision of the Bureau of Markets of the United States Department of Agriculture, which has become so impressed with the value of going direct to the fruit men that instructions were given to put in a complete office demonstration at the apple show.

J. H. Conn, assistant in market business practice, was assigned to the management of the office as a special representative from Washington. He had a trained staff at his disposal, provided with every modern equipment required to illustrate the proper accounting systems in fruit handling. The demonstration was run in connection with the operating packing house. The apples were checked in when they entered the warehouse and followed throughout all of their handling up to the time they were billed out to the Spokane Growers' Company, which concern bought all the fruit used in the packing house.

Mr. Conn and his assistants went into complete detail showing how each and every item of cost should be properly entered and explaining the value of modern equipment and up-to-date methods as applied to every branch of the fruit industry. The booth was crowded all the time during the show and expressions of approval were heard on all sides. It is probable that the Department of Agriculture will install a similar feature at each of the future shows.

The packing house, in full operation, was again of especial value. The big grader and sorter was running morning, afternoon and evening with a full crew of packers, handlers and superintendent. Instead of having a quantity of selected apples to be repeatedly used in the demonstration, the packing house handled the fruit from several orchards on a regular commercial basis. The apples had been bought in the orchards by the Spokane Fruit Growers' Company and when put through the packing house, they were sent out as a regular commercial product. The advantage in this system was that the grower saw the full actual operation and not merely a demonstration with selected fruit.

There was an unusually large line of orchard appliances on exhibition. These included several varieties of spray pumps, pruning implements, spray material, trucks, tractors, picking bags, ladders, etc. All of them were given prominent positions in proximity to the packing house and orchard accounting room, an arrangement which pleased every one interested. Many growers spent their entire time in the section of the building devoted to the practical

Continued on page 26

any previous shows. This dinner was required to be a complete, well-balanced meal for one person, composed of from five to ten dishes, all made wholly or in part from apples and all carrying out the Hoover idea of food conservation. Each contestant was required to bring in everything pertaining to her entry, including cloth, dishes, silverware, food and all table appointments. The judging was done upon food value, palatability, attractiveness

to Mrs. A. C. Dukelow, N. 2209 Perry Street, Spokane, who carried away \$50 in gold with first honors. In making up the dinners contestants were allowed such combinations as apple butter served with muffins, counting as one dish, or cookies served with apple fluff, counting as another. The complete meal as prepared by Mrs. Dukelow cost less than 22 cents per person served. Her menu and its scoring record follows:

	Proteins	Fats	Carbonates	Calories	Cost
Cocktail	1.0	3.0	138.0	125.0	.021
Soup	12.0	19.0	68.0	99.0	.006
Bean Loaf	96.0	189.0	112.0	397.0	.01
Potato	16.0	9.0	111.0	130.0	.006
Onion Patties	9.0	11.0	57.0	77.0	.01
Cabbage and Apple	6.6	20.6	52.0	79.6	.006
Rye and Cornmeal Muffins	21.0	25.0	186.0	232.0	.013
Apple Fluff	21.0	15.0	95.0	153.0	.02
Apple Salad	26.0	118.5	93.0	257.5	.01
Cookies	20.0	107.0	110.0	267.0	.01
Cider	...	...	119.0	119.0	.02
Butter	0.5	99.0	...	100.0	.02
Rye Crisps	1.0	8.0	31.0	16.0	.005
Totals	222.0	671.0	1185.0	2681.0	.217

and economy. So extensive was the competition that it was necessary to set aside a special division, and this division was added to from time to time, crowding other displays into the background. As one of the judges said, "It makes a man ravenous to look at those dinners."

This contest was another poser for the judges. The decision finally went

Other exhibits in the food-conservation classes embraced 33 separate by-products, ranging from apple mamalade to apple jelly. Liberty bread was in demonstration, also economical apple pies and another Hoover special showing products made strictly from cores and skins of apples.

At stated hours through the day practical demonstrations in economical



# Blast holes for trees and give the roots more pasture

A tree in a blasted bed (at left) roots deeper, grows faster and bears earlier than a tree set in an ordinary dug hole (at right).

"The soil is the pasture in which the roots of the tree feed," says the Wyoming Experiment Station. "Blasting enlarges the root pasture, breaks up the hardpan and subsoil and permits the roots to go down and get plenty of food."

Plant your fruit trees in beds blasted with

## GIANT FARM POWDERS STUMPING—AGRICULTURAL

—Eureka Stumping or Giant Stumping— which are made especially to meet Pacific Coast farm and orchard conditions. They pulverize the subsoil better than ordinary dynamites which often act too quickly and pack the earth.

### Book "Better Orchard Tillage," FREE

It tells and shows how to give your trees more pasture; how to blast for planting and how to increase the crops of bearing trees. Other books—on Stump Blasting, Boulder Blasting, Ditch Blasting and Subsoil Blasting for farm crops—are also sent free. Mark in the coupon the books that you prefer.

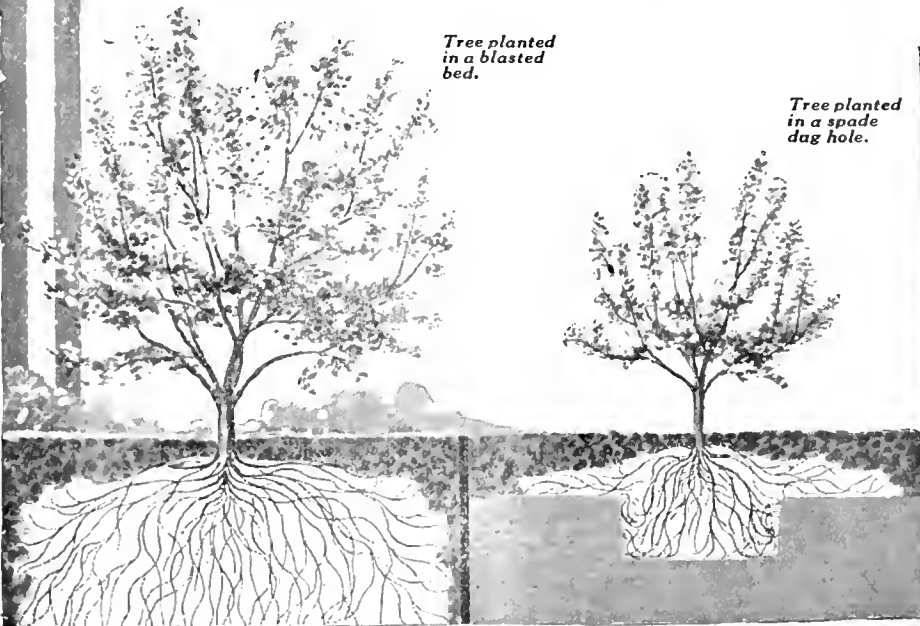
Because the superiority of Giant Farm Powders is so generally acknowledged, other explosives are frequently offered as "giant powder." Insist upon having the genuine—always bearing the Giant brand.

### THE GIANT POWDER CO., Con.

HOME OFFICE: SAN FRANCISCO

"Everything for Blasting"

Distributors with magazine stocks everywhere in the West



### FREE BOOK COUPON

THE GIANT POWDER CO., Con.  
San Francisco.

Send me your illustrated books on the subjects which I have marked X:

- Stump Blasting
- Boulder Blasting
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- Tree Planting
- Ditch Blasting

200

Name \_\_\_\_\_

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Write below your dealer's name.

# Compatibility Table—Insecticides, Fungicides

EDITOR'S NOTE.—It is frequently necessary to combine different sprays to spray for different diseases and pests at the same time. For the reason that in order to get proper control of two different troubles it is necessary to spray with two or more materials at the same time. In addition, combining sprays is economy. In doing so two or three spray materials can be put on at one time, instead of going over the orchard two or three times. Just what sprays can be mixed and what can not be is a subject that many growers are not thoroughly familiar with. Information on this subject has not been in very definite form nor arranged in a practical way for the fruit grower. It is frequently difficult to find out and necessitates the asking of many questions. Mr. George P. Gray, of the Experiment Station of the University of California, has arranged this information in a very practical way in tabular form, which will be of assistance to the growers.

	Fungicides			Contact Insecticides						
	Paris Green	Bardeaux	Lime-Sulphur	Iron Sulfid	Cyanid Fumigation	Tobacco	Soaps	Emulsions	Alkalies	Acids
Stomach Poisons (Arsenical)	Paris Green	A-1	D	A-1	D	?	D	D	D	D
	Calcium Arsenite	A	D	A		A	D	D	D	D
	Lead Arsenate (Acid)	A-1	?	A-1		A	D	D	D	C
	Lead Arsenate (Neutral)	A	B	A		A	A	A	A	D
	Zinc Arsenite	?	D	A-1		A	D	D	D	D
Contact Insecticides	Lime-Sulphur	?	—	—	A	A	C	D	C	C
	Emulsions	?	D	C		A-1	A	—	D	D
	Soaps	A-1 or B or C or D	C	C		A	—	—	A	C
	Tobacco		A	A		—	—	—	B	A
	Cyanid Fumigation	D	A							
Acids	D	C	D						C	
Alkalies	B	C	D							
Class										
A-1—Better results by mixing.										
A—Properties not changed by mixing.										
B—Efficient, non-injurious.										
C—Inefficient, non-injurious.										
D—DANGEROUS MIXTURE.										
[Arranged by Geo. P. Gray]										

	Cars
Walla Walla district	100
Spokane district	30
Yakima Valley district	3060
Wenatchee district	1125
White Salmon district	2
Total	4317

Reports from the fruit commissioner of Canada, Donald Johnson, shows about 132,800 barrels, or about 630 carloads, in storage in Canada, December 1.

### Fruit Products

The demand for fruit at the canning establishments, evaporating plants, cider and vinegar factories has made a good market for all cull fruit, making it possible for the growers to receive a much larger revenue for this grade of fruit than ever before. There seems to be a market for every grade of apples grown in the state at a profitable price.

In 1913 the fruit products plants in the state used about 150 tons of apples. In 1915, 4,362 tons. There were about 270 prune evaporators at that time which consumed the bulk of the crop. The canning of small fruits was becoming to be a prominent industry in the state.

In 1916 there were more than 8,500 tons of apples and other fruits canned in the State of Washington, more than 3,400 tons evaporated and 9,100 tons used for cider and vinegar, besides 140 tons of grapes which were used by the grape-juice factories. In 1917, nearly all fruit-product plants in the state were increasing their output, some many times, while the number of factories have been greatly increased. This has made an unprecedented demand for the cull fruit at prices which have turned a good profit to the growers and has solved the problem of the disposition of cull apples. It also removes them from competition with the good fruit in the open market.

Some plants are already reporting a shortage of stock and they will not be able to fill their orders. This should encourage all growers to conserve every apple and not allow any to go to waste in the orchards, packing sheds or elsewhere, because there is a good market value in them, and as a food product they should be saved.

## Washington State Department of Horticulture

By M. L. Dean, Chief Division of Horticulture

The State of Washington takes the lead in the production of apples for the year 1917. Government and other reports show that the commercial apple crop for the state is greater than that of any other state in the Union.

The quality of the fruit as a whole is up to the average, yet the codling moth

At the Grade and Pack Conference held at Spokane November 23, 1917, it was recommended that the 1917 regulations be adopted for the 1918 pack. There seemed to be much demand for a Federal uniform grade, in order that the uniform grade may become a fixed standard in all states.

### CARLOADS ESTIMATED.

District	Winesap	Rome Beauty	Jona-than	New-town	Esopus Spitz	Delicious	Wagoner	Arkansas	Other Varieties
Yakima Valley	2509	899	1590	548	568	261	230	201	3503
Wenatchee	1553	529	1131	110	884	569	...	51	2442
Walla Walla	24	311	150	30	...	23	...	3	69
Spokane	...	75	150	...	...	...	210	...	115
Western Washington	1	1	8	19	34	2	3	...	699
Totals	4087	1815	3329	737	1486	855	443	255	6828

Total number of carloads, 19,815.

has been very active and the larvae was found entering the apples as late as the middle of October, which increased the percentage of wormy fruit over that of former years.

In some sections the yields are over-running earlier estimates. The bulk of the fruit is already sold, returns from early shipments showing good margins of profit. Scarcity of boxes, shortage of labor and limited shipping facilities at times seemed alarming, but where proper storage facilities were provided the crop was secured with a minimum of loss.

Reports show that there were 2,112 carloads of peaches and 1,465 carloads of pears shipped, beside those used by the fruit products factories. Cherries, prunes, plums, apricots, strawberries and other small fruits showed an aggregate of 965 carloads.

### Apples in Storage

Careful investigation shows that there were about 4,317 cars of apples left in the apple-producing sections of Washington December 1st, distributed as follows:

### FURS IN STRONG DEMAND

Coyotes, Moles, Lynx, Cats, Muskrats and Martins bringing record prices.  
Send for Price List and Tags.

**OSCAR GARD**  
75 Marion Street Seattle, Washington



### RABBIT SKINS

**ARE VALUABLE**

We will pay from 4 to 15 cents each for dry Jack and tame rabbit skins and will take millions of them.

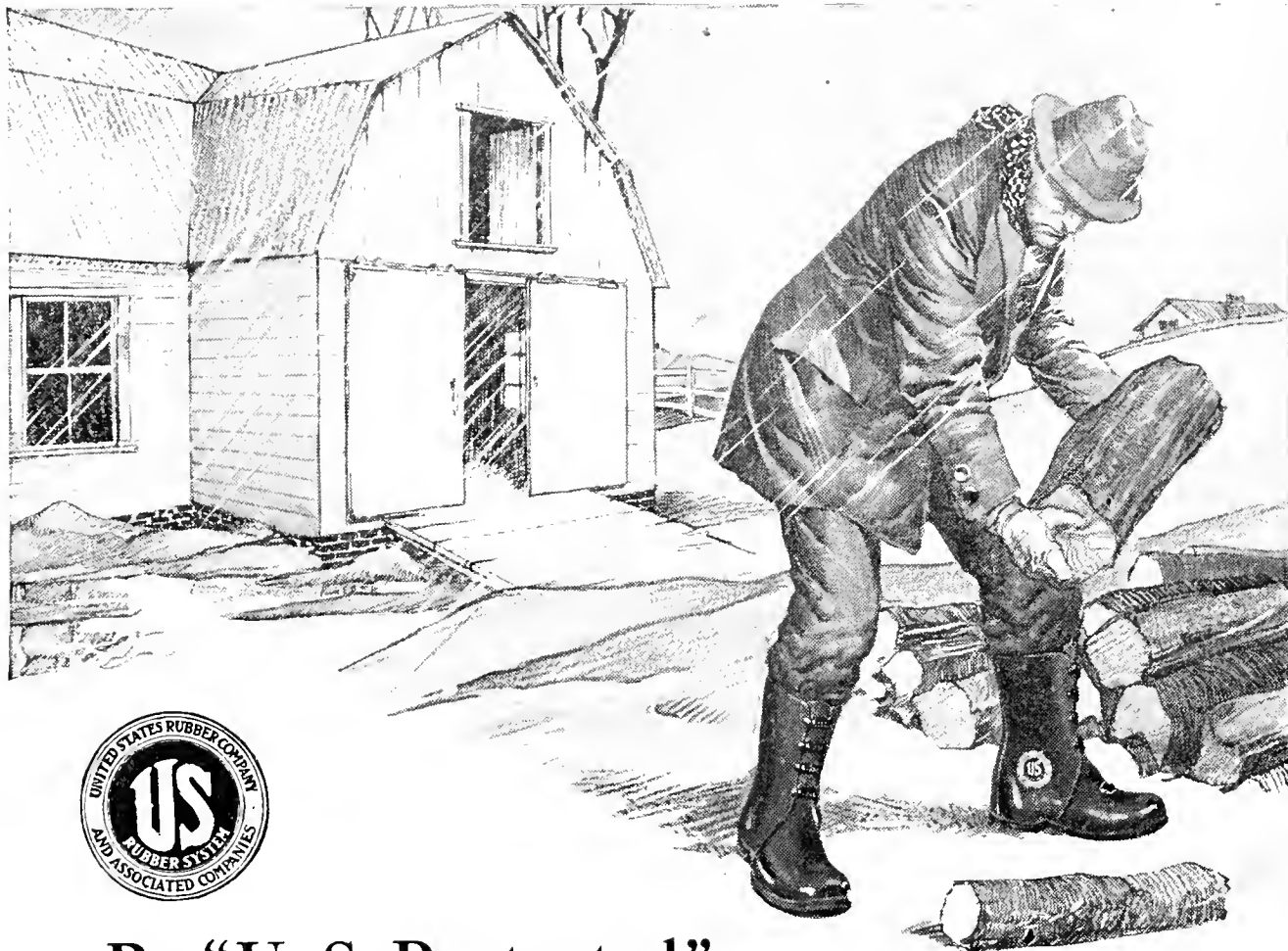
**Mole Skins ALSO WANTED**

Rid orchards and gardens of these pests. Let us know what quantity of rabbit skins you can gather and we will make you special prices. Write today.

Get our price list on all kinds of furs—muskrat, mink, skunk, etc.

### FUNSTEN

CO. & COMPANY ST. LOUIS, MO.  
561 Funsten Bldg.



## Be "U. S. Protected" When Chilling Rains Pelt

Sloshing around in pneumonia-breeding weather, your feet need the rubber footwear that will keep them warm, dry and comfortable and keep you healthy.

# U. S. Rubber Footwear

meets the situation—"U. S. Protection" is the all 'round comfort, long wear and economy which you are sure of in every pair of "U. S." Protection for your feet, your health and your pocketbook. Made for heavy service, double duty, reinforced where the wear is greatest, they are bound to give utmost satisfaction.

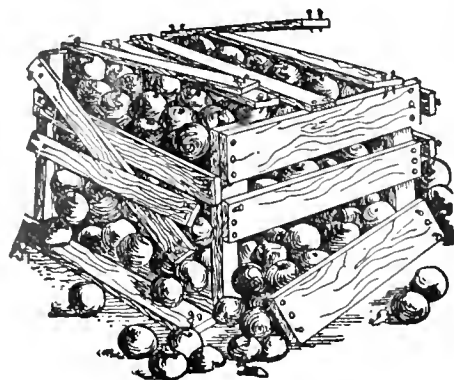
There are styles suited to every outdoor worker. Every pair carries the "U. S. Seal," the trade mark of the largest rubber manufacturer in the world. This seal is your protection. Look for it and be sure of it.

For sale everywhere. Your dealer has the style of U. S. Rubber Footwear to meet your needs, or can readily get it for you.

**United States Rubber Company**

New York

**U. S. Rubber Footwear**



BEFORE using Cement Coated Nails

## Western Cement Coated Nails for Western Growers

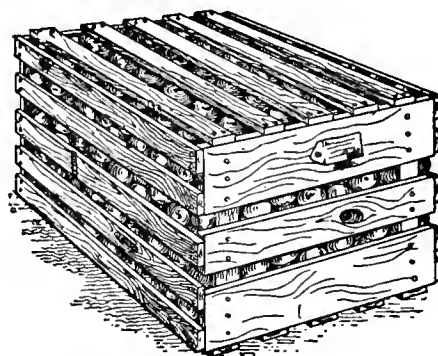
Our Cement Coated Nails are always of uniform length, gauge, head and count. Especially adapted to the manufacture of fruit boxes and crates. In brief, they are the Best on the Market.

Write for Growers' testimonials.

### Colorado Fuel & Iron Co.

DENVER, COLORADO

Pacific Coast Sales Offices  
Portland, Spokane, San Francisco  
Los Angeles

AFTER use of C. F. & I. Co.'s  
Cement Coated Nails

# Spraying Problems and the Outlook for 1918

By Leroy Childs, Entomologist and Plant Pathologist, Hood River Branch Experiment Station, Hood River, Oregon

**T**HOUGH it is several weeks before spring spraying activities will be in order, growers should nevertheless be looking forward and making their plans for the coming campaign, in order to satisfactorily cope with the many irregularities that will have to be faced on account of the disturbed economic conditions.

Chief among these irregularities, and which will probably prove most annoying to many of the orchardists, will be that of available labor. Spraying, in order to be effective, must be attended to at very definite, well defined periods, or results measured in degrees of control will be very poor, accompanied by the wasting of much valuable time and costly spray materials. In the face of this labor scarcity, growers should take every precaution in the arrangement of a workable spraying scheme or outline before the season arrives, in order that no unnecessary delays occur when the time arrives for operations to start. The machines should all be overhauled and tested, rotten hose replaced by new, new discs for the nozzles obtained—in fact, get all of the machinery connected with the spraying work in readiness while there is plenty of time to attend to it. The apple growing sections have all lost many men, men trained in the art of spraying, the loss of which can not help but influence the aggregate results obtainable in pest control in the different communities unless extra precautions are taken. An expert rod man is not made through intuition, nor does he become proficient from observations or demonstrations. He only becomes efficient and valuable through actual experience and days of practice. The novice must go through the spray-in-the-eye period; he must learn how to manipulate his rod against the wind, and, above all, he must be taught to leave nothing uncovered, for upon his thoroughness, even in the form of oversight in a single spraying, hinges the fruits of the season's tedious work.

What, then, should the orchardist, dependent upon green, untried help, do? In the first place, before it is time to actually begin the spraying, conduct a little school; take a little time off, or

discuss it with the help while attending to other labors, but at any rate try to get them interested in the why's and wherefore's of spraying. Tell them of the codling moth, its life history and behavior, and why it is necessary to fill the calyx cups with the poison in order to obtain best results. In the control of apple scab tell them how the fungus lives over the winter on the fallen leaves, from which spores are discharged over a period of two or three months after the foliage comes out in the spring. How, in order to prevent infection and keep all parts of the trees coated, it is necessary to use lime-sulphur at intervals not to exceed fifteen days from the time foliage appears, and that it is necessary to continue this practice until the spring rains, which favor spore germination, cease. Impress upon these men the fact that apple scab fungus grows upon both upper and under surfaces of the foliage as well as the fruit, and that after infection once takes place it cannot be destroyed. That it soon begins producing more spores and thus continuing the spread of the disease. If the foliage is kept clean early in the season little trouble will be encountered later, if the regular spraying practices are followed. If, on the other hand, neglect or some other factor has permitted the occurrence of infection on the foliage, even if this is apparently only slight, control operations for the remainder of the season are severely handicapped. Such a condition existing, extreme care in the application of the remaining sprays accompanied by some good fortune in the way of weather conditions will only make possible effective control. The only way to fight apple scab is to get the jump on it early in the season and stay ahead of it with the spray wagon until the spring rains are over.

The grower must often remind his new men of the need of giving particular attention to the spraying of the tops of the trees. We have found in supposedly well sprayed orchards that there is a definite progression in the degree of scab infection from the ground to the tops of the larger trees. On the trees studied there occurred seven to

ten times as many scabby fruits between a height of fifteen and twenty-eight feet as there was between the ground and fifteen feet. The failure to keep to tops protected with spray is the only possible explanation for the difference. Theoretically, there should be much more scab nearer the ground, owing to the proximity of the overwintering spores being discharged from the fallen foliage, and, later in the season, the washing down of myriads of summer spores upon the lower foliage and fruit.

During the first few days at least, and most of the time if possible, the orchardist should watch and follow his green crew. No new man can be expected to begin and spray his trees thoroughly from the start. He will not do it, regardless of the fact that he is expected to. The chances are 100 to 1 that during his early endeavors the work is extremely poor. You must remember that he must go through the agonies resulting from the presence of lime-sulphur in his eyes, not once, but many times, before he learns how to avoid it. Though he gamely stays with the rod, he is unable to see just what he is doing. The orchardist should be on hand, pointing out overlooked limbs. He should see to it that the rod men turn over their nozzles in order to cover the under surfaces of the leaves; in fact, there are dozens of little points that are entirely unknown to the new man, who will not find them out for days if left alone, and all at your expense. The early sprays are more important than the later ones usually, so make your crew a veteran one just as soon as possible.

The failure in the excessive development of apple scab in the Northwest during the past season should materially assist in its control during the coming season. In Hood River this natural factor, combined with very effective work on the part of many growers, reduced infection in numerous orchards to 1 per cent or even less. The foliage likewise was kept free from infection. This latter condition, therefore, reduces materially the chances of new infection in the spring, owing to

**Bean  
Double Giant**

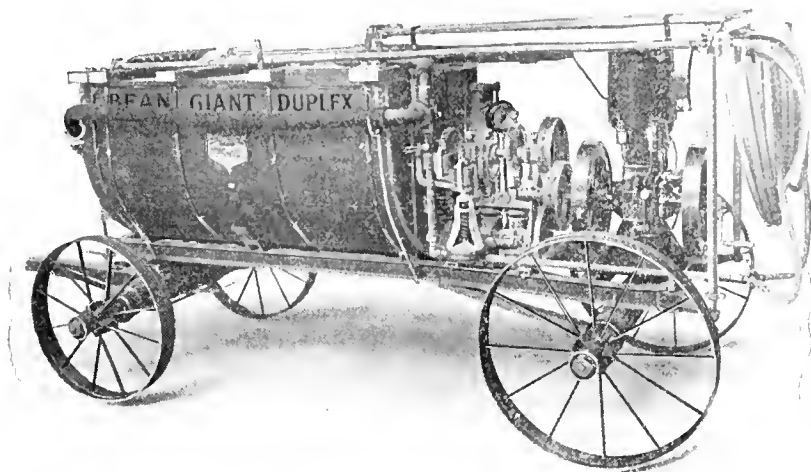
Capacity 25 gallons per minute, 400 lbs. pressure. Supplies 10 or 12 lines of hose.

**Bean  
Giant Triplex**

Capacity 8½ to 11½ gallons per minute, 200-250 lbs. pressure. Supplies 2 to 4 lines of hose.

**Bean  
Giant Duplex**

Capacity 6 gallons per minute, 250 lbs. pressure. Supplies 2 lines of hose.



# Bean Power Sprayers

**Bean  
Little Giant Duplex**

Capacity 5 gallons per minute, 200 lbs. pressure. Supplies 2 lines of hose.

**Bean  
Pony Duplex**

Capacity 5 gallons per minute, 200 lbs. pressure. Supplies 2 lines of hose. (Overhead suction.)

**Bean  
Eureka Sprayer**

Capacity 2½ gallons per minute, 200 lbs. pressure. Supplies 1 line of hose. A one-man, one-horse outfit.

**Bean  
Midget Sprayer**

Mounted on skids. Capacity 2½ gallons per minute, 200 lbs. pressure. Supplies 1 line of hose.

**THE GROWERS IN YOUR SECTION WHO ARE PRODUCING THE LARGEST, CLEANEST AND MOST PROFITABLE CROPS ARE THE GROWERS WHO ARE EQUIPPED WITH THESE STURDY, EFFICIENT, HIGH-GRADE SPRAYERS**

The almost universal use of Bean Power Sprayers throughout the Northwest is not merely a matter of chance. It's because the growers of this wonderfully productive section have learned that the Bean is an indispensable factor in the growing of the most and the best fruit. Clean trees are of vital importance—and nobody knows it better than the apple grower himself! It's such advantages as these that have made "Bean" and "best" synonymous with Northwest apple men:

**Constant Pressure**—Bean Pressure Regulator holds pressure at any desired point. When not spraying engine runs free, thus saving gasoline and wear and tear on engine and pump.

**No Stuffing-Box**—and hence, no stuffing box troubles. Our cylinders are equipped with cup plungers.

**No Loss of Time**—For example, any valve can be removed from pump under full pressure while engine is running. Many other time-saving features.

**Flexible**—The Bean is built low down and compact. It is easy to handle under all conditions.

**Economical**—Bean parts are interchangeable. Worn parts quickly, easily and cheaply replaced.

**Heavy Pressure**—All Bean Outfits are built to throw the liquid at heavy pressure so as to do effective work. Pressure guaranteed.

**Heavy Pressure**—All Bean Outfits are built to throw the liquid at heavy pressure so as to do effective work. Pressure guaranteed.

**Send for Our Complete New Catalog of Hand and Power Sprayers, Spray Hose, Accessories, Etc.**

It illustrates and describes the entire Bean line, explains the many distinctive exclusive Bean features, and tells you everything you ought to know about spray pumps. Send the coupon—now. Also, see your nearest Bean dealer. We have representatives in all fruit-growing sections.

## Bean Spray Pump Co.

213 W. Julian Street  
SAN JOSE, CAL.

12 Hcsmer Street  
LANSING, MICH.

**Bean Spray Pump Co.**

213 W. Julian St.  
San Jose, Cal.

12 Hosmer St., Lansing, Mich.

Gentlemen: Please send me your new complete catalog

No. 30. I have \_\_\_\_\_ acres of \_\_\_\_\_

and am interested in  
HAND PUMPS ..... ACCESSORIES  
POWER SPRAYERS .....

Name \_\_\_\_\_

Address \_\_\_\_\_

### It Pays to Buy the Best

Cheap outfits can always be had, but the best outfits are difficult to get at this time, as the demand for them is stronger than ever before. Therefore if you want a Bean investigate at once. We are placing extra large stock of repair parts and extras in Portland and other Northwest points, so as to take care of all of our customers and avoid delays in shipping.



**BEST SERVICE-  
QUALITY & PRICES**

**PERFECTION IN  
FRUIT  
LABELS**

**THE  
SIMPSON & DOELLER CO.**  
1423-24 NORTHWESTERN BANK BLDG.  
PORTLAND, OREGON.  
**E. SHELLEY MORGAN**  
NORTHWESTERN MANAGER  
WE CARRY—AND CAN SHIP IN 24  
HOURS—STOCK LABELS FOR PEARS,  
APPLES, CHERRIES & STRAWBERRIES.

Spraying for mildew during the remainder of the season should be timed the same as that for scab control.

Our experimental work during the past two years has included the use of more dilute mixtures of lime-sulphur in the different applications. Due to the fact that the past season was not a favorable one upon which to draw conclusions, we are not in a position to alter the recommendations that were given out last season. Preliminary results indicate that the strengths of several of these applications can be materially reduced without destroying the effectiveness of the spray. The accompanying spray program, based on experimental results obtained at Hood River, has been arranged.

(To be continued)

### Stretching the Meat

It is possible to make a little meat go a long way. Meat pies and meat stews offer a variation for every day in the month. In these combinations a small piece of meat can be stretched to flavor a big dish. Try these hot savory dishes, the whole family will like them.

**Fish Chowder.**—Rabbit, fowl, or any meat may be used instead of the fish, or tomatoes instead of milk. Carrots may be omitted: 1½ pounds fish (fresh, salt or canned), 9 potatoes peeled and cut in small pieces, 1 onion, 2 cups carrots cut in pieces, 3 cups milk, pepper, 3 tablespoons flour, 1 tablespoon fat. Fry chopped onion in fat for five minutes. Put fat, onions, carrots and potatoes in kettle and cover with boiling water. Cook until vegetables are tender. Mix flour with one-half cup cold milk and stir in liquid in pot to thicken. Add the rest of the milk and the fish which has been removed from the bone and cut in small pieces. Cook until the fish is tender, about 10 minutes. Serve hot.

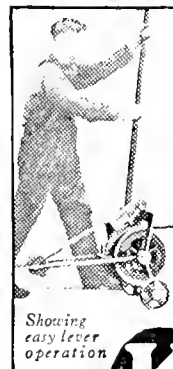
**Tamale Pie.**—2 cups cornmeal, 2½ teaspoons salt, 6 cups boiling water, 1 onion, 1 tablespoon fat, 1 pound Hamburg steak, 2 cups tomatoes, half teaspoon cayenne pepper or 1 small chopped sweet pepper. Make a mush by stirring the cornmeal and 1½ teaspoons salt into boiling water. Cook in a double boiler or over water for 45 minutes. Brown the onion in fat, add the Hamburg steak and stir until the red color disappears. Add the tomato, pepper and 1 teaspoon salt. Grease a baking-dish, put in a layer of cornmeal mush, add the seasoned meat and cover with mush. Bake 30 minutes.

### New Marmalade Without Sugar

Now the papers are calling for fifty-fifty marmalades. The recipes below, though not of the fifty-fifty variety, reduce sugar to zero and introduce other surprises.

**Prune Conserve.**—2 dozen prunes, ½ pound raisins, 2 oranges, ⅓ cup corn syrup, ½ cup water, ¼ cup nut meats. Dried apricots, peaches or canned plums may be used in this recipe. Wash and cut prunes in pieces; add chopped raisins and orange pulp and peel, cut

## Make more Money Pull big stumps by hand



Showing  
easy lever  
operation

Clear your stump land cheaply—no digging, no expense for teams and powder. One man with a K can rip out any stump that can be pulled with the best inch steel cable.

Works by leverage—same principle as a jack, 100 pound pull on the lever gives a 48-ton pull on the stump. Made of the finest steel—guaranteed against breakage. Endorsed by U. S. Government experts.

**K** HAND POWER  
**Stump  
Puller**

Write today for special offer and free booklet on Land Clearing.

Walter J. Fitzpatrick  
Box 330  
182 Fifth Street  
San Francisco  
California

very fine; then add corn syrup and water. Cook slowly until it is the consistency of marmalade. Add chopped nuts five minutes before removing from fire.

**Carrot Honey.**—Take one pint grated raw carrot, two cups white syrup and two lemons. Mix ingredients and add the grated rind of one lemon. Heat slowly and simmer the mixture until it is thick and clear. Turn into scalded jelly glasses and when cold cover with hot paraffine. Serve with cold meat or as a sauce for puddings.

**Scotch Orange Marmalade.**—To two pints ground oranges (pulp, rind and juice) add two pounds or honey, and cook to a thick marmalade.

### Breakfast Spoon-Breads

**Virginia Batter-Bread.**—1 cup white cornmeal, 1½ cups boiling water, 1 cup sweet milk, 1 teaspoon salt, 2 teaspoons baking powder, 2 eggs. Sift meal into a bowl. See that the water is boiling vigorously, pour over the meal, stirring at the same time. When lukewarm, add the sweet milk, the well-beaten egg yolk and beat thoroughly. Add the baking powder and last fold in the stiffly-beaten whites. Pour into a hot, well-greased baking dish and bake in a moderately-hot oven thirty minutes. If baked in a shallow pan, twenty minutes will suffice.

**Hominy Bread.**—2 cups boiled hominy grits, 2 eggs, 1 cup sweet milk, ⅓ cup flour, 1 teaspoon baking powder, 1 tablespoon fat. Cook hominy with four times the bulk of water. Cool and add the sweet milk and well-beaten eggs. Sift in the flour and baking powder. Last add the hot fat and pour into greased baking dish and bake in hot oven until firm and brown, but not stiff.

# SPRAYING REVOLUTIONIZED — BY A — NEW SYSTEM

This Advertisement Appeared in the Fruit Grower Aug. 15th, 1916

**"Friend" was First** and spent thousands of dollars to develop and place it on the market.

**Evidence** of "FRIEND" priority in this new system is found in this FRUIT GROWER advertisement and the thousands of "FRIENDS" spray guns used in 1916 and 1917.

**Towers and Spray Poles** had annoyed Horticulture long enough so "FRIEND" invented the

## SPRAY GUN

A small, light device that one man could hold and distribute the entire capacity of the largest power sprayer alone — with ease, **FASTER** and **BETTER** than two men with towers and long poles and so constructed that it could be used equally well on all power sprayers.

The Gun was soon Characterized **SPRAY GUN** and the System or Method called **NU SYSTEM**

**Are You A Grower?** Then you want the best there is; when you buy a sprayer or spray-gun, you want it for business; you want the kind that always makes you feel that you made the right choice.

**Are You a Dealer?** Then you want the line that will enable you to LOOK YOUR CUSTOMERS SQUARE IN THE EYE when you talk "spray-gun" to him. If you are not a "FRIEND" dealer, you should apply NOW.

**This has proven to be the world's greatest horticultural achievement and the "FRIEND" line is a live wire, business-getting proposition.**

**The "Friend" SPRAYGUN:** Light weight, quick action, durability and simplicity—are the chief features of the gun. Light enough to be held in one hand; quick action for any kind of spray desired; durable, by special materials and ingenious design; simple in construction, only one working part. All who used the "FRIEND" gun say that it not only saved 25% of spray solution but did much better work—owing to the great projectiveness of fine spray; some prominent growers have said that they would not take \$1,000 for their SPRAYGUN. Don't spray again without a "FRIEND" gun; there will be many substitutes but—only one "FRIEND."

"I will take any power sprayer that will maintain 200-lbs. pressure and with one line of hose and the "FRIEND" gun, will do more work and a better job during the day, than three men can do with the old system."—Grand Rapids, Michigan.



THE "FRIEND" MANUFACTURING COMPANY has a reputation for square and honest dealing and has chosen its representatives with the greatest possible care. "FRIEND" products are made only by THE "FRIEND" MANUFACTURING COMPANY and can be obtained only from its authorized representatives. This remarkable service is now close at hand; the Western distributors are:

- The California Rex Spray Co., Benicia, California
- The Medford Rex Company, Medford, Oregon
- The Wenatchee Rex Spray Co., Wenatchee, Wash.
- Local dealers in all sections

- The Payette Valley Rex Spray Co., Payette Valley, Idaho
- The Rex Company, Omaha, Nebraska
- The Toledo Rex Spray Co., Toledo, Ohio

With this peerless organization to carry "FRIEND" blessings to the Western fruit growers, all horticulture will rejoice.

Fill out the coupon and mail today to nearest "FRIEND" distributor.

A limited output, going fast, write today

**The "Friend" Manufacturing Company**  
Gasport, New York, U. S. A.

**Spraying Revolutionized**  
By the present system altogether too much time is spent in a large orchard and hereafter the work will be done by a  
**NEW SYSTEM**  
Dusters have their place and "Friend" is glad to sell them, but the liquid spray will be always in demand and now comes this method by which a large orchard can be thoroughly sprayed in one-half the time ordinarily required.  
"FRIEND" has finished practically all of the new sprayer ideas for many years, due to the untiring efforts of the "genius" department and growers everywhere will welcome this great saving of time and money.  
If in the market for a sprayer that will save one-half your time fill out and mail the coupon to your best and most aggressive sprayer works.

**"FRIEND" Manufacturing Co.**  
Desk F Gasport, N. Y.

Fruit Grower, August 15, 1916

**FRUIT-GROWERS' GREATEST LABOR-SAVING DEVICE**  
**TOWERS AND SPRAY POLES HAVE GONE FOREVER**  
**"FRIEND" NUSYSTEM SPRAY GUN**  
DOES THE WORK  
WORKS EASY  
A simple form of the wire sprays close or far  
**SAVES LABOR**  
One nozzle man to a Sprayer  
**SAVES TIME**  
Moved quickly. Taken anywhere  
No catching or clogging  
**SAVES MONEY**  
Costs less than old style equipment. Works on any sprayer  
Write Today. Name this Paper. Agents Wanted  
**Yakima Rex Spray Co.**  
Sales Agents for  
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Better Fruit, May, 1917

**The "Friend" Power Sprayer** When you have bought a "FRIEND" Power Sprayer, you will talk like all the other owners: They say—"It's a wonder; so handy; so convenient to work around; goes anywhere, doesn't upset, draws easily, so powerful, so well designed, every part built for its place and best of all—puts the spray where I want it, etc." These wonderful sprayers are now built in three sizes; small, medium and large. Our Service Department will help you decide which to buy. **DO NOT WAIT**—this season's output is going fast; you will find the "FRIEND" a TRUE FRIEND and a MONEY-MAKER.

"Our NUSYSTEM power sprayer has proved to have twice the capacity of any other sprayer we have ever used; we are ordering one more and with these two NUSYSTEM rigs and four men, we will do the work formerly requiring four rigs and twelve men."—Waterville, Ohio.

Cut out and mail to nearest "FRIEND" dealer

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medium .....  
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SPRAYGUN .....

I have ..... acres of fruit.

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# BETTER FRUIT

HOOD RIVER, OREGON

Official Organ of The Northwest Fruit Growers' Association  
A Monthly Illustrated Magazine Published in the  
Interest of Modern Fruit Growing and Marketing  
All Communications Should Be Addressed and Remittances  
Made Payable to

## Better Fruit Publishing Company

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ADVERTISING RATES ON APPLICATION

Entered as second-class matter December 27, 1906, at the

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of Congress of March 3, 1879.

**President W. J. Kerr.**—The State of Oregon is to be congratulated on the decision of Mr. Kerr to remain as president of the Oregon Agricultural College. Mr. Kerr deserves the appreciation and thanks of every resident of the state for his loyalty to the state and for his affection for its inhabitants, indicated by the fact he remained at a lesser salary than he was offered elsewhere. Under President Kerr the Oregon Agricultural College and the Experiment Station has made a most wonderful advancement. Through his guidance the institution has accomplished the greatest amount of good for the farming industry in the state that it ever accomplished since the beginning. Under Mr. Kerr's guidance, I speak more particularly of horticulture, although the same is true of all other departments of farming carried on in connection with the Experiment Station, an institution has been built that is second to none anywhere in the world, with no superiors. The work in the horticultural department stands out pre-eminently compared with all other horticultural institutions in the world. In fact the success has been so marked that other states, being aware of the great work being done by the Oregon Agricultural College, have persistently and continuously been endeavoring to take away its ablest professors and instructors, offering them larger salaries than the State of Oregon thought it could afford to pay. Quite a number of very valuable men, attracted by higher salaries, left, which is to be regretted. Many others, including Mr. Kerr, have been offered higher salaries, but their sense of loyalty to the State of Oregon, connected with the hope, in which we think they were justified, that the state in its growing prosperity would appreciate the work being done by the Oregon Agricultural College to the fullest extent, and in the near future be able to

pay a salary that is equal to that offered by other states. President Kerr, and others who remain, have the heartfelt thanks of every fruit grower, every farmer, and, we believe we can honestly say, of every resident of the State of Oregon.

**G. Harold Powell.**—Nearly every fruit grower in the Northwest is acquainted with Mr. G. Harold Powell, who for many years was chief executive in the Horticultural Department of the Department of Agriculture, Washington, D. C., during which time he visited the Northwestern fruit sections annually, making friends wherever he went. Mr. Powell is now assistant to Mr. Hoover in the food conservation. A very nice account of Mr. G. Harold Powell's life is printed in the Literary Digest of December 15, being extracts from an article appearing in the Country Gentleman. Mr. Powell is 45 years of age. A few of his achievements that signify his ability in a most emphatic way will be of interest. He entered Cornell at nineteen years of age, paying his own way by running a boarding house for students. He entered the Department of Agriculture, rapidly advancing and becoming chief executive of the department. It was Mr. Powell who, in his research work, discovered that thousands and hundreds of thousands of dollars lost on the decay of oranges in transit was due to rough handling in picking and packing—a fact unknown up to that time. It was Mr. Powell who discovered that the great loss on peaches in transit from Georgia and other localities was due to the peaches being shipped too warm, and who discovered the loss could be prevented by pre-cooling. It was Mr. Powell who discovered that the great loss on apples in shipment and poor keeping when stored was due to rough handling, too late picking and too long a delay after being picked before being placed on cold storage. It was Mr. Powell who was called on to become general manager of the California Citrus Fruit Growers' Association, which handles about 70 per cent of the oranges in California, and under the able management of Mr. Powell the Citrus Fruit Growers' Association has been successful, and under his administration the orange growers made more money than they ever made before. Appreciation of his ability is shown by his success in all of these affairs, and it is due to his success in these matters that he was chosen as assistant to Mr. Hoover.

**Apples on Cold Storage.**—A report issued by the Department of Agriculture, Washington, D. C., December 12, shows a decrease of apples on cold storage in the United States compared with December 1 last year of 1 $\frac{1}{10}$  per cent. The total number of box apples on cold storage in 1916 was 796,620 boxes; in 1917, 939,838. Barreled apples show a decrease; however it is true that the amount of box apples on common storage is considerably larger than last year. Prices during the month of December have been depressed. This is undoubtedly due to the very heavy

shipments. During October cars were short, but on the first of December the number of cars shipped exceeded the number of cars shipped last year by 20 per cent. Cars were loaded fully 20 per cent heavier, which in reality makes an increase of 40 per cent, probably more, in the quantity of apples shipped, going onto the markets during the month of November, over the same month last year. It is stated the loss has been pretty heavy from freezing weather. The heavy shipments have resulted in some pretty low prices, which undoubtedly has caused a very heavy consumption, indicated by the fact that the amount of box apples on cold storage is very little in excess of last year. Some of the big factors in the business seem to think that the big shipments have resulted in a very heavy consumption. The loss in common storage will be heavy, consequently there will be no over-supply on hand after the first of the year. There is a general opinion there will be a good demand commencing the latter part of January or the first of February, with no excess supply, and consequently there is every reason to assume that prices will be fair a little later on during the year.

**Spraying.**—The fruit growers of the Northwest have suffered a severe loss for many consecutive years from fungus on apples. Strange to say, it took several years before they became informed and fully appreciated the necessity of a rigid spraying program, but it is a pleasure to announce that in 1917 the fruit growers got the right idea and did the work right. They began with sulphur sprays—lime and sulphur was used extensively; application was made in the semi-dormant, sometimes called the pre-pink spray, or when the leaves are one-quarter to one-half an inch long. This was followed by another application in the pick, another application just after the petals dropped, known as the calyx spray, and another two weeks later. Those who sprayed, following this program, doing it thoroughly with the proper strengths, had crops that were entirely free from fungus. In some sections additional spraying was necessary. No grower who wants a clean crop, free from fungus, can afford to take any chances in 1918, by omitting any sprays. But one word more of advice. On account of the shortage of supplies and the uncertain advancing prices, it seems wise to suggest to the fruit growers that they purchase their fungicidal sprays as early as possible.

**Thrift Stamps are intended to enable** those people who cannot spare the amount necessary to purchase Liberty Bonds to help carry on the war and at the same time to help themselves by becoming saving and thrifty. These stamps will be on sale from December 3, 1917, to January 31, 1918. A thrift card is furnished to all purchasers of 25-cent stamps. This card has space for sixteen stamps. When all the spaces are filled the thrift card may be exchanged for a \$5.00 stamp at the

bank, postoffice or other authorized agency, by adding 12 cents in stamps prior to February 1, 1918, and 1 cent additional each month thereafter. Those who prefer may buy a \$5.00 stamp outright. These will be on sale from December 3, 1917, to January 31, 1918, for \$4.12. They automatically increase in value until January 1, 1923, when the United States Government will pay \$5.00, at any postoffice or at the Treasury in Washington, for each stamp affixed to a war-saving certificate. War saving certificates contain 20 spaces. If these are filled with war-saving stamps between December 3, 1917, and January 31, 1918, the cost to the purchaser will be \$82.40. On January 1, 1923, the United States Government will pay the owner of the certificate \$100, a net profit to the owner of \$17.60—a mighty good way to help one save and at the same time help the Government carry on the war.

**Codling Moth in 1917.**—In previous years the growers have had varying degrees of success with codling moth. Where conditions were favorable apparently they got through with slight damage. It is almost invariably true that following clean crops growers felt that the codling moth had been almost completely eradicated and more or less failed to apply sufficient number of sprays or put them on at the proper times. The man who wants a clean crop of apples cannot afford to miss any one of the arsenate of lead sprays during the entire season; putting on every spray is the only sure road to success. Equally important is the selection of some well-known brand, one that either you or your neighbors used and obtained good results. The price of arsenate of lead undoubtedly will be higher this year. It is also possible that it may be difficult to obtain the necessary quantity if the grower postpones purchasing until late in the season. The Government has issued instructions that arsenic should be conserved, hoping to prevent any possible shortage in the supply needed by the fruit growers.

**Land Clearing and Increased Production.**—The administration, realizing the condition fully in Europe, and in this country as well, understands that the United States must feed the Allies, knows also that the food supply next year will be very short unless superhuman efforts are made to increase production. It is a well-known fact that production can be increased in two ways—intensified farming and more planting. That everyone will endeavor to increase by intensity goes without question. It is the duty of everyone to increase his output by increasing the

**MYERS SPRAY PUMPS**  
**KILL**  
**THE PESTS THAT EAT YOUR PROFITS**  
**SAVE YOUR CROPS BY SPRAYING**  
**MYERS WAY**

Your Uncle Samuel Says:—"Conserve all food so that our Sammies at the front can be abundantly fed, and the folks at home still have plenty."

This message is of such importance to owners of orchards and fruit bearing trees, vines and bushes, that Fruit Growing Associations, Farmers' Clubs, Grange and other State and National Organizations, are urging and insisting that each member take an active part in an earnest endeavor to increase and improve his fruit and vegetable crops for 1918, and thus

place within easy reach of the general public such fruits, berries, and vegetables for preserving, canning, drying and bin storage, as will take the place of grains and other food supplies that are easier to ship and transport.

### MYERS

Says—"Good Gospel—Follow it to the letter." It will pay—Pay in the satisfaction of knowing you are doing your part—Pay in a more material way through larger crops and better prices. So prune your trees and spray them MYERS WAY with a Myers Knapsack, Bucket, Barrel or Power Spray Pump or complete Spray Outfit. You will know your spraying work will be done right, for Myers Spray Pumps—All Styles—All Sizes—are tried and proven. They get spraying results many times where others have failed by killing the numerous pests which attack your trees and eat your profits.

Write for late catalog—54 pages—devoted to MYERS SPRAY PUMPS, NOZZLES, HOSE and ACCESSORIES for Spraying, Painting and Disinfecting—and be ready for action when Spraying Time comes around.

**F. E. MYERS & BRO.**  
 No. 120 ORANGEST. ASHLAND, OHIO.

acreage wherever possible. It is the duty of everyone who has uncleared land to clear as much as his financial condition will permit. Time is short and quick action is necessary, consequently land owners should use quick and effective methods to clear land. Special blasting powders are made for this purpose. Full instructions can be obtained from any company manufacturing blasting powders. There are a number of good stump pullers made which can be obtained at a moderate price. Fruit growers should use every man-saving factor possible in doing the work.

**Spray Outfits.**—Spraying for fungus and San Jose scale will begin in most districts in March. The grower must bear in mind if he uses the right spray at the right time he cannot get satisfactory results unless he has efficient equipment. It is foolish for a grower to spray with a worn-out spray outfit. A grower can save money by throwing away the old rig and getting a new one, buying one that is high-class in every respect. There are several first-class power outfits manufactured. Some growers may like one, others another,

but when you buy a spray outfit be sure you purchase one that is absolutely first-class, and when you buy from a high-class and well-known manufacturer you can generally feel assured that you will get something that is first-class in every respect. You cannot buy anything good these days cheap.

**Auto and Motor Trucks.**—The automobile is no longer a luxury with the fruit grower and farmer. For some time fruit growers and farmers have realized that the automobile was almost a necessity. Since war was declared, on account of the shortage of men, it is absolutely necessary that every fruit grower should economize and conserve his time in every way possible. The automobile fills the bill and enables the fruit grower to come to town, transact his business and get back in the least amount of time. The automobile truck, on account of quickness and capacity, enables the fruit grower to do his hauling to and from the depot in much less time, and where larger crops are to be moved the automobile truck will do the work of several teams.

**YOU CAN EARN \$50.00 PER DAY WITH THE Gearless Improved Standard Well Drilling Machine**

Drills through any formation. Five years ahead of any other. Has record of drilling 130 feet and driving casing in 9 hours. Another record where 70 feet was drilled on 2½ gallons distillate at 9c per gallon. One man can operate. Electrically equipped for running nights. Fishing job. Engine ignition. Catalogue W-8.

REIERSON MACHINERY CO., Mfg., 1295-97 Hood St., Portland, Ore.



# APPLE SEEDLINGS

A surplus in all grades. Grown on **new land**.  
Strong, healthy Stocks that will please.

## APPLE GRAFTS

Made to order. Satisfaction guaranteed. If short of labor,  
let us make you Grafts for you.

**A Complete Line of General Nursery Stock for the Spring Trade**

Always pleased to quote prices. Ask for Price List.

## Mount Arbor Nurseries

E. S. WELCH, Pres.

SHENANDOAH, IOWA

## MORE WORK FROM YOUR HORSES

Heavy spring work takes the surplus flesh from the horse. His collar no longer fits. His neck and shoulders chafe and gall. He can't do his full share of work and you lose money. Prevent these evils by using TAPATCO Pads.

### A NEW AND BETTER HOOK ATTACHMENT

Consisting of wire staple, reinforced with felt washer (note where arrows point). This gives the hook a better hold and prevents pulling off. The weakest point is made strong and life of pad greatly lengthened.

Found Only on Pads Made by Us.

Look For The Felt Washer.

SOLD BY DEALERS EVERYWHERE

The American Pad & Textile Company

GREENFIELD, OHIO

Canadian Branch: Chatham, Ontario.



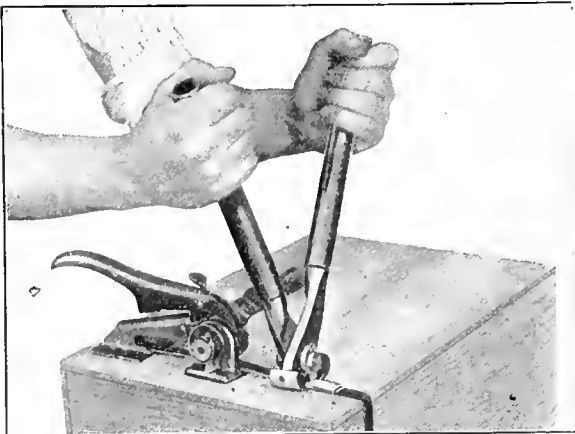
Pat. in U. S. Dec. 1, 1914.  
Pat. in Can. Apr. 6, 1915.

**Spray Guns.**—A new spray gun is being put on the market by spray-outfit manufacturers, which is being found very efficient and economical. One spray gun with sufficient power back of it in a spray outfit will do the work of two spray rods. By using a spray gun which is adapted to present machines one spray outfit with one man can do the work of two men. Large machines of greater power are being made at a moderate increase over the average power outfit, which are made with sufficient power to operate two spray guns, which will do the spraying in half of the time required by the ordinary spray outfit. A large orchardist should get a large machine and use two spray guns. A moderate-sized orchardist can use his own machine and use one spray gun instead of two spray rods. Spray guns, while they have not been used generally, give every evidence of doing satisfactory work.

**Nitrate of Soda.**—Many fruit growers, who had complained of light yields, have been using nitrate of soda for two years, with wonderful results. In cases where the supply of nitrate had become deficient many orchards bloomed but failed to set a crop. One orchard in Hood River blossomed well for several seasons but failed to set a crop. Nitrate of soda was applied at the proper time, about March, and in the same year the grower produced a crop of about 500 boxes to the acre. Nitrate was used again the next year and a crop of more than 500 boxes to the acre produced. It seems to be generally conceded by the fruit growers that where apples have failed to set, due to the deficiency of nitrate contained in the soil, that by judicious application of nitrate a good set and increasing yield results in a most wonderful way.

ACME

## Steel Box Strapping



Used in connection with metal seals consists of encircling a package with a metal strap, drawing the strap very tight and interlocking the overlapping strap-ends within a metal sleeve (**SIGNODE**) in such a manner that the joint has a greater tensile strength than the strap itself. Nails, rivets and buckles, with their attendant objections, are entirely eliminated.

Write for  
Catalog

Acme Strapping packed in bbls. of about 500 lbs. or larger pkgs.  
Metal Seals packed in cartons containing 2,000-2,500 seals.

**ACME STEEL GOODS CO. MFRS.**

Factory: 2840 Archer Ave., Chicago

311 California St., San Francisco

**Professor C. I. Lewis**, one of the most eminent horticulturists in the United States, Professor of Horticulture of the Oregon Agricultural College, has a very interesting article in the December 22nd issue of the Country Gentleman, entitled "Northwestern Apples and Other Fruits." Professor Lewis is appreciated for his splendid knowledge of fruit growing and is recognized as one of the most practical men that ever filled a chair of horticulture in any of the agricultural colleges. Professor Lewis is so well known and is so popular with the fruit growers that anything we might say would be of faint praise.

**Winter Short Courses.**—Winter short courses will be held this year at the Washington State Agricultural College, Pullman, Washington; The Idaho Agricultural College, Moscow, Idaho, and the Oregon Agricultural College, Corvallis, Oregon. Every fruit grower and farmer who can possibly get away should write for a schedule and plan his work so as to be able to attend.



# Here's the Catalog

## for Northwest Farmers

—*And it's free*

The farmer is the most important of Uncle Sam's soldiers because, as Napoleon said: "An army fights on its stomach." Every seed sown helps win the war—choose your seeds then by the select draft system.

**LILLY'S** seeds, acclimated for northwest soils and conditions—*best for the west*—are tested for germination and purity.

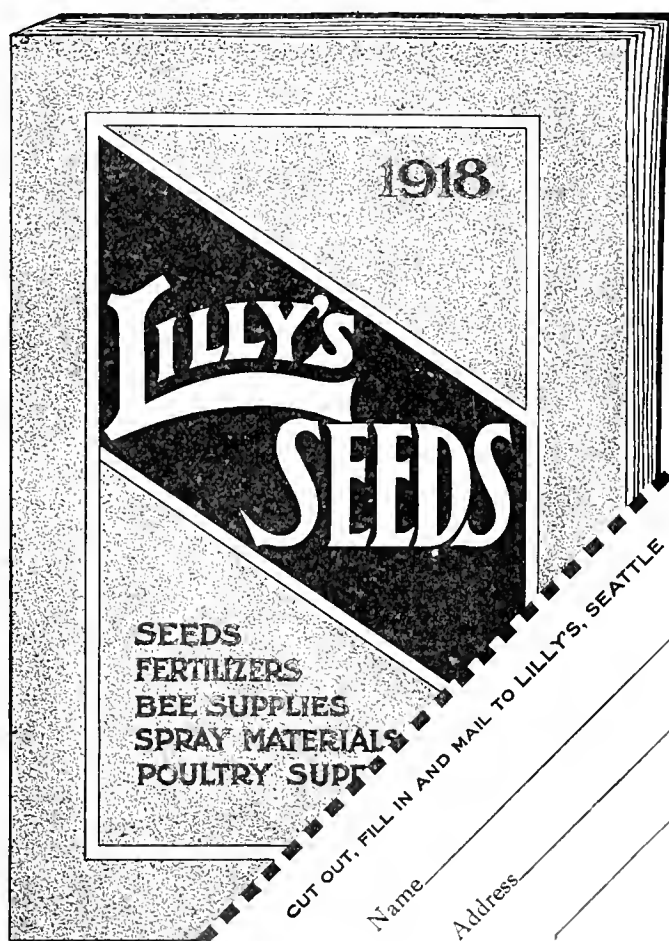
Our catalog is complete and contains the accumulated experience of thirty years in the selection of seed for Pacific Northwest farmers,

*Write for free copy and buy your seeds early*

**LILLY'S**

The Chas. H. Lilly Co., Seattle

Established 1885



**Tractors.**—Already a large number of men have volunteered, a large number have been drafted, and in addition to this the Government has to supply ammunition, war machinery, clothing, food and all kinds of supplies, not only for the men at the front but for our Allies, consequently every industry should use all the machinery possible in this way, relieving men for work that cannot be done by machinery. There is no line of work on the farm that takes more time or more men than cultivating. One tractor will do the work of many men and many tractors can be bought at a very moderate price.

Where they are used they not only save the cost of extra men but the cost of capital invested in extra horses, extra cost of feed. They have proved efficient, and economical and by using them the United States will be able to produce a greater amount of food, which is absolutely necessary.

**Keep the Family Cow.**—On account of the war, the shortage and high cost of feed in foreign countries, the number of cows will be reduced to a minimum. The same is true to a great extent in this country. A great many people are selling off their cows. This

is a serious mistake, because cows will be very high after the war and possibly be very difficult to get. With the increased production of feed undoubtedly in the near future feed will be much cheaper. The Government is urging everybody, and wisely too, to keep the family cow.

**Horticulturist** Wants position as manager with large orchard company. 8 years' experience in orcharding and farming; college education; married; age 31. Can furnish best of references as to ability and character. Address "C.A." care Better Fruit.

# The Question of Fruit Marketing After the Great War

By Gordon C. Corbaley, Seattle, Delivered Before Northwest Fruit Growers' Conference, at Tenth National Apple Show, Spokane

**T**HE best answer to the question under discussion has been furnished by Mr. W. F. Gwin, general manager of the Northwestern Fruit Exchange. He says: "I don't know. All precedents have been swept aside and rendered worthless. We face an entirely new situation, the complexion of which and the exact development of which no man can foresee. We have our opinions of how things are likely to develop, and that is all."

The effect of peace on the apple industry depends largely on the condition of business in the United States. Our Northwest apples are largely sold as a luxury, and are therefore peculiarly liable to business depression and hesitation. Nobody has any real idea as to what will be the exact condition of business during the first days following the coming of peace. It will be a period of hesitation and uncertainty. That will be because nobody will know what is going to happen. This uncertainty will be particularly marked because about half of the entire productive capacity of the United States will be devoted wholly to war purposes. The release of the billions of money and millions of employes from this war work will naturally make unsettlement. The period of hesitation and unsettlement is capable of almost any outcome. A great deal depends on the financial condition and the mental condition of the people. They perhaps will be so depressed and worried and scared that capital will run to cover, and we will have a smash.

I, personally, do not think so. I believe that the wide distribution of Government bonds will be one of the most valuable of influences during these first

few months of uncertainty. The return of peace will mean an immediate strengthening of the value of Government securities. There will not be a boom in Liberty Bonds, but there will be an appreciable strengthening of value that will put confidence into the many millions of citizens who will have their liquid capital tied up in these securities. All that we will need as a people to bring us out of this period of uncertainty in an aggressive, forceful frame of mind will be a reasonable measure of encouragement. Once we are no longer in doubt, business will go ahead more rapidly than ever, because we will have untold billions of capital available to invest in development. I refer not only to the capital that has been engaged in war industry, but also to the many billions of capital that will have stored up in Government bonds.

The whole world is on an inflated basis. I think that we are going to travel on an inflated basis for many years to come. That means high prices for everything, and high prices with plenty of money form the ideal conditions for our fancy apple market. I think that Mr. Ford asked me this question with the idea of leading the way to a discussion of foreign markets, rather than for the purpose of giving me an opportunity to discuss economics. He knows our tremendous interest in Seattle in foreign trade, and he naturally judges that the foreign market is to become a constantly increasing factor in the distribution of our boxed apples.

The best analysis that I have been able to get of the general foreign situation comes from our old friend, H. M. Gilbert, of the Yakima Valley, who says: "The world is going to be much more of a family of nations after the war. In rebuilding and reconstructing I look for a very active demand for fruit, as well as for all other food products. There will certainly be a big demand for labor and we shall have good times, I take it, much as they do when a city is rebuilding after a big fire. This will be especially important on the Pacific, because Japan and China are now awakened and will want to trade with us more than ever. They will want all the modern improvements of railroads, electric machinery and the other inventions of the West."

When I spoke of the former foreign market for our apples as having been of little importance, I have in mind no disrespect to our export apple business or the men who are engaged in it. It is true, thus far, we have sent abroad only a small percentage of our fancy apples, say 5 to 10 per cent of the fancy and extra fancy stock, depending on the year. The foreign trade has been nothing but a safety valve to help take the pressure off the domestic markets. This is not alone true of the apple business. It pretty accurately describes the condition of almost all American exports, except the great staples. As a people,

we have used the foreign markets to help have an outlet to make possible and furnishing of a more even supply to the really important markets within the country.

After the war this will be different. The whole world has been brought closer together. The United States has become the financial and industrial center of the world. We have shown ourselves much too big to ever be able to again stay within our own boundaries. We will certainly sell to the rest of the world and buy from the rest of the world on much larger volume and in a much more direct way than we ever have in the past. Perhaps the greatest single influence in bringing that about will be the new American Merchant marine now in process of creation as a war-time necessity.

At the beginning of the war we were forced to depend on the ocean-trade channels of other countries. Very little business moved direct from the United States to distant lands, and hardly any ocean transportation was handled by American lines.

Under the war shipbuilding program, the United States by the end of 1919 will have as great a tonnage afloat in foreign trade as will Great Britain, and we will surpass Great Britain as a peace sea power, because more than 90 per cent of our tonnage will be Government owned and available to be operated for the purpose of developing American trade lines to every corner of the world. This will present an indeed fortunate situation for us, coming at a time when we will want to do business with every country in the world and every country in the world will want to do business with us.

Now, just what will this mean to the apple business? In general terms, it will mean an enormous possibility for expansion that will depend in a considerable measure upon our being organized to take advantage of it. It is difficult to say just what it will mean in terms of business with individual countries. At the present time we have practically no export business. There is plenty of demand for our fruit, but, for various reasons, we cannot get the fruit there to supply the demand. Prosperous England could use any quantity

## Fruit Tree Stocks

Apple, Doucine, Paradise, Mahaleb, Mazzard, Peach, Plum, Quince, Japan Pear and Kieffer Pear Seedlings. We can ship Mahaleb and Mazzard direct from Oregon

### Apple and Pear Grafts ANY STYLE

Complete Assortment of  
General Nursery Stock

There is a small stock of apple seedlings this year, and with the increasing demand for apple trees, it will pay to put out a plant. But act now, do not wait until the top of the market has been reached.

**SHENANDOAH NURSERIES**

D. S. Lake, Pres.

SHENANDOAH, IOWA

## POSITION WANTED

As manager of a fair sized apple orchard proposition by a competent and experienced man with a small family. Either salary or salary and commission proposition will be considered. Two years Horticultural Department, University of Illinois, fifteen years practical experience in bearing orchards, one of which was in the Payette Valley, Idaho. Have had considerable experience with gasoline and kerosene engines and thoroly understand all phases of apple orchard work.

Open for employment on or before March 1, 1918.

**HENRY O. HINKLEY, Dubois, Illinois**

of small red apples and Yellow Newtowns, if the English government could be persuaded that our apples are not a luxury and would lift the embargo. The Scandinavian countries and South America are literally crying for apples and offering all sorts of inducements, but there is practically no ship space to be had. Australia, always heretofore a dependable outlet for our early Jonathans, is closed with an embargo.

The individual markets open to our apples in the different countries will depend in a large measure on the conditions in those countries. Personally, I think that nearly all these markets will be favorable. Europe offers the largest question of doubt, because Europe is so intensely in the middle of the war that nobody knows what it is going to look like when the struggle is over. Personally, I believe that the releasing of men and capital from war occupations, and the turning of Government finances to the spending of anywhere from ten billion to twenty billion dollars in reconstructing the damaged places, will produce a condition of great activity. One element very much in our favor will be the fact that European orchards have been neglected during the war, and those that have not been entirely destroyed will show a low efficiency in production. Another pleasant element will be found in Russia. Some day in the not distant future Russia is going to complete its present occupation of blowing off steam accumulated during years of repression, and will move into a period of expansion and development that will draw much of the money and man power of the world. Russia will be a good market for our apples.

Personally, I look for a tremendous expansion in the Orient and in Australia. We will see a great outpouring of capital and of men to the new places of the world. That has come after every great war. The greatest new places of the world are Siberia, with its billions of acres of untouched resources, and China with its hundreds of millions of undeveloped labor reserves. Perhaps also in this list should be specifically included Australia, which is due to expand, although not in as great a measure as Siberia and China. Australia, you will remember, is bigger than the United States, and is capable of some expansion and development, even if it does not approach Siberia, which is more than twice as big as the United States. Northwestern part of the United States, and Australia is a market in which we have a direct interest. They take our low-colored early Jonathans that are mighty hard to market any place else, and we wish they would have a period of development that would cause them to take many thousands more of them.

As I look at this entire world situation, I find that it is impossible for me to be pessimistic. Perhaps I am so constituted that it is not practical for me to be pessimistic very long at any time. But it is pretty hard for an American citizen to be pessimistic at this time, when the center of the world is swing-



Mission San Buenaventura, Ventura, California. Founded 1782

# CALIFORNIA

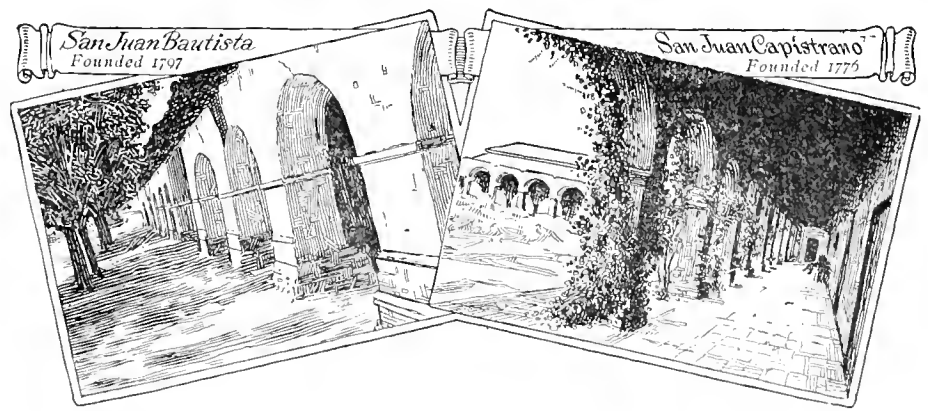
MISSIONS add the romance of California's early days to the infinite variety and charm of California life today.

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ing to the Western hemisphere; when we are about to become the old world and when Asia is about to become the new world. We Americans, in this day of change and stress, are getting a better understanding of each other, and I believe we are developing a greater efficiency. We are going out collectively to serve the markets of the world. I believe that the question as to what foreign markets will mean to the boxed-apple business during the days immediately following the war will depend in a very large measure on our ability to organize collectively to develop these foreign markets in a big way.

Big things will have to be done if we are going to develop these markets rapidly. Chances will have to be taken and some mistakes will be made. These chances will be much better taken and we will do business much more efficiently if all the big factors in the boxed-apple business will pool their foreign trade into one big export corporation. That is a lesson that the European nations learned before the war. It is a lesson that the war is teaching to America. The big factors in the apple business of the Northwest will please take notice.

# Study of Fruit-Bud Formation—Relation to Pruning

By J. R. Magness, Assistant in Research Laboratory, Oregon Agricultural College

**W**HAT often amounts to one of the most difficult problems that confronts the orchardist is that of securing a good amount of bloom in the orchard. In many cases it seems almost impossible to secure blossoms in trees that have reached the age at which they should begin bearing. Trees eight or ten years of age, that have never borne even a partial crop, are only too familiar to many fruit growers.

Not only do we have difficulty with a failure to produce fruit buds, but oftentimes in our old orchards we are troubled with their overproduction. Trees low in vigor will often produce so many fruit buds that the tree is simply a mass of bloom in the spring, but lacks the ability to set and mature a crop of first-class fruit. Especially is this true of old pear and prune trees.

A third condition which the orchardist has to combat, and which is closely linked with fruit-bud formation, is that of alternate bearing in many varieties of apples and pears. Many fruit buds are formed one year, with such a heavy crop of fruit following that apparently the whole energies of the tree are expended in maturing the fruit, and no fruit buds are formed for the following year. Consequently, a heavy crop is followed by no crop at all, and the orchard, instead of producing a fair

crop year after year, produces very heavily, but only once in two years.

For a number of years, investigations have been carried on at the Oregon Experiment Station to determine where fruit buds are formed on different kinds of fruit trees and for different varieties; the time of the first appearance of flower parts in the buds in different positions; and the conditions in the tree that are associated with, and which apparently control fruit-bud formation. It is proposed to present in this article some of the things that have been learned in regard to fruit buds, in order that the troubles in connection with fruit-bud formation may be more readily dealt with.

The first subject to consider is that of the positions of fruit buds in the different kinds of fruit trees. Apples and pears may be considered together, since their methods of fruiting are almost identical. By far the greatest number of fruit buds in mature trees of all varieties are borne on spurs. The terminal bud on the spur produces the flower parts, an entire cluster of flowers being formed in a single fruit bud. During the following season, if fruit is produced from the fruit bud, one or more leaf buds will develop at the sides of the spur at the base of the flower cluster. These leaf buds continue the growth of the spur, and will usually form fruit buds during the season following the one in which they are formed. Thus a spur normally produces fruit buds every other year. This varies greatly, however, for fruit buds may be formed every year, or a spur may go a number of years and never form them. Whether or not they are formed depends very largely upon the nourishment they receive.

Buds in another position which often form flower parts in many varieties, especially while the trees are young, are those formed in the axils of the leaves along the current season's growth. Such buds are of great importance in certain varieties. Much of the first crops of such varieties of pear as Bartlett and Winter Nelis, and of such apples as Jonathan and Wagener, is produced from them. Other varieties show very few such buds. It is also of interest to note that when flower parts are formed in buds in this position, they are almost invariably out toward the terminal portion of the shoot. This is very important from the standpoint of winter pruning, for a severe heading back in these trees will oftentimes almost entirely remove the bloom crop for the following year.

The last position to consider in which fruit buds are borne on apples and pears is at the terminals of shoots too long to be classed as spurs. This occurs to a greater or less degree in practically all varieties, and is of much importance in some, especially while the trees are young. In Yellow Newtowns, for example, much of the first fruit is produced at the ends of shoots

10 to 15 inches in length. If these short shoots are systematically cut from young trees of certain varieties, it may delay the time of bearing very materially.

In the case of cherries, the fruit is borne mainly on spurs. Each spur is terminated by a leaf bud, about which a number of fruit buds are grouped. The leaf bud continues the growth of the spur year after year, so the cherry spur is straight, and unbranched. Normally, fruit buds will be formed on the spur every year. A small amount of fruit in most varieties is also produced from buds on the one-year wood. When such buds are formed, they are usually toward the base of the shoot, rather than near the terminal, as in apples and pears. Consequently, they will usually not be removed by a winter heading back.

In prunes and plums, considerable variation occurs as to the proportion of the buds borne in different positions. In prunes and other European-American varieties of plums, most of the fruit buds are borne on spurs. The spurs are terminated by a leaf bud, which makes a certain amount of growth each year. The fruit buds are produced in the axils of the leaves along the new growth made by the spur. So what the spur really amounts to is a short shoot, with fruit buds in the axils of the leaves. In most varieties, a few fruit buds are pro-

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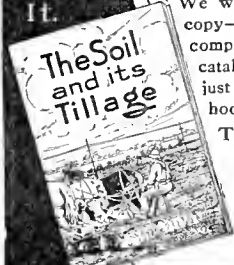
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duced as axillaries along the sides of the shoots. In certain of the Japanese plums, these assume much importance, producing a large proportion of the total blossom crop. In these varieties, they are distributed along the branch in a way similar to peach buds.

In peaches, the entire fruit-bud crop is produced on the one-year wood. The buds are borne in the axils of the leaves, normally in groups of three. In that case, the middle one is a leaf bud, while the two outside buds form flower parts. If the shoots are making a very vigorous growth, and especially if the tree is rather dense and shaded, the fruit buds are mostly out toward the terminals of the growth. On the other hand, if the shoots are making only a medium amount of growth, and the tree is well opened up to the light, the fruit buds will be well distributed along the entire length.

After this brief summary of where fruit buds are formed, it is well to consider briefly just what the exact differences in buds in various positions are, if any such differences exist. Is there any fundamental difference between a spur and a shoot, and between buds produced in the two positions? Careful microscopic study has failed to reveal any such difference. Leaf buds on spurs and leaf buds on shoots are apparently exactly the same, except in degree of development. The only difference between spurs and shoots seems to be in amount of growth made. The amount of growth depends upon nutrition, rather than upon any inherent difference, either in the shoot or in the buds. In those cases in which fruit buds are formed on both spurs and long shoots, there is apparently no difference in manner of formation and development of flower parts.

The question then arises, why do some of these buds form flower parts while others do not? If there is no fundamental difference between buds in different parts of the tree, why do apples and pears tend to bear mainly on spurs, rather than upon the one-year wood? This brings up the question of the fundamental conditions in the tree which are associated with fruit-bud formation. Before discussing this, it is well to establish the exact season during which fruit-bud formation takes place.

The season under Oregon conditions, during which the earliest evidence of flower parts in buds may be detected, has been established more definitely for apples than for any other kind of fruit. Buds on spurs of apples have been found to show the initial formation of flower parts during a period extending from the last of June until the middle of August. A few have been found to be forming even as late as September 1. Considerable variation occurs between varieties as to the exact season of this fruit-bud initiation, but for all varieties, it extends over quite a long period of time. So far as the buds on the one-year wood are concerned, they are formed at a somewhat later date. Their season occurs from the middle of August until the end of September. Thus it is seen that in apples, there is a



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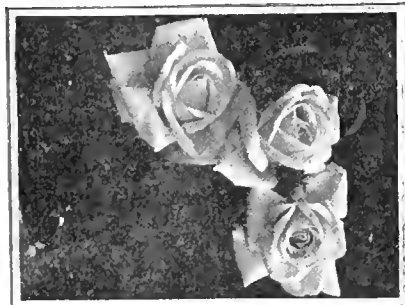


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period of two to three months during which fruit buds form.

Other kinds of fruit have almost the same season. Pears, prunes, peaches and cherries all have a season of fruit-bud formation extending from late June or early July until September. Most of the buds are formed between July 10 and September 1.

(To be continued)

### Meat Substitute

Impelled by economy and war duty, housekeepers are collecting meat substitute dishes. These dishes are high in protein value and should be served in place of meat and in combination with fresh vegetables. Potatoes and tomatoes combine well with bean dishes. Cornbread and a green salad make an excellent combination with the fish kedgerree.

**Beans and Rice.**—2 cups cooked kidney bean, 2 cups cooked rice, 4 cups tomato sauce. To make the tomato sauce: Brown three tablespoons of flour in quarter cup of drippings or vegetable oil and mix with one quart of strained tomatoes and one tablespoon grated onion. Cook sauce five minutes; combine hot rice and beans; pour over them the hot sauce and serve.

**Creamed Peas or Beans.**—1 pint dry peas or beans, ½ cup milk, 1 teaspoon drippings, 2 teaspoons syrup, 1 teaspoon salt, pinch red pepper. Soak beans in cold water over night or until hulls rub off easily; rub between hands until all skins are removed; boil slowly with just enough water to cover them until thoroughly done; pass through a ricer; add other ingredients; whip as for creamed potatoes; serve hot.

**Fish Kedgerree.**—1½ cups flaked cooked fish, 1 egg, 4 tablespoons rice, 1 teaspoon chopped onion, salt and pepper to taste, 2 tablespoons drippings. Wash rice and drop slowly into fast-boiling water, with a teaspoon of salt, and boil fast until tender (about twenty minutes). Drain well and dry in a colander. Boil the egg hard, cool it in cold water, and chop it coarsely. Melt the fat in a saucepan, stir in the cooked rice, add the fish and seasoning. Make it very hot, then add the chopped egg, and serve at once. If onion is liked, fry it lightly in the fat before putting in the rice.

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## Eat Apples and Please Hoover

Fruit Growers' Agency

An apple a day drives the doctor away. But that isn't the reason the Government has started a campaign to increase the country's appetite for apples. It's because it is up to citizens of this nation to eat 2,000,000 barrels—nearly 6,000,000 bushels—more of the fruit this year than last to prevent its being wasted, incidentally thereby saving considerable on wheat and meat.

The reason is the lack of ships. European countries have been eating 2,000,000 barrels of American apples a year, but now the space on the ships is needed for wheat, meat, munitions of war, and for troops, and apples are taboo.

Unless there is an increased appetite for apples there may be waste, as the Government's report indicates a total crop of 190,000,000 bushels, which, while a little below the average yield, is still somewhat greater than America has heretofore consumed.

The food administration is planning a campaign of publicity to induce apple eating which will extend until the last of November. It also educates the apple grower so that it will be more salable. It will also take a hand in storing the fruit and seeing that speculators do not take a hand and run up prices beyond reason.

## How to Purchase Farm Supplies

It has been suggested by transportation experts who are with the Food Administration that, after the harvests are laid by, the farmer make an estimate of the fertilizer, seed, machinery and the like that he will need for the coming season, and then place his order. This will eliminate the failure to receive supplies which resulted last spring on account of car congestion and priority of shipment.

Between March 1 and July 15 of this year the railroads operating in the East and Middle West made a saving of 28,000,000 passenger miles by cutting down on the number of passenger trains. Not counting the saving in labor, this reduction continued throughout the year will mean the saving of 500,000 tons of coal per annum.

From the farmer's standpoint a like saving may be effected in the coming months. All orders for supplies should be placed early. It is also advisable for several farmers in a community to club together in ordering so that each car may be loaded to its maximum capacity, and in this manner eliminate transportation waste. By acting on these suggestions supplies will arrive in season so that time, which is so precious during the spring rush, may be saved; and at the same time the crops will have advantage of those things necessary to their successful planting, tending and harvesting. Cars should be loaded and unloaded promptly when placed on the siding. No stumbling blocks should be left in our path of preparation for a bumper crop in 1918.—Contributed by U. S. Food Administration.

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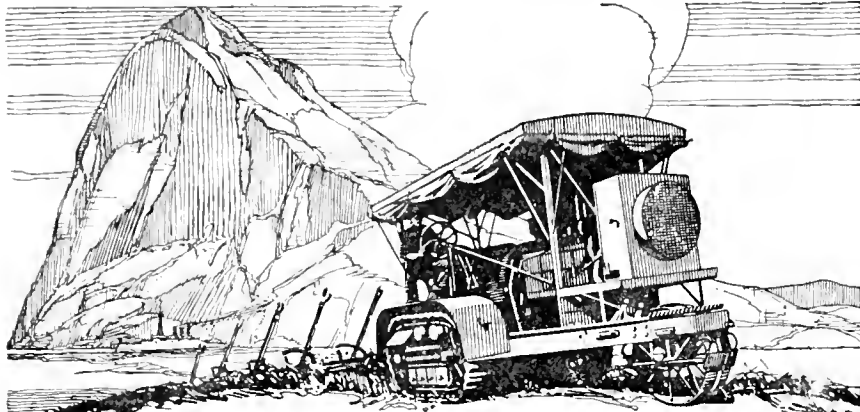
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## Tenth National Apple Show

Continued from page 8.

side of the show, giving but a glance as they came into the grounds to the amusements and entertainment programs.

During three days of the apple-show period the annual Fruit Growers' Conference of the Northwest was held in the assembly rooms of the Chamber of Commerce. Each session drew a constantly-increasing attendance. Discussions of practical problems and live issues were participated in by instructors from state colleges, experiment stations and by fruit inspectors and shippers from the four Northwestern States. The discussions covered a wide range of vital subjects.

An issue which brought about the liveliest debate and engendered the deepest feeling was the proposal to change the apple grades from three to two. Discussion over this point almost reached personalities. For a time the convention seemed about equally divided over the question, but adherents of the present grades won out for another year.

Each day of the conference the delegates voted upon various slogans which had been suggested as desirable to use during the war period. By a process of elimination the convention finally awarded first honors to this slogan suggestion made by Mrs. Katherine M. Portch of Almira, Washington: "Let's apples eat and save the wheat."

To the executives of the show must be given the principal credit for its success. These executives were headed by Jake Hill, a shoe merchant, who was president of the organization, and James A. Ford, secretary of the Chamber of Commerce, who was manager. Mr. Hill chose for his cabinet 35 of the leading business and professional men of the city, augmented by 31 of the best-known fruit men in the several apple-growing districts of the Northwest. All of these men gave of their time, money and work without recompense, and they did it so cheerfully and thoroughly that it set a new mark in the annals of the apple show.

The trustees from outside of Spokane were:

John B. Adams, Wenatchee, Washington.  
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Important Horticultural Meeting.

The fourteenth annual meeting of the Washington State Horticultural Association will be held at Kennewick January 3, 4 and 5, 1918. The work is to help the fruit grower. Come and spend these three days with us. It will be a tonic for your system. The following vital subjects are to be discussed: The labor problem; Transportation; Better marketing; Improving community packing houses; Air-cooled storage plants; Gathering fruit for flavor and color; Combatting the insects—best sprays to use; Better pruning—better fruit; Benefits of a cover crop; Abuses of water; Pollination of sweet cherries and Tragedy prunes; Irresponsible grower vs. irresponsible commission merchant; Magnitude of the fruit industry of Washington; Illustrated lecture on potato diseases; Colonization—Australia vs. America.

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Any poultry raiser can easily double his profits by doubling the egg production of his hens. A scientific tonic has been discovered that revitalizes the flock and makes hens work all the time. The tonic is called "More Eggs." Give your hens a few cents' worth of "More Eggs" and you will be amazed and delighted with results. A dollar's worth of "More Eggs" will double this year's production of eggs, so if you wish to try this great profit-maker, write E. J. Reefer, poultry expert, 3891 Reefer Bldg., Kansas City, Mo., who will send you a season's supply of "More Eggs" Tonic for \$1.00 (prepaid). So confident is Mr. Reefer of the results that a million-dollar bank guarantees if you are not absolutely satisfied your dollar will be returned on request and the "More Eggs" cost you nothing. Send a dollar today or ask Mr. Reefer for his Free Poultry book that tells the experience of a man who has made a fortune out of poultry.

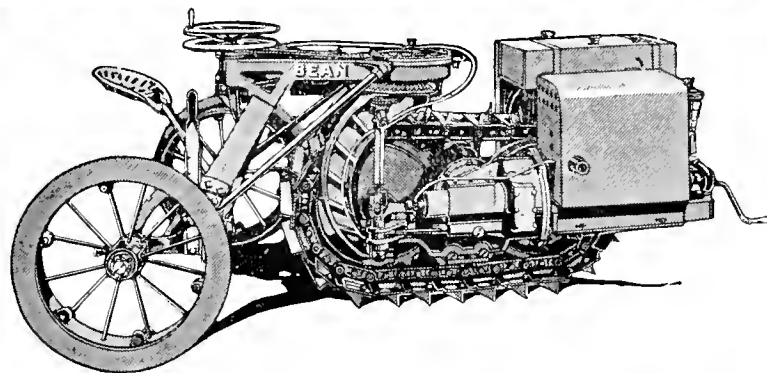
Portland Wholesale Nursery Company

Rooms 6 & 7, 122½ Grand Ave., Portland, Oregon  
 Wholesalers of Nursery Stock and Nursery Supplies  
 A very complete line of  
 Fruit and Ornamental Trees, Shrubs, Vines, Etc.  
 SPECIALTIES  
 Clean Coast Grown Seedlings  
 Oregon Champion Gooseberries and Perfection Currant  
 Write Now — Write Now

A Message for Fruit and Vegetable Growers

THE A. A. A. EVAPORATOR MANUFACTURING CO., Inc.  
 2371-73 Market Street, San Francisco, Cal.

Desires to get in touch with Fruit and Vegetable Growers in all parts of the country in order to establish Fruit and Vegetable Drying Plants for single firms that want to build new and up-to-date drying plants for themselves and with two or more growers that would favor to construct a drying plant on a co-operative base. There are many millions of dollars worth of Fruit and Vegetables to be left to rotten on the ground and many more millions of dollars are paid in freight rates, tin cans and boxes that can and must be saved. We will invest some of our own capital if you wish as we are sure that it is to our mutual benefit if you write us today for particulars. All information on this subject will be given cheerfully and free of charge. If you are in business for making the best profits write now.



A Masterpiece of Simplicity  
 with Patented Front-Drive

SEND the coupon below for our new catalog which describes the Bean TrackPULL Tractor—a masterpiece of simplicity, with patented front-drive which no other tractor has.

It is built by an old-established concern, the Bean Spray Pump Co., makers of the famous Bean Sprayers and Pumps.

A life-long reputation is staked on this tractor.

Note some of the things it does, then get the entire story.

Don't make the mistake of buying another type and then decide too late that you need the Bean. Think of a tractor that turns clear around inside a 10-foot circle (5-foot radius)—that weighs only 3100 pounds, but that will plow from 4 to 7 acres or cultivate from 10 to 15 acres in 10 hours.

Learn all about its 15 vital features. You'll want them all in your machine.

What Other Does These Things?

1. Pulls instead of pushes itself over the ground.
2. "Gees" and "haws" out of holes and soft places like a team.
3. Turns clear around inside 10-foot (5-foot radius) circle with full power on turns.
4. Cultivates as close up in corners as a team.
5. Goes under tree-branches only 4 feet off the ground.

There are 15 features. Read about the rest in the catalog we send you. Mail us the coupon now.

Bean Spray Pump Co.

613 W. Julian Street  
 San Jose, Cal.

Without any obligation on my part, send me Tractor Book.

BEAN  
 TrackPULL Tractor

Price Now \$1215  
 F. O. B. San Jose, California

Name \_\_\_\_\_  
 Street \_\_\_\_\_  
 City \_\_\_\_\_ County \_\_\_\_\_  
 State \_\_\_\_\_  
 No. of acres \_\_\_\_\_ Kind of crops \_\_\_\_\_

# Did You Ever

- Stop** To consider how congested and over-populated Europe feeds its hundreds of millions?
- Look** Into the reason for the heavy yield of the Hawaiian Sugar Plantations?
- Listen** To the successful rancher and farmer explain the source of his profits?

THE ANSWER IS

**“Nitrate of Soda”** with its 15% Nitrogen—equal to 18% Ammonia—immediately available.

**“Nitrate of Soda”** is imported from Chile; through lack of tonnage it is becoming increasingly difficult to secure;—place your orders for spring requirements NOW.

Literature upon request.

## NITRATE AGENCIES CO.

Leary Building, Seattle, U. S. A.

### Hooverizing the Small Apple

As the crop of Northwestern box apples is being matured and harvested, it is realized that sizes will run much smaller than expected. This will result in a big shrinkage in the estimated number of boxes and cars, and actually means a greater shortage of apples than early figures indicated. When apple prices are relatively high every student of marketing knows that the retailers are inclined to shift to the smaller sizes. The reason is simple—the price per apple can be kept within the range of the pocket book of the common people. Every storage operator knows that the small-sized apples keep the longest in storage and shrewd operators are figuring this season that the best and safest buy will be the small-sized fruit. Prices of apples in general seem high, but sellers believe the prices are fully justified by the shortage existing not only in apples but in the California and Florida citrus crops, together with restricted importation of bananas.

The Northwestern Fruit Exchange is shaping its advertising campaign to the consumer through magazines, newspapers and other media, strongly stimulating the demand for the smaller-sized apples, which will probably be denominated as the economy apples for children, “School Apples,” etc. Hooverizing the special advantages of the smaller apple in eliminating waste. Everybody knows that the average youngster’s “eyes are bigger than his stomach.” He naturally reaches for a big apple whether he is hungry or not, overestimating his capacity and perhaps half of the big apple may be wasted. The smaller apple is just his size and will be consumed without waste. This is a year, above all others, when “There ain’t a-goin’ to be no core” in efficient apple consumption.

Every lunch box of every school child should contain at least one apple every day. With this year’s prices fairly well up on the larger sizes, many a housewife would hesitate to supply the kiddies with this fruit regularly, but the small apple solves the problem. Boxes of 175s and 225s, consisting of beautifully colored perfect specimens at an average low cost per apple, will solve the problem. With this special line of educational advertising directed to the consumer by the Exchange in its “Skookum” apple advertising, there is an added reason why the trade should realize the special values existing in the small sizes this year.—Produce News.

### California Fruit Growers’ Exchange

Following are related some interesting achievements by the California Fruit Growers’ Exchange, which prove very conclusively the value of fruit growers’ associations:

At the moment when the subject of farmers’ co-operative associations again has come to the front because of unusual conditions and because of the necessity for economical marketing of agricultural products, the announce-

Pacific Coast Agents  
**United States Steel Products Co.**

San Francisco  
Los Angeles  
Portland  
Seattle



**J.C. Pearson Co., Inc.**  
Sole Manufacturers

Old South Bldg.  
Boston, Mass.

# PEARSON

**ECONOMY** in buying is getting the best value for the money, not always in getting the lowest prices. PEARSON prices are right.

**ADHESIVENESS** or holding power is the reason for PEARSON nails. For twenty years they have been making boxes strong. Now, more than ever.

**RELIABILITY** behind the goods is added value. You can rely on our record of fulfillment of every contract and fair adjustment of every claim.

**SATISFACTION** is assured by our long experience in making nails to suit our customers’ needs. We know what you want; we guarantee satisfaction.

**ORIGINALITY** plus experience always excels imitation. Imitation’s highest hope is, to sometime (not now) equal Pearson—meantime you play safe.

# NAILS



ment is made by the California Fruit Growers' Exchange that in the year closed August 31, 1917, it returned to citrus growers the enormous sum of \$33,611,000.

The California Fruit Growers' Exchange long has been recognized as the largest co-operative organization of farmers in the world, and has been the model held up to the agriculturists of America. Such authorities as Sir Horace Plunkett, Harbert Quick, Charles Holman and Charles McCarthy have made studies of its success and have sought to have its methods adapted to other localities.

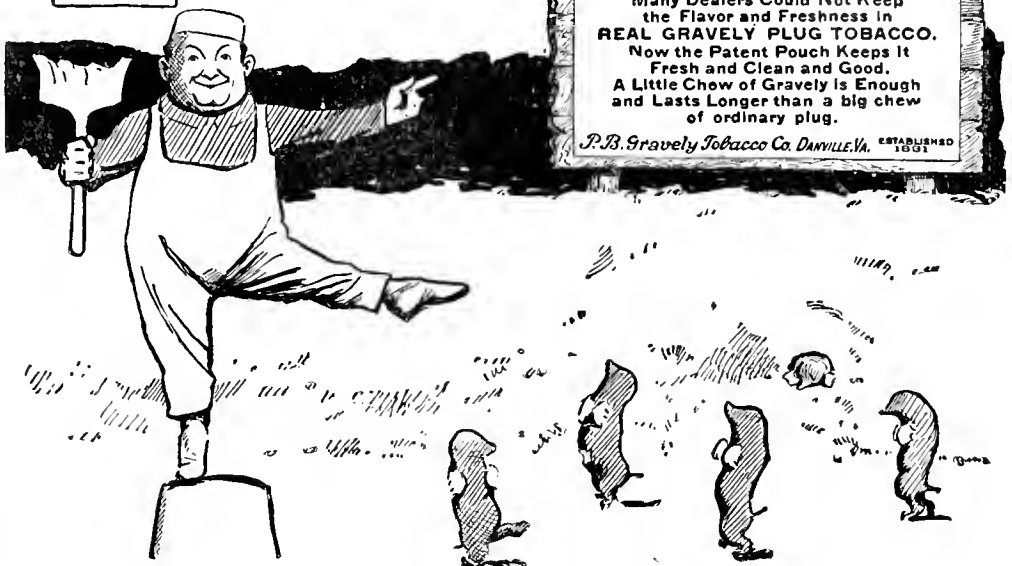
According to the report for the year recently closed, the Exchange now markets 69 per cent of all oranges, lemons and grapefruit grown in California, a business which last year totaled 15,492,990 boxes of citrus fruit. This tremendous volume of fruit was marketed at a cost of 4 3/4 cents a box, and not a single penny was lost through bad debts or other causes. The annual report points out that in the last 14 years the business of the growers' organization has amounted to \$226,100,000, on which losses from bad debts and all other causes have been less than \$8,000, or 35/10,000ths of 1 per cent. The total California citrus crop of last season amounted to 53,830 carloads.

The Exchange is composed of 8,000 growers and acts as a clearing house for the bulk of the California crop. Growers pool their fruit, which is then graded in 150 packing houses, and, under the direction of the central office, is distributed through the organization's sales offices to all parts of the country. The service is performed at absolute cost.

The citrus industry has virtually been organized upon a manufacturing basis. For advertising in newspapers and other periodicals each box of oranges is assessed two and one-quarter cents and every box of lemons four cents. Last year this netted a fund of nearly half a million dollars for publicity work. According to the report, the growers look to advertising to increase the consumption of oranges and lemons and thereby make room for the rapidly-increasing crops. During the ten years in which advertising has been done, the consumption of citrus fruits has increased 80 per cent, or four times as rapidly as population.

The growers in the Exchange have their own mutual insurance compact. They operate a supply company which last year purchased for its members packing house and orchard supplies worth \$5,459,574. A large tract of limber land, with saw mills and lumbering equipment from which box wood is made, is owned and operated by the growers. In order to dispose of the unmerchantable lemons a by-products plant has been constructed which last year converted 6 per cent of the lower grades into citric acid and other by-products. The interests of the growers

MOLES HAVE NO EYES, SO THEY CAN'T READ MY BILLBOARDS AND GET WISE. DON'T YOU BE A MOLE!



## Pittsburgh Perfect Cement Coated Nails are of the highest standard

The Heads don't come off. Given Preference by Largest Pacific Coast Packers

MANUFACTURED EXCLUSIVELY BY  
PITTSBURGH STEEL COMPANY, Pittsburgh, Pa.

A. C. RULOFSON COMPANY, Pacific Coast Agents  
359 Monadnock Building, San Francisco, California

## East Through California

When you go East via California you may visit San Francisco, all the resorts along the Road of a Thousand Wonders.

Los Angeles and Sunny Southern California,

The Apache Trail of Arizona.

Liberal stopovers are permitted at various points en route.

Four trains a day from Portland offer ample accommodations.

Inquire at any S. P. agency, or address

John M. Scott, General Passenger Agent  
Portland, Oregon

### Southern Pacific Lines

# Ridley, Houlding & Co.

COVENT GARDEN, LONDON

Points to remember when consigning  
apples to the London Market

## Specialists in Apples

CABLE ADDRESS: BOTANIZING, LONDON

LESLIE BUTLER, President  
TRUMAN BUTLER, Vice President  
C. H. VAUGHAN, Cashier

Member Federal Reserve System

## Butler Banking Company

HOOD RIVER, OREGON

Capital . . . \$100,000.00

4% Interest Paid in our  
Savings Department

THE OLDEST BANK IN HOOD RIVER VALLEY

# F. W. BALTES AND COMPANY

*Printers · Binders*



Unexcelled facilities for the production of Catalogues, Booklets, Stationery, Posters and Advertising Matter. Write us for prices and specifications. Out-of-town orders executed promptly and accurately. We print BETTER FRUIT.

CORNER FIRST AND OAK STREETS  
PORTLAND, OREGON

are guarded by a traffic department, a legal department and other staffs of experts.

The crops of oranges and lemons last year were the largest ever shipped, and California provided 71 per cent of the lemons consumed in America. The balance were imported.

In order to provide an efficient marketing medium for California farmers, who have planted vegetables extensively in response to the requests of the government, the Exchange is temporarily opening its marketing facilities to vegetable shippers.

### One Hundred Cars of Apples for Our Soldier Boys at the Front.

The International Apple Shippers' Association deserves the sincerest thanks of the public and every fruit grower for their wonderful appreciation of the service being rendered by our boys at the front by raising a fund with which to purchase one hundred cars of apples, which will cost approximately \$100,000. Every member of the International Apple Shippers' Association is being called on for a donation to this fund. Nothing is too good for our boys at the front. Everyone should contribute freely and generously for their comfort and welfare in every way possible. The campaign has just commenced, it already being reported that before the campaign even started Mr. Wayne M. French, as treasurer, commenced the list with \$500. Immediately subscriptions from members of the Association began to pour in at the rate of \$100 apiece.

The car shortage, which of course is more or less general, has delayed the movement of the Northwestern apple crop, the delay being more in the early part of the season than recently. On account of the shortage of refrigerator cars fruit shippers have been compelled to use box cars very extensively. Wenatchee has been shipping out trainloads of box cars and refrigerator cars combined, regularly using about 56 cars to the train, with a number of specials being sent in addition to the regular fruit trains. The Apple Growers' Association of Hood River has also shipped in trains, usually sending 25 cars at a time, using box cars quite extensively. Mr. Sam Campbell, who went East in charge of the first train from Hood River, reported the fruit arrived in excellent condition. The fruit was carefully watched all the way through and sufficient heat maintained by the use of Perfection oil heaters, so no damage from the cold weather. Unless a number of refrigerator cars are built during the coming year, with next year being a heavy crop, growers will have to use more box cars in the future than they have in the past.

### Nice Bright Western Pine FRUIT BOXES AND CRATES

Good standard grades. Well made. Quick shipments.  
Carloads or less. Get our prices.

**Western Pine Box Sales Co.**  
SPOKANE, WASH

# Hidden Pests Easily Conquered with **FRUIT-FOG** It Brings Amazing Yields From Ordinary Trees!!

## HAYES FRUIT-FOG GUN

(Fully Patented)

Big success where time and speed is the important factor. One man handles full capacity of power sprayer. Combines convenience and labor saving with the wonderful thoroughness of **FRUIT-FOG**, the superfine high pressure spray.

One man does 4 days work in 1. Simple twist shoots long spray to top of trees or wide spray for close work. Half turn opens wide or shuts tight. Made of high grade brass. Mechanically perfect. Fully guaranteed.

**\$12**

Millions of dollars worth of fine fruit is destroyed annually by hidden pests and diseases. Some experts even claim that as much as 47% of the damage is done by those insects and diseases which infest the minute niches, cracks and crevices about the trees.

For years these dangerous *hidden* pests and diseases have laughed at your best efforts to reach them with coarse, heavy, low-pressure sprays. Thus they have caused a heavy loss *even in supposedly thoroughly sprayed orchards.*

The increased yields from Fruit-Fog Trees is due to the fact that this superfine, fog-like, high pressure spray absolutely stamps out *all hidden pests.* By this treatment many ordinary trees have been known to produce amazing yields. **FRUIT-FOG** is made from any standard solution by the high pressure of

## HAYES FRUIT-FOG SPRAYERS

**FRUIT-FOG** easily filters into the most minute crevices of bark—works under bud scales—beneath fleshy stamens of apple blossoms. It seeks out the hidden pests, penetrates into the innermost sections of the foliage—gets at the bottom of the leaves as well as the top.

**FRUIT-FOG** literally envelopes everything—like the finest mist. It deposits a light film of solution—enough to exterminate all diseases

and insects, without injury to the foliage! **FRUIT-FOG** is so vapory that no drops form. No solution is wasted.

**FRUIT-FOG** uses much less solution than coarse, low-pressure sprays and is more economical. It is easily directed and quickly applied. This is very important when you only have a few days for spraying.

### Guaranteed!!

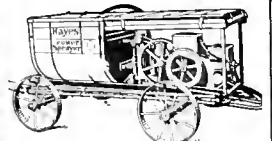
Hayes Power Sprayers are tested to 500 lbs. and are **GUARANTEED** to maintain 300 lbs. working pressure at their full rated capacity. These Sprayers are built for constant operation at high pressure and for enduring service. This requires not only thorough mechanical construction but finest materials and fittings. **HAYES HAND SPRAYERS** are built to give maximum pressure and capacity with minimum power to operate. The complete line contains more than

### 50 Styles

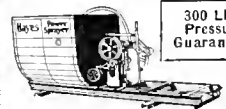
We manufacture large and small Hand and Power Sprayers for orchards, field crops, shade trees, hops, poultry, disinfecting, painting, whitewashing, farm, home and garden use. Complete outfits or separate spray pumps, hose, nozzles, fittings, bamboo rods, etc.

### A Few of Our Famous

## FRUIT-FOG SPRAYERS



Large Power Sprayers



300 Lbs. Pressure Guaranteed

Outfits Less Engine



Large Hand Sprayers



Barrel Sprayers



Nozzles and Fittings

Successful Spraying  
With a spray of **FRUIT-FOG**

## This Spraying Manual FREE! →

Tells all about spraying—how to spray; when to spray; what solution to use for different pests and diseases—and in different seasons. Now being used by thousands of growers and prominent agricultural colleges. We will mail you a copy free of charge, with our beautiful 88-page catalog on Hayes **FRUIT-FOG** Sprayers, upon receipt of the coupon **FRUIT-FOG** and this Spraying Guide are a big crop combination that can't be beaten. MAIL COUPON TODAY.

## HAYES PUMP & PLANTER CO.

Specialists on Spraying and Spray Apparatus  
Dept. K, GALVA, ILLINOIS

### Mail this Coupon

Hayes Pump & Planter Co.  
Dept. K, Galva, Illinois.

Gentlemen: Please send me Free Spraying Guide and complete catalog of Hayes Sprayers. I am interested in—

- Large Hand Sprayer  Small Hand Sprayer  
 Large Power Sprayer  Small Power Sprayer  
 Nozzle and Fittings

NAME.....

POST OFFICE.....

R. F. D. No..... STATE.....

STREET No.....

# A MESSAGE

In conformity with the suggestion and at the request of the National  
Food Administration under the direction of

**MR. HERBERT C. HOOVER**

ASSISTED BY

**Messrs. G. Harold Powell and E. W. J. Hearty**

IN THE FRUIT DIVISION

## Steinhardt & Kelly NEW YORK

desire to advise the trade in general, and their out-of-town customers in particular, that their entire holdings of purchased apples and other fruits, will, during the duration of this war, be only sold within the limits of the Metropolitan district for consumption and use by the people of Greater New York.

Under no circumstances will we allow any of our salesmen to sell to speculators, our sincere intention being to get as close to the actual consumer as legitimate business tactics will permit.

Being unquestionably the largest holders of box apples in the country, it will be our earnest endeavor to keep prices on an even, equitable basis of values and we will permit no manipulation of our holdings that might tend to create abnormal prices.

To prove our sincerity at this critical time in our country's history, we will not, during the war, allow a single car of our holdings, no matter where stored, to be diverted from New York to other markets for speculative purposes.

The pyramiding of prices as practiced in some industries at this time is a crime against the nation of which we trust no firm in the fruit and produce trade will be guilty.

We feel certain that our stand in this matter will result in stabilizing values, thereby bringing fruits, which are so necessary and healthful, to consumers at a fair and reasonable price.

## Steinhardt & Kelly NEW YORK

# BETTER FRUIT

VOLUME XII

FEBRUARY, 1918

NUMBER 8



These are the leaf buds taken from a typical tree at the time the delayed dormant spray was applied in 1915. The third twig from the left shows approximately the ideal development. At this time the rosy apple aphid can be destroyed.

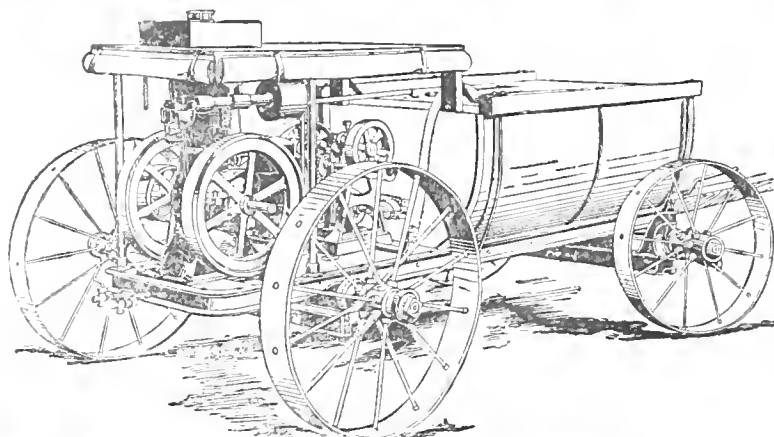
BETTER FRUIT PUBLISHING COMPANY, PUBLISHERS, HOOD RIVER, OREGON

Subscription \$1.00 per Year in the United States; Canada and Foreign, Including Postage, \$1.50.

Single Copy 10 Cents



# TO EVERY ORCHARDIST!



## The Hardie Hillside Triplex

The choice of a power sprayer is of the utmost importance to your success in fruit raising. The Hardie Triplex is full of essential features which insure proper spraying to every user. Among them are:

- First*—**EFFICIENCY**—This being its ability to always do effective spraying which will produce a good clean crop.
- Second*—**RELIABILITY**—The ability to do first-class spraying continuously day after day.
- Third*—**OPERATING COST**—A design and construction which enables you to run your machine at the lowest possible cost.

By incorporating in the Hardie Triplex, the manufacturing experience of years, a thorough knowledge of orchard requirements, together with the necessary skill and energy, we give you the very utmost of power spray value for your money.

You should send today for our latest catalog. This will give you all the details of the pump, engine and other parts of the complete machine.

The Hardie is filled with time and labor saving devices; is free from complicated parts, and back of it nearly ten thousand satisfied users.

### The Hardie Mfg. Co.

49 N. Front Street

Portland, Oregon

**SIMONS, SHUTTLEWORTH & CO.**

LIVERPOOL AND MANCHESTER

**SIMONS, JACOBS & CO.**

GLASGOW

**GARCIA, JACOBS & CO.**

LONDON

Agencies and Representatives in Every Important European Market

## European Receivers of American Fruits

FOR MARKET INFORMATION ADDRESS

SIMONS, SHUTTLEWORTH & FRENCH CO.  
204 Franklin Street, New York

SIMONS FRUIT CO.  
Toronto and Montreal

SIMONS, SHUTTLEWORTH, WEBLING CO.  
46 Clinton Street, Boston

**OUR SPECIALTIES ARE APPLES AND PEARS**

The Old Reliable

### BELL & CO.

Incorporated

WHOLESALE

**Fruits and Produce**

112-114 Front Street  
PORTLAND, OREGON

W. H. DRYER

W. W. BOLLAM

### DRYER, BOLLAM & CO.

GENERAL

COMMISSION MERCHANTS

128 FRONT STREET

Phones: Main 2348  
A 2348

PORTLAND, OREGON

### MARK LEVY & CO.

Commission Merchants

**Wholesale Fruits**

121-123 Front St. and  
200 Washington St.

PORTLAND, OREGON

## Pittsburgh Perfect Cement Coated Nails are of the highest standard

The Heads don't come off. Given Preference by Largest Pacific Coast Packers

MANUFACTURED EXCLUSIVELY BY

PITTSBURGH STEEL COMPANY, Pittsburgh, Pa.

A. C. RULOFSON COMPANY, Pacific Coast Agents  
359 Monadnock Building, San Francisco, California

### W. van Diem

Lange Franken Straat 45, 47, 49, 51, 61  
ROTTERDAM, HOLLAND

European Receivers of American Fruits

Eldest and First-Class  
House in this Branch

Cable Address: W. Vandiem  
A B C Code used; 5th Edition

Our Specialties Are

Apples, Pears, Naval Oranges

### ORCHARDISTS SUPPLY HOUSE

—  
Franz Hardware Co.  
HOOD RIVER, ORE.

# ARCADIA

*America's Greatest Orchard Project*

The home of the big "A" brand of apples.

Winner of first prize at the National Apple Show, 1916,  
in shippers' contest.

Only 22 miles from Spokane, Washington  
Gravity Irrigation. Healthful Climate  
Pleasant Surroundings

Tracts sold on easy monthly payments.  
Send for free booklet.

### Arcadia Orchards Company

DEER PARK, WASHINGTON

# DO YOU KNOW

**That** nitrogen is the real energizer in practically all fertilizers.

**That** in most fertilizers the nitrogen is not available until changed to a nitrated form, resulting in your having to wait for nature to act.

**That** in **NITRATE OF SODA**—already in nitrated form, no delay is experienced, the 15% nitrogen—equal to 18% ammonia—being **Immediately Available.**

**TRY IT THIS SPRING**

**Remember—Food Will Win the War**

## NITRATE AGENCIES CO.

LEARY BUILDING, SEATTLE

Pacific Coast Agents  
**United States Steel  
Products Co.**

San Francisco  
Los Angeles  
Portland  
Seattle



**J.C. Pearson Co., Inc.**  
Sole Manufacturers

Old South Bldg.  
Boston, Mass.

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**ORIGINALITY** plus experience always excels imitation. Imitation's highest hope is, to sometime (not now) equal Pearson—meantime you play safe.

# NAILS



## Ladd & Tilton Bank

**Announces Its Membership  
in the  
Federal Reserve System**

That our patrons will indorse our judgment in becoming a member of the Federal Reserve and will fully appreciate the importance which such action attaches, is our belief. Any inquiries which you might wish to make, relative to the Federal Reserve or any matters of a financial nature, will be welcomed by us.

**Ladd & Tilton Bank**  
Established 1859  
Portland, Oregon

Total Resources over \$21,000,000

# BETTER FRUIT

AN ILLUSTRATED MAGAZINE PUBLISHED MONTHLY IN THE INTEREST OF MODERN, PROGRESSIVE FRUIT GROWING AND MARKETING

## Banking the Fruit Crop

By J. J. Rouse, Cashier Fidelity National Bank, Spokane, at Washington State Horticultural Convention, Kennewick, Wash., January, 1918

WHEN the harvest days are over and the pay check is in sight, this subject of mine ceases to be a problem. The H. C. or L. and the numerous calls for Red Cross and Liberty Bond subscriptions, and other worthy causes which have to be supported at this time, point the way for rapid disbursements of the crop proceeds, so you do not need any suggestions from me as to final disposition of the proceeds via the check-book route. If I am to interest you at all, I take it that it must be by a discussion of ways and means of making, not only the crop itself, but the crop prospects from soup to nuts—or from blossom to loaded car, and in transit to market—a basis for bank credit, in order that the necessary expenses of operation may be met as they accrue.

The ideal loan, sought by commercial banks, is one of definitely fixed maturity date—not too far in the dim future, with an absolutely known and proven self-liquidating power attached. While live-stock loans have greatly increased in volume and popularity with Northwestern banks during the last few years, as have loans arising from the production and distribution of various other products of this favored section, yet wheat was for so a long a time king of our agricultural products that the term "Good as the wheat" still has a real significance. If the horticulturist would like to coin a new commercial phrase, "Good as an apple in the box," he must strive for the standardization of his product and stabilize his marketing methods to an extent that will approach "King Wheat" in sureness of returns at harvest time, on capital invested and labor and expense involved.

It seems to me that the various stages of development through which the fruit industry has passed and is passing, corresponds somewhat to like stages of development through which wheat farming has passed in this country, as well as in the Middle West. There is, however, undoubtedly one striking difference. Whereas the wheat farmer's plant equipment—his land was obtained partially by homestead entry, and the balance at raw material prices, which when developed into a producing plant gave him, in the rise of land values, compensation for the labor, time and money expended in bringing it to a productive basis, the orchardist, in many cases, paid for raw lands and water rights, which were simply the raw materials necessary for the construction of a productive plant—a price equal to the value of the plant when fully equipped and running on a productive basis.

If we regard a farm or an orchard as a plant for the production of food, this state of affairs is comparable to a manufacturer, who pays as much for his site and the materials with which to build his factory, as his factory is worth when completed and ready for productive operation. He is then faced with a loss equal to the cost of labor in constructing the plant, which loss must be written off his books, or he is forced to sell his output at a price sufficient to pay dividends on watered stock to the extent of this increased plant cost.

If his product is highly specialized and non-competitive, he may for a time be able to successfully follow the latter course, but if he must compete with other factories operating on a fair value capitalization, whose stock is not watered, and who are not forced to earn dividends on excessive plant cost, he will sooner or later find a readjustment necessary.

If Northwestern boxed apples are to compete with other food products—and by this I do not mean other apples alone, but other fruits or foods which can be made to take their place on the table and in the dinner pail—then, in my opinion, they will, after the close of this war and the general fall in commodity prices, which is bound to follow, have to be sold at prices to net the grower, after cost of production and marketing is met, a fair return—not on what he may have paid for his land, but on what it is worth.

Of course, a good part of decreased prices, which I believe is bound to come, may be absorbed in correspondingly decreased cost of production, when labor and all materials will doubtless be cheaper, but I do not believe you can successfully compete in after-war markets, at prices which used to pay reasonably fair interest rates, for a few banner years only, on inflated land values. This inflation is one of the principal reasons why the fruit industry has been viewed with more or less suspicion by the bankers in the past, and is one obstacle in the way of easily banking the crop, in the sense of obtaining advances at the various stages of progress from blossom to warehouse. The grower who is the victim of this inflation is more to be pitied than blamed, and the early promoters and exploiters of the fruit industry are no more truly representative of the men upon whom the future of the industry depends than is the unscrupulous bank promoter and organizer representative of the men who have developed and are handling the banking business of this country. Both are fly-by-night parasites looking for easy-money com-

missions, and there is no more place in the general scheme of eternal fitness of things for either than for a fifth wheel for a wagon; and why chambers of commerce and civic organizations the country over, who had the good of the fruit industry at heart, should have been so completely led astray by the wily orchard-land promoter as to assist his game passeth understanding. The only criticism that can be made of the grower who sacrificed to the promoter who sold him raw land at the price of a bearing orchard six or seven years of hard toil necessary to bring the orchard to bearing is an apparent bulldog determination to insist that the promoter was right and that the land is really worth two or three thousand dollars per acre, because during a few banner years when few orchards were in bearing and crops were poor elsewhere and our big, red apples were a new thing in the markets, he was able to sell his crop at fancy prices which paid dividends on his investment.

It is no more fair to judge the fruit business by these few exceptional years, and fix orchard-land values accordingly, than it would be to infer that we will always have two-dollar wheat and adjust wheat-land values accordingly.

Your banker, if he is a safe man to handle the finances of your community, is not going to be so much influenced in his judgment of what he may reasonably expect you to do, by what you did at a brilliant start, as by the general average of what you can do over a period of years. He will also have more confidence in your good judgment if you list your land at sane values on your financial statement, even though your net worth appears smaller than heretofore, for he will see that you have had the nerve to face and admit your loss, if you paid too much for your land, and will have better hopes of you for the future if he sees that not only are you not trying to fool him as to land values, but that you have stopped trying to fool yourself.

Another thing that will tend to increase his confidence in you is a well-kept set of books and records showing exactly what you have been able to do with your orchard since it first came to bearing. Estimates and figures furnished from memory in round, even amounts are one thing, but actual black-and-white figures are another thing. The production of food is by far and away the biggest industry in this country, but undoubtedly the one about which the least is known by accurate, detailed bookkeeping.

The farmer would no doubt be too shrewd to deposit his money in a bank in which he knew no accurate book record was made of each and every transaction, or even in one in which the bookkeeping system was a little faulty, admitting of numerous errors. Yet, with the best of face, he asks the banker to put the money intrusted to his care into his business and when asked for a financial statement, particularly if full details are required, complains of red-tape and seems to feel that his honesty is at question when simple information is all that is sought.

I venture the guess that not one wheat farmer in five hundred knows the average cost of production and average selling price of wheat per bushel from his own farm over a period of the last five years. He can, perhaps, tell you something of the high and low spots, as, for instance, how he used to sell for thirty cents and how in 1893 he got nothing, and he knows that this year the Government didn't pay him quite \$2.00 in the field, but as to what his average net returns have been for several years, between the high and low price, he is guessing in the dark or trusting to memory. All are agreed, however, that the farmer gets skinned at every turn of the road, although he has no figures to prove it other than the fact that he hasn't much left. Perhaps if accurate records were kept, it would be shown that his business pays him as good or better returns than is paid by some of the alleged soulless corporations. Perhaps his business is not to be blamed if he doesn't keep any of the profits after he gets them.

A banker cannot form accurate opinions regarding other lines of business and the ability of the men engaged in them except from books and records which show what has been done in those businesses, and farming, the biggest business in this country, is certainly no exception. It seems to me that in the fruit business the keeping of records to show the cost per box of producing and delivering the crop, the price received and the net gain or loss ought to be a simple matter. If you want your banker to form a good, sound opinion of your business and your ability to successfully handle it, show him the recorded facts and figures, rather than give him estimates from memory. He doesn't dare trust memory in his own office, and would rather have your records than your memory. Well-kept records of what is actually being accomplished will go far toward putting the fruit industry on a solid foundation and toward overcoming the idea that it is a risky business because of the perishable nature of the product.

There is a risk involved in every commercial transaction, but the fear of apples spoiling in transit or in the hands of brokers and selling agencies has perhaps been one of the principal reasons why they have not heretofore been regarded "as good as the wheat." Yet I presume that if the percentage of the crops produced which has actually been lost was published and compared with the percentage of loss in the

banana industry it would be too small to be noticed. I think you ought to cackle a good deal about this. You know when you say "eggs" everyone thinks of hen eggs, yet the duck egg is just as good and twice as large. The difference is the hen cackles and the duck doesn't. Perhaps the banana industry, which is quite firmly established, is the hen and the fruit industry is the duck—which ought to wake up and advertise. I am a strong believer in printers' ink and the white light of publicity, and believe that the men engaged in the fruit business ought to take advantage of every opportunity offered to educate the public to the value of the Big Red Apple as a food product, to the end that the variety of uses to which it is adapted may be better known and appreciated and its consumption increased and your markets consequently widened.

I venture the guess that the average American family makes a great many more daily purchases of bananas, shipped from the tropics, perishable as they are, than of Northwestern boxed apples. When you have a firmly knit-together selling organization covering the entire United States, with a perfectly organized distributing system which makes the sight of your apples at every fruit stand and grocery store quite as common as the sight of oranges and bananas, so that it is as easy for the shopper to get a sun-tinted apple a day to keep the doctor away for every member of the family as it is for him to get the sun-kissed oranges, and when by educational advertising you have taught him to think in terms of apples as he now thinks in terms of bananas and oranges you will have, without reference to export markets, a demand which will go far toward absorbing your output and allaying the fear of overproduction, even with all the orchards in bearing, of the many that have been planted, which will ever see the productive stage. This fear of overproduction and the uncertainty of your limited markets, as well as the fear of decay in transit, is largely responsible for the unfavorable light in which the fruit industry has heretofore been held by a great many people.

It is a well-known financial maxim that "The higher the rate of return the greater the risk involved." Here, again, the big returns of the banner years in the infancy of the fruit industry have acted as a boomerang to discredit the industry to some extent in the minds of financial men, who, before committing themselves to support the marketing of the fruit crops, wanted to be shown the sureness of your markets in the big-crop years and the sureness of the percentage of returns in the poor-crop years. The man who has gone through the ups and downs of the business for several years and has records to show that he did not become over-intoxicated with success in the good years, nor had his heart broken in the poor ones, is now, in my opinion, in a better position to talk "turkey" to his banker, when he needs assistance, than ever before.

The industry is yet new, comparatively speaking, and while there is yet a great deal to be done much has already been done toward solving your problems and placing the industry upon a proven basis, and it is quite refreshing to take stock of the progress made, just as when climbing up a long hill it is refreshing to occasionally stop and look back to see how far you have gone.

If you will contrast present marketing conditions with what they were a few years ago when the commission men and consignment houses had it all their own way, you will certainly have cause to congratulate yourselves upon your good judgment in the organization of your co-operative selling agencies. Necessity perhaps mothered this invention and forced you to get together when it was every fellow for himself and the devil wasn't very far from the heels of any of you, but you must not forget to give co-operation the credit due for what has been done and stay together for all time, despite any and all petty jealousies which are so apt to creep into organizations of this kind.

No doubt some mistakes have been made, and others will be made, so long as you have only human beings to manage your affairs, and perhaps you have some men in your co-operative associations who are blessed with the spirit of criticism and can tell you of many things that have been done that ought not to have been done, and of many more things which have been left undone that ought to have been done—and, oh Lord, a thousand things that need fixing.

Russia today is a shining example of the handiwork of men, strong on destructive criticism but weak on constructive program; so before giving too much heed to the calamity howler and crepe hanger, perhaps it would be well to ask him for a well tried and proven remedy for the ills he so loudly bemoans.

Co-operative marketing associations, being institutions of your own creation, are just what you make them, and if they don't suit you it is up to you to help steer them in the way they should go. Their success or failure is absolutely up to you. The future of the fruit business in this country, in my opinion, entirely depends upon these institutions, and their success will be measured exactly by the measure of your hearty co-operation and support.

Based upon our observation and experience of the last few years, I should say, if asked to point out the principal weaknesses of co-operative selling agencies and prescribe remedies, that the chief faults are two—lack of capital to properly handle a task of such magnitude and a tendency to stray into other fields of activity than that in which they are best fitted to serve. Regarding the latter, while I am a strong believer in co-operation, I like to see it halt a safe margin this side of paternalism. I do not believe your co-operative association should attempt to do everything for its members and leave them nothing to do for themselves, any more than every member should at-



tempt to do everything for himself, unless we are to return to the pre-commercial age, when there were no specialists in any line, but every man used only that which he produced or fashioned with his own hands.

If the fruit growers attempt to establish not only their own lines of communication to all markets, but from all markets as well with an idea of eliminating all middlemen, then these middlemen will have to raise their own fruit in the back yard, and you will have to eat your own fruit. So, while I believe that you must hang together in your co-operative selling agencies or be hanged separately outside of them, I believe it is in the marketing of your output in which these agencies have been most useful and in which they are most likely to continue to be useful, rather than in co-operative buying of all the necessities of life, although there are doubtless some things of common use to all growers which can be purchased to advantage in quantity lots and satisfactorily distributed through the association to its members, such as spray materials, paper and boxes, but I believe that it would be poor business to attempt to cover too wide a field and take in too many lines of activity, if for no other reason than the enormous amount of capital required. Regarding the lack of adequate capital for handling the tasks you have assigned to your associations, I see no reason why the grower should hesitate to reinvest in the stock and surplus of these organizations some of the money they have undoubtedly saved him since their establishment. If he is afraid to do so and does not want to support with his own money, his own organization, which is supposed to be working for his own good and using the funds for his own benefit, then he should not criticize the banker for taking a tip from him and refusing to risk the bank's money where the grower is afraid to risk his, where the ratio of benefit is 92 to the grower to 8 to the banker. I therefore feel that after the capital stock of your co-operative organizations is paid in, every box of fruit passing through its hands should bear a tax equal to a small part of the increased net price the grower is getting by co-operative selling, to the end that a surplus working fund may be built to help take care of the increasing volume of business the association must do each year, and that your business at bank may be backed up by a combined capital and surplus capable of absorbing the occasional losses that are bound to creep into your business, just as they will creep into any other business involving the handling of perishable products and the extension of credit. This is equally true of the individual grower. He ought to at least set aside in a surplus fund part of the returns from the good years to absorb the shock of the poor years. These shock absorbers of capital and surplus in your business are quite as essential as springs and shock absorbers on your machine, and if you don't have them someone is going to get bumped when you hit the rough places

in the road. Your banker will be more willing to ride with you if you have them.

To sum up this somewhat rambling argument, I would say that with the progress that has already been made and is being made toward standardizing the grade and pack of Northwestern fruit, and the safeguards that have been put around the moving of it to market, it is quite possible to so widen the markets and increase consumption as to reasonably insure a ready sale of the output each and every year and place the industry on such a basis of sureness of returns as to make paper arising out of the commercial transactions involved in the marketing of the product quite as attractive to banks as the paper of various other industries now freely circulating through trade channels.

Keep in mind that it is products rather than prospects that must back up a loan, and that if you must have help when prospects are all you have you need facts and figures to demonstrate your ability to turn prospects into products. You must also be willing to tie your product to your paper and let it follow through to market, so that when maturity date arrives the automatic self-liquidating power will be also present.

A beautiful method of operation covering this has been provided by the federal reserve act in the trade acceptance. The national bank act declared and the federal reserve act reaffirmed a preference for bills of exchange drawn in good faith against actually-existing values. The most acceptable form of such a bill of exchange is the trade acceptance, which, briefly, is a draft drawn by the seller of merchandise on the buyer, payable at a definitely fixed future date and accepted

by the buyer. This must be accompanied by evidence, or bear declaration on its face that it arises out of a commercial transaction between the parties, involving the sale of merchandise, and in order to be eligible for discount at bank must be accompanied by signed financial statements of the parties showing satisfactory responsibility and a reasonable proportion of quick assets to current liabilities.

All the fruit growers must do to put their paper in this favored class is to be able to demonstrate to the federal reserve board that apples in warehouse and in transit to market are actual-existing values that are sure to continue to exist to the end of the chapter, and that the market is sure and steady enough to insure payment for the apples by the buyer upon arrival at destination, and that all parties to the paper are financially responsible and proper safeguards are employed for protection of the apples, such as warehouse facilities to avoid loss from freezing, proper cars for safely shipping and adequate fire-insurance protection, and perhaps a few other little things like that.

But believe me, all this, and more, is worth while, for the old days of haphazard jawbone style of credit are at an end, and the man who wants it now must be able to cite book, chapter and verse for the faith that is in him, or that he wants the banker to have in him; and the fellow who is conducting a farm or an orchard on a business basis, and has recorded facts and figures with which to illustrate his story, is more likely to get a respectful hearing and live happily ever after than the fellow who approaches the custodian of the long, green alfalfa from the "You know me, Al" standpoint.

## The Labor Problem Among Fruit Growers

By Dr. Suzzallo, President University of Washington, Chairman State Council of Defense

**T**HE State Council of Defense is aware of the great seriousness of the labor problem for the horticulturists. The last season was difficult because of a shortage in the labor supply and strikes. Since then there has been one complete military draft and another is coming about the month of April. In addition, the large growth of war industries in this state and in Oregon has drawn still further numbers from the ranks ordinarily available for agricultural labor. Still larger numbers will be drawn into industrial establishments the next three months. All this forecasts still further labor shortage. The situation is menacing and must be met because the food situation is crucial.

The policy of the State Council of Defense is to plan early to meet this situation. It has already held several conferences on the subject with government officials. Thus far its organized work covers the following points: First, the United States Employment Service, which is now established in a few places in this state without adequate co-ordination, is to be extended and co-ordinated under the supervision of

paid government officials. This machinery is being set up now for the shipbuilding industry's use this winter, and it can be utilized for the ranchers this spring and summer. We understand a Federal appropriation will soon be available for this purpose. Second, the public service reserve is now being organized to tap previously unused labor resources. The Council of National Defense has already issued suggestions for this work, and a state director has been appointed. The immediate co-operation of this organization will be with shipbuilding, but its mechanism will be turned over to agricultural needs as soon as the present crisis has passed. Part of its machinery is specially devised to aid the rancher.

The work will cover: The men's working reserve; the women's working reserve; the boys' and girls' working reserve. Each county will have a county director with two associates, probably some school official representing boys and girls, and one other person representing women. These county officers will work in direct connection with the United States Employment Service and will perform two services:



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Check and report labor needs to the United States Service; find available labor reserves among the men, women and youth of the county.

The Council, on the basis of the experience of last summer, recommends certain policies which have been of great aid during the difficulties of last summer. They are: Let every method of economizing labor be put into effect. This applies mainly to the grain farmers, where machinery can be used to economize labor. If any means of helping the horticulturists to economize come within their experience, these should be formulated at once and the information spread. Let every rancher get his primary labor supply from his family, relatives and friends, particularly those living in towns and cities. This will give a solid and loyal emergency corps, even though it may often be inexperienced and not fully efficient, and it will be a safeguard against labor agitators and strikes at the crucial moments when such difficulties interfere most. Let every rancher get his secondary labor supply from other people, strangers, who are nevertheless people with a stable domicile living in the

community or the county. If adequate wages and good living conditions are provided, these workers can be attracted away from other occupations less essential or in slack season. Let the tertiary labor supply come from the migratory labor class, which is least dependable at the present time.

The Council would suggest that the horticultural association take the initiative in considering the whole problem of the agricultural labor supply in this state. The procedure might be along the following lines: Have your association appoint a committee empowered to consult with the State Council of Defense and the U. S. Employment Service, and draw up a standard policy to recommend to the individual members of the association. Ask all the other agricultural associations to appoint similar committees. A meeting of the State Council of Defense and these association committees could then be called to discuss and formulate the whole matter. Mr. Rogers of Waterville, a member for farm labor in the State Council, would be especially glad to have this meeting I am sure.

When I consider how much the leaders of the various associations were able to help themselves and the Defense Council this summer on the fruit-box situation, I am sure of equally effective policy in dealing with this problem. There are two other problems that should be considered with labor supply: The question of good standard wage, so as to avoid merely taking workers from each other without drawing in the needed new workers. The problem of getting a special committee of farmers and sanitary engineers to plan a standard but cheap equipment for housing workers during the season. A great many city workers who were induced to go into the country have said that they would not return to the orchards next year because of the unsanitary conditions. Our experience is that this is a difficult problem to handle cheaply. The careless will make no expenditure and some will spend more than they need to get a good, standard living condition. In other ranches situated near a village or town, another method used is to devise adequate transportation facilities such as is done for consolidated schools transporting pupils.

A resolution was drafted, presented and carried as a motion that the executive committee of the Horticultural Association co-operate with the State Council of Defense in carrying out this program.

## Planting Trees in Buckshot Soil

By C. H. Witherspoon, Arkansas

**B**UCKSHOT soil is not looked upon by horticulturists as very good orchard ground. As we desired to plant several hundred pecan trees in this type of soil and did not feel greatly encouraged as to the success of the project, if we planted the trees by ordinary methods, we decided to employ what was to us a new method of planting; that is, using dynamite to blast the holes.


We were very much pleased with the results. We found it to be much quicker and cheaper than digging, and what is more important, the dynamite broke up the soil nicely and made an ideal bed in which to plant. We used a half pound of dynamite for each hole, loading the charges in the bore holes about two and one-half feet deep. Very little digging was required to get the dirt out of the holes and prepare them for the planting.

In view of this experiment, I feel that I can confidently recommend dynamite for tree planting, especially in buckshot soils.

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# U. S. Rubber Footwear

# Irregular Emergence of Codling Moth at Hood River

By Leroy Childs, Entomologist and Plant Pathologist, Hood River Branch Oregon Experiment Station

[Editor's Note.—The following observations on codling moth in Hood River, by Leroy Childs, entomologist in charge of the Experiment Station, during the years of 1914-15-16-17 will prove very interesting and valuable. It should be borne in mind very distinctly that the conditions refer to Hood River climate, which is very different from almost any other section in the Northwest, being subject to great changes and more variation in weather and generally cooler throughout the entire season. However, some very important facts are well established by Mr. Childs, as indicated in the article. It certainly seems important to call the fruit growers' attention in the Northwest in general to the fact that if the great variation at the time of the emergence in Hood River is due to climatic conditions it is quite likely that more or less variation occurs in other districts. The editor does not mean to say this is a fact, but it looks very likely. The damage from codling moth in several districts was very excessive in the years 1916 and 1917, particularly in 1916, with a heavy damage in 1917. It is the editor's impression that a great many have followed a set spraying program, spraying on the same dates every year. Possibly this is the cause of the severe loss. It is quite evident from Mr. Childs' investigation that, owing to the weather conditions, the continuation of the brood may cover a longer period. A great many fruit growers have believed they can control codling moth by three sprays. Investigation as given here is quite conclusive evidence that in some years in Hood River it will take four sprays, possibly five. It is also quite probable that the same conditions may prevail in other districts, and instead of three sprays being sufficient, four or five may be necessary to effect a satisfactory control of the codling moth. As before stated, the investigation of the codling moth in this article is confined to Hood River. It seems reasonable to assume that by reading this article the fruit grower in other sections of the Northwest will be put on his guard and will watch the development of codling moth more carefully. One other very important feature put forth in this article is that the average orchardist, for some reason, is frequently not able to determine the proper time for spraying for codling moth, and therefore it is suggested that every district that has not already a trained man to determine the proper time for spraying for codling moth would do well to make arrangements for putting in a sort of experiment station to carry on the work.]

**T**HIS article includes a brief resume of the observations that have been made relative to the behavior of the codling moth at Hood River, Oregon, during the years 1914, 1915, 1916 and 1917. The work has been conducted for its applicable value chiefly in order that the local orchardists might be supplied with first-hand information on the seasonal progression of this insect's activities which would enable them to more intelligently and satisfactorily apply their lead sprays. Not being a major project the investigation lacks many details that would more clearly demonstrate the very wide seasonal variations in the life history of this apple insect from one year to another.

The two most important points that have been brought out in this study are, first, the very decided variation in the emergence of the broods from one season to another and its necessary influence on the timing and applying of sprays in order that control may be entirely successful. Secondly, the investigations indicate that sweeping recommendations given out often in the form of spring bulletins from a central or distant station are far from meeting the requirements in codling-moth control in the different apple-growing sections of the Pacific Northwest, where vast ranges of conditions are found at rela-

tively short distances. These ranges, due probably to temperatures varying on account of altitudinal, coastal and interior influences, are such as to warrant seasonal studies of the insect in the different sections in order that a comprehensive knowledge of the insect's activities be available for the use of orchardists in their control measures. Until such stations of study are maintained we can expect a great deal of trouble from the codling moth in the different apple-producing districts.

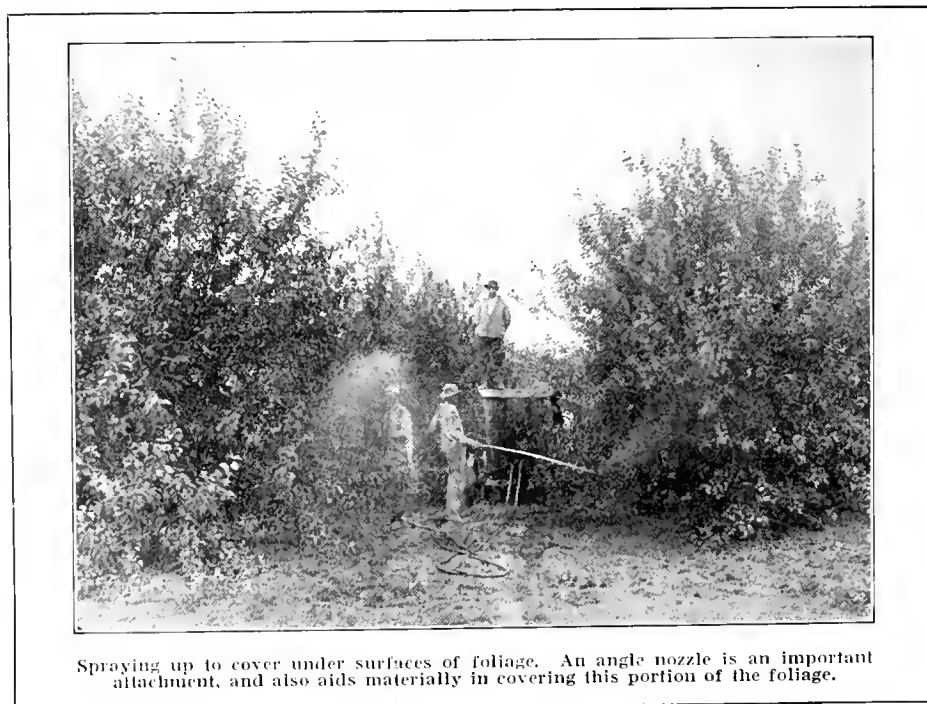
The variation in the life history of the moth, which influences the timing of sprays, has been found to be of more importance in the control of the second generation of worms than the first brood, as in the case of the latter, conditions which retard vegetative growth usually directly influence insect activity with a result the standard spring applications—usually a combination insecticide and fungicide—can under most conditions be effectively applied by following a prearranged spraying program.

The information gained and the points herein discussed have been obtained through yearly breeding cage studies and field observations of the different stages in the life cycle of the codling moth. Properly prepared and watched, the breeding cage can be used by the investigator as a good index for the successful timing of sprays in order to get maximum control. However, in the hands of the novice, particularly one who is not very familiar with insect life information gained from the cage can lead one astray. The writer has found some growers who can draw sound deductions, others the following of the information divulged would prove disastrous.

The breeding-cage information gained by the writer during the past four years has on many occasions proved decidedly perplexing, and was only of value when carefully weighed with surrounding general field conditions. As an example of this: In 1915 we observed several moths issuing in the breeding cages as early as April 27, due to the fact that about a week of very warm weather occurred at that time. This was followed by cold, rainy weather during the remainder of the spring. No more moths issued in the cages for nearly a month and no eggs were found until May 28. This is only one of many similar observations. When problems arise that puzzle the trained investigator—who can make deductions of value only upon considering the problem from all angles—the orchardist stands little chance of gaining more than approximate information at best. In the absence of expert advice, however, breeding-cage studies on the part of orchardists are to be encouraged. Its maintenance not only keeps them more keenly interested in habits and control but if carefully attended to serves as a very good indicator where developments are normal.

Breeding cages employed by the writer have been of two kinds: One a box 14x16x20, screened in on three sides by ordinary window screening, and the other the actual screening in of the trunks of apple trees which were known to be harboring codling moth; in order to insure a good supply trees were often banded before the brood left the fruit, following which the cages were attached.

For spring study of the insects' development, cages were always prepared and stocked with worms during the fall of the year. In so doing no unnecessary



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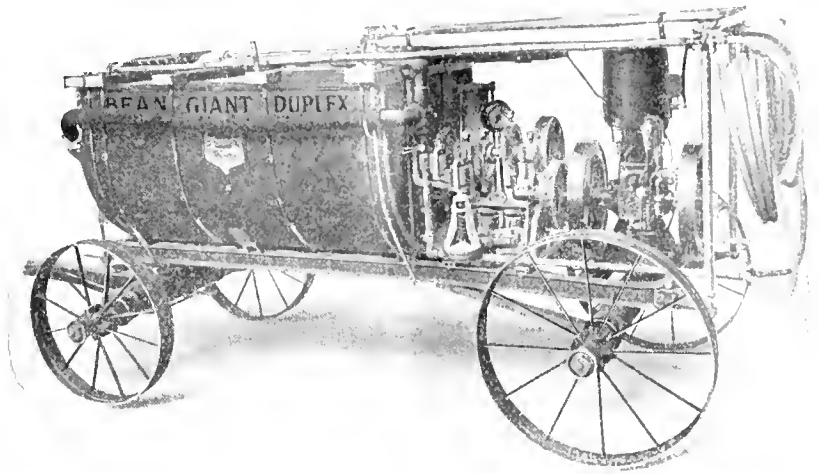
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Cheap outfits can always be had, but the best outfits are difficult to get at this time, as the demand for them is stronger than ever before. Therefore if you want a Bean investigate at once. We are placing extra large stock of repair parts and extras in Portland and other Northwest points, so as to take care of all of our customers and avoid delays in shipping.

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Send for Our Complete New Catalog of Hand and Power Sprayers, Spray Hose and Accessories. It illustrates and describes the entire Bean line, explains the many distinctive exclusive Bean features, and tells you everything you ought to know about spray pumps. Send the coupon—now. Also, see your nearest Bean dealer. We have representatives in all fruit-growing sections.

# BEAN SPRAY PUMP CO.

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**Bean Spray Pump Co.**

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Gentlemen: Please send me your new complete catalog

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stimuli, showing itself either in the form of increasing or retarding emergence, occurred. A much greater variation in the emergence of the moths has been noted where transfers from the tree trunks were made during the spring of the year. The mortality of spring transfers is also much higher, making it often difficult to gather accurate information. To facilitate the stocking of cages, trees are usually banded before the worms leave the fruit. Many of the insects establish themselves in the folds of the burlap which is used and transferred to the cage, without disturbing them if their cocoon has already been spun. Others can be readily removed from the trunk and be placed in the cages which have been provided with bark, chips and decaying bits of wood in which the larvae readily establish themselves. To determine development from some of the worms which have not suffered transferring, worm-infested apples are placed in the cages; these are removed as soon as the worms have left the fruit.

The cages are distributed throughout the valley at different altitudes. Commercial apple orchards are found at heights ranging from 100 to nearly 2,000 feet. The average seasonal variations in the two extremes given has been found to be from fifteen days to three weeks for the first brood and about ten days for the second. In the emergence of the first brood a very definite progression from the lower to the higher elevations occurs; it is much less pronounced for the second, due probably to the fact that summer temperatures during the day at least are more nearly uniform throughout the valley than are the spring temperatures.

As near normal orchard conditions as can be determined are taken into consideration when establishing the cages. This particularly refers to sun exposures, wind and rain that emergence may be as nearly uniform to the surrounding orchard conditions as possible. As far as time has permitted breeding-cage observations and notes have been checked against field observations.

In comparing the dates of emergence of the moths of the first brood over this series of years there occurred a variation of a full month and a half. A record was not obtained in 1914, but in 1915 the first moths issued in the cages on April 27. In 1916 this phenomenon occurred on May 26 and in 1917 on June 15. The question that immediately presents itself is: What factor or group of factors is responsible for that very marked variation. A study of the existing weather conditions during these years assist to a large degree in supplying the answer.

Owing to the fact that the writer did not arrive in Hood River until the middle of July, 1914, observations were not taken relative to the weather conditions during the early season. However, a study of the daily weather report indicates that the temperatures for April, May and June for this year were exceedingly mild. The mean average temperature being much higher than in any of the other three years under con-

sideration, and is largely due to the fact that the average minimum temperatures were uniformly higher during the three months. The result was that codling moths issued in large numbers early in the season. This was followed by favorable weather conditions for egg deposition and hatching. Mr. G. F. Moznette, who made observations at Hood River on the activities of the codling moth during the spring of 1914, found eggs hatching in large numbers in several orchards on June 5. On this date many of the worms had entered the fruit. Summer weather during July and August continued favorable for development. The first worms were found leaving the apples on June 24; pupae were noted on July 7 and moths emerged July 19. On July 27 the first eggs of the second brood were found on the fruit. The station gave out at this time notices for growers to begin their spraying operations for the control of the second generation of worms.

In 1915, during the months of April, May and June, there was much more fluctuation in the daily temperatures than in the corresponding time during 1914. The average maximum temperature for 1915 was practically the same as for 1914, but the minimum temperatures were very much lower. In 1915, due to this fluctuating daily temperature, breeding-cage observations seemed of little importance when correlated with timing of sprays for the control of the first generation of worms. The latter part of April and the first few days of May were very warm, resulting in the emergence of numerous moths in the breeding cages on April 27 and the days immediately following. At the time the calyx spray was being applied in an orchard in which the writer was carrying on experimental work many moths were flushed from the trees when the spray was thrown into the foliage. Following the 6th of May and continuing throughout the remainder of the month rainy, cold weather occurred. The influence of these conditions not only prevented emerged moths from depositing eggs, but checked—practically stopped—emergence which had begun on April 27. Eggs of the codling moth were not found until May 28, one month after the emergence of the first insects. These were found plentifully during the month of June and early in July. The first hatching eggs were noted on May 31. The average maximum temperature during July was about six degrees below normal, which apparently retarded the development of the insects during this time. The first moths of the second generation issued July 26 and eggs were first noted August 10, fourteen days after the egg hatching of 1914. Growers were advised to have their spray on by the 12th, or fifteen days later than was recommended the preceding year.

The year 1916 proved to be one of more irregularities in the habits of the codling moth than of any ever previously studied by the writer. Spring and summer seasons were very far from normal. The spring and early summer was cold and accompanied by many rainy days, and late summer, though

fair weather prevailed, at no time did it become warm. The first moths issued in the breeding cages May 26, or at practically the same time eggs were present on the trees during the two preceding seasons. Emergence of moths was at its height between the 6th and 15th of June. On June 10 the first eggs of the season were observed. Beginning with the 17th of June (at which time egg deposition should have been at its height) rainy-weather conditions set in, which continued until July 4. During this time temperatures were very low, there being only five days during this period at which time the thermometer registered above 60 degrees at sunset (the theoretical minimum temperature required by the codling moth for the deposition of eggs). Of these five days, three registered 62 degrees. Eggs of the first generation were found present on the fruit as late as the 8th of August, but at no time during the summer were they numerous.

Moths of the second generation were found for the first time on August 18, exactly one month later than in 1914 and twenty-two days later than in 1915. But very few second-brood moths appeared in 1916; for the most part but one generation occurred. This definite statement can be made due to results of breeding experiments conducted to determine this point. Those worms which resulted from eggs deposited prior to the cold, rainy weather which extended from June 16 to July 4 produced second-generation insects; those insects resulting from eggs deposited following this cold period failed to undergo any changes after they left the fruit and remained as larvae on the trees until the spring of 1917.

The year 1917 was productive of still different irregularities in codling-moth behavior. The past season has been one accompanied by heavy losses in many Northwestern apple-growing sections due to the great numbers of worms. Hood River was apparently more fortunate than most of the sections in this respect, but nevertheless losses resulting in a good many orchards were serious.

In 1917 the early season was very backward; March, April and May were quite cold, accompanied by many days of rain. This prevailing condition had a very marked influence on plant development; leaf buds on the apple trees did not begin to burst till the first of May. At this time during the years 1914 and 1915 the petals were falling, followed shortly by the calyx spray. Even after this late date foliage development continued to be very slow owing to the continued low temperatures. The average maximum temperature for the month of May was but 62 degrees. A temperature of 70 degrees was not reached until the last day of the month. With the arrival of June weather conditions changed; continued warm, settled weather following June 4. The first moth, however, did not emerge in the cages until June 15. This observation was checked up with orchard conditions during this period and no moths found to have issued under field conditions up to this time. This date was

# Every Page is of Interest To Northwest Farmers

If you can't put a gun on your shoulder, sow a seed or raise a hog—never has the need been so great for crops and food.

**LILLY'S** seeds are *Best for the West* and you'll find our catalog a complete compendium and real guide to seed buying and planting. Contains Field, Farm and Flower Seeds, Fertilizers, Poultry Supplies, Stock Foods, Bee Supplies, etc. *Buy early*—write for your copy today.

The illustration shows an open seed catalog with two pages visible. The left page is numbered '10' and the right page is numbered '11'. Both pages are titled 'SEATTLE LILLY'S PORTLAND'. The left page features several vegetable varieties: 'CRIMSON GLOBE' (Best Second Early of Main Crop Beet), 'Early Egyptian Beet', 'Early Blood Turnip Beet', 'Eclipse Blood Turnip Beet', and 'Half-Long Blood Beet'. The right page features 'Broccoli', 'Brussels Sprouts', and 'LILLY'S GLORY CABBAGE' (Splendid Second Early Variety: Round). At the bottom of the catalog, there is a large 'FREE' stamp and a coupon that says 'Cut out, Fill in, and Mail to Lilly's, Seattle, Wash.' with fields for 'Name' and 'Address'.

nearly a month and a half later than the first emergence in 1915 and twenty days later than in 1916. From June 15 on, however, activities of the moth progressed in war-time speed. Favored with ideal weather conditions the large numbers of worms which established themselves on the tree trunks and protected locations throughout the summer of 1916 issued as moths and apparently deposited their full quota of eggs. The first eggs were found on June 25, practically one month later than in 1915 and fifteen days later than in 1916, which was in itself a late season. Hatching

eggs were noted on the 27th, and on July 26, or at the same time noted in 1916, worms were found leaving the apples to undergo their normal changes. On August 3 the first moth of the second brood issued and eggs were noted on August 8, seventeen days earlier than in 1916. In other words, codling moth activities started off one and a half months behind that of 1915, and by the time eggs of the second generation were deposited were just two days behind. The first brood of 1917 started off twenty days behind that of 1916, and by the time eggs of the second genera-

tion were deposited if had gained seventeen days.

Prevailing warm weather continued throughout August, September and October, during which time the second brood of insects were very active in 1917. Hatching of the eggs reached its height during the middle and latter part of August, but continued until the fruit was harvested. Eggs on the fruit in the boxes were found while checking up experiments as late as October 16. This continued activity made it advisable for our station to recommend an

Continued on page 16

# BETTER FRUIT

HOOD RIVER, OREGON

Official Organ of The Northwest Fruit Growers' Association  
A Monthly Illustrated Magazine Published in the  
Interest of Modern Fruit Growing and Marketing  
All Communications Should Be Addressed and Remittances  
Made Payable to

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Entered as second-class matter December 27, 1906, at the  
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of Congress of March 3, 1879.

Produce all you can—save all you can—  
waste nothing.

Keep healthy by eating apples.

Help win the war by buying Liberty  
Bonds.

People who are not able to buy Liberty  
Bonds should buy Thrift Stamps.

Use fruit that requires less sugar.

All fruits contain sugars in the most  
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Drink coffee and tea with very little  
sugar—better without.

Produce more by intensified farming  
and clearing more land.

Spray regularly and thoroughly and  
produce a clean crop of fruit—only  
clean fruit pays.

You cannot do a good spraying job with  
a poor outfit—buy the best.

Put an apple in every child's lunch  
basket.

A box of small apples costs less and  
will supply a greater number of chil-  
dren with an apple apiece.

Every dinner pail should contain an  
apple.

Sharpen your tools in the winter and  
have them ready when the spring  
work begins.

It is wise to overhaul and clean the  
spray outfit.

Be sure the spray outfit is in first-class  
condition in advance of the spraying  
season.

Spraying.—Last year weather conditions were especially favorable, consequently the growers had very little fungus. However, codling moth was serious. The growers who followed the spraying program, spraying in the right way at the right time, had comparatively little loss from codling moth. Those who did not suffered severely. The aphid in 1916 caused a heavy loss; in 1917 the loss was much lighter. The loss from San Jose scale and the damage done to the trees, which is always more or less prevalent, makes it nec-

essary for the grower to watch his orchard very closely. If any scale is present the orchard should be sprayed. To sum up briefly—because one season a man suffers very little from any pest or diseases he must always bear in mind that next year the conditions may be favorable to the development of diseases or pests, consequently the only one safe method is to follow the spraying program, omitting none of the sprays for any of the diseases or pests that infest orchard communities. One word more of caution seems advisable, that is in reference to the spray materials used. There are a sufficient number of good makes of arsenate of lead on the market so there is no reason for a fruit grower to take any chances on buying an unknown brand or a brand that is questionable.

Advertising the Apple.—“Good as an apple in the box” should be made a slogan, and it should be made just as effective and just as strong as “Good as the wheat.” “Good as an apple in the box” can be brought about by superior product, packed absolutely according to standard grades, careful handling and being placed on cold storage early in the season promptly after packing, so that none of the life of the apple has left. Under these conditions, with proper demand and satisfactory values, then the fruit grower will be entitled to say when asking credit, “Good as an apple in the box.” This demand can be created by proper salesmanship, proper publicity, wide distribution. Every other well-known mercantile commodity that we use, eat or wear, that is extensively sold, has an established reputation brought about through advertising and salesmanship, coupled with quality. There is no question about the fact that advertising is one of the great big factors in increasing the demand for a first-class commodity. Illustrations are too numerous and too well known to mention them in detail in regard to general commodities, but it might be worth while to call the fruit grower's attention to a few publicity campaigns that have been carried on in connection with the fruit industry that have proved extremely successful. By advertising, the Sunkist orange has created an immense demand that consumes 50,000 cars a year, whereas 1,400 cars a few years ago was considered an oversupply. Sun Maid raisins have raised the raisin industry of California out of stagnation and put the business on a proper paying basis. Bananas a few years ago could only be had in a few of the large cities. By the greatest salesmanship ever carried on a demand for bananas has been created and bananas are now sold in every city and every village in the United States. The advertising carried on for Skookum apples by the Northwestern Fruit Exchange has been a big factor in securing satisfactory prices. The advertising campaign carried on by the Hood River Apple Growers' Association on the Blue and Red Diamond brands has shown splendid results in establishing these brands and has been a big factor in selling them at satisfactory prices.

The advertising campaign carried on by the Yakima Valley Fruit District Growers' Association with the big “Y” brand during the year 1917 has been of great value in creating a reputation and a demand for that brand and increasing the consumption of apples. Loganberry juice was little used and seldom heard of until this delightful drink was given publicity through the advertising of Loju. Comparatively little cider was drunk until in the last year or two and now cider is being sold extensively, one of the popular brands being Appleju. The Pheasant Fruit Juice Company of Salem, Oregon, by advertising and publicity coupled with good salesmanship, built up a splendid business on their fruit juices.

Loss From Wormy Apples.—Does it pay to omit one spray? Emphatically no, even though the cost of spray has advanced. Just take a piece of paper and do some figuring on the cost of spraying, the value of a crop of fruit, and the damage from worms. If you are not handy with figures consult the information contained in the table prepared by Mr. S. W. Foster appearing elsewhere in this edition. If the loss is 3 per cent, at \$1.00 per box, and the crop averages 300 boxes per acre, the loss will pay the cost of spray material of four sprays at 300 gallons to the acre for four times. Every grower will admit that 3 per cent is a small loss, as many growers lose 10 or 15 per cent, and growers understand fully, in addition to this, that there is an extra loss from healed-over stings which are worth less in value on account of having to be packed in lower grades. The editor advises all fruit growers to give the matter a little thought and a little study and to do a little figuring, feeling sure if they will do this they will omit none of the sprays or fail to spray thoroughly.

Fruit Growers' Associations.—The fruit growers' association is expected to do two things for the fruit grower—sell his crop at satisfactory prices and furnish him the necessary supplies, such as boxes, paper and spray material. To do the latter, especially, requires capital, more so now than ever before, when the time limit on credit is being shortened on account of war conditions. Therefore it is more important for the fruit grower than ever before to help create a surplus for his selling organization. A small amount per box in a few years will build a splendid surplus. Fruit growers should not hesitate in being willing to contribute to this surplus—in fact it is a necessity. Goods that are bought must be paid for. A small amount per box of one or two cents per year will soon build a splendid surplus in a very few years. With good equipment in the way of warehouses, cold storage plants, etc., paid for, or being paid for, and a good surplus, an association is in a position to borrow money, but if the fruit grower is afraid to contribute to this surplus how can he expect the bank to have sufficient confidence to be willing to advance money to the association.

# THE MYERS AUTOMATIC POWER SPRAY OUTFIT

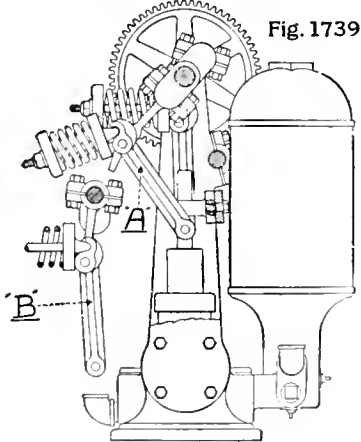
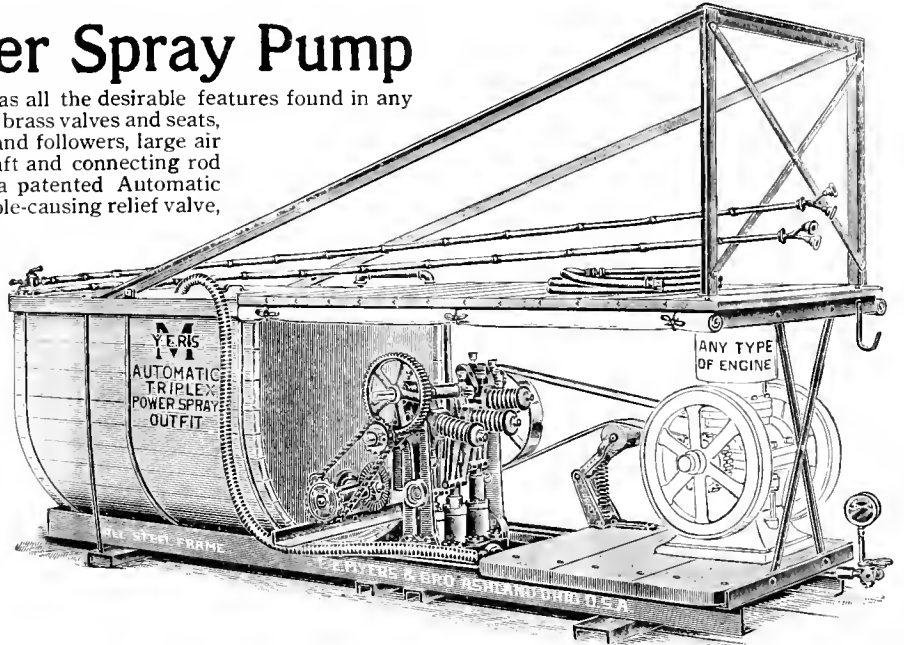
With Automatic Pressure Governor

VERTICAL CYLINDERS—NO RELIEF VALVES—MACHINE CUT GEARS

Automatic Control. Insures Safety. Secures Uniform Pressure and Eliminates Unnecessary Wear.  
 Plunger Guide above Plunger Eliminates all Side Thrust and Reduces Wear.  
 Belt Driven. Brass Fitted Throughout. Forged Steel Crankshaft.  
 All Boxes Babbitted. Improved Oiling System.

## The Myers Power Spray Pump

With patent Automatic Pressure Governor, has all the desirable features found in any Spray Pump, viz., vertical cylinders, renewable brass valves and seats, large stuffing boxes fitted with brass glands and followers, large air chamber, machine cut gears, ample crankshaft and connecting rod bearings, etc. In addition it is fitted with a patented Automatic Pressure Governor which eliminates the trouble-causing relief valve, and briefly, has the following advantages over the ordinary construction. Safety—Pressure relief is not dependent on the operation of a sluggish or defective relief valve. Uniform pressure regulation—The governing mechanism is not exposed to the clogging or corrosive action of the spray liquid which always effects the operations of the relief valve. Elimination of unnecessary wear—Plungers and valves are in action only when spray material is passing through the nozzles.



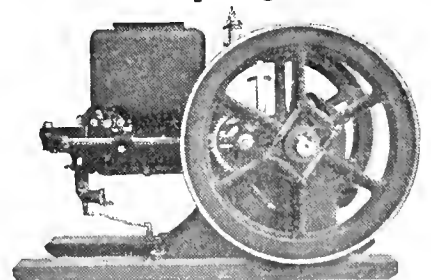
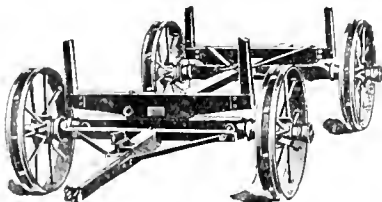
"A"—Position of Plunger Connecting Rod unlocked from crankshaft while not pumping.  
 "B"—Position of Plunger Connecting Rod locked into position while pumping.

In operation the Automatic Pressure Governor has for its object the positive control of the pump pressure. This is accomplished by a simple arrangement of a combined lever and spring on each plunger connecting rod. [See A and B, Fig. 1739] which, when the pressure reaches a predetermined limit, automatically stops the operation of the plungers without interrupting the driving power, and again permits them to resume operation when the pressure falls below this limit; also removes the entire load on engine causing it to run idle [saves gasoline]. All wearing parts thoroughly lubricated.

**YOU CAN USE YOUR OWN ENGINE AND TRUCKS IF YOU HAVE THEM**

## The Myers Automatic Power Spray Outfit

A Stover  
 Good Engine  
 AND THE  
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A Most Efficient, Reliable and Economical Sprayer

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PORTLAND, OREGON

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HOOD RIVER, OREGON

MANUFACTURERS  
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**Lime and Sulphur  
Bordeaux Paste  
Miscible Oil**

**Selling the Apple Crop.**—A few years ago a prominent banker informed the writer that it was a well-established fact the wheat farmer who sold his wheat at harvest time made more money than the farmer who speculated by holding his wheat. It seems there is a mighty good reason to believe this is true in regard to almost every product that the farmer or fruit grower produces. It certainly seems to be true in the fruit industry, especially apples, as it is true in reference to wheat. There is an occasional year when late prices show a considerable advance over early prices, but when the loss in condition, the loss in claims and repacking charges are figured it is the editor's opinion that the fruit grower is no better off than if he had sold early. Taking it all and all, on the average five or ten years, there is no question, in the editor's opinion, but what the fruit growers do well to sell extensively at harvest time.

**Spray Outfits.**—Every grower who has an orchard should own a spray outfit, but what is equally important, he should own a first-class spray outfit. If his old machine is out of date and partially worn out there is only one safe course to pursue, that is to buy a new one. When you buy a new one be sure to buy one that you know does effective and satisfactory work.

## Irregular Emergence of, etc.

Continued from page 13

extra moth-spray suggestion, the application of which was given out for September 5.

At this point the question might be asked whether it was not a partial third brood of insects which caused the deposition of eggs found late in October. A series of the earliest-matured larvae of the second generation were caged and their activities watched during the remainder of the season; in not a single instance did pupation occur. A study of this character has been conducted during some of the other seasons, but up to the present time no indications of the occurrence of a partial third generation has been observed at Hood River.

As a general practice in the past in most of the sections of the Northwest spraying for the control of the second generation of worms has been supposed

to be necessary between the 25th of July and the 1st of August. This was the belief of local orchardists at the time the writer began the study of this insect in Hood River. In 1914 the study checked up nicely with these suppositions; the 27th of July being the time recommended for spraying. In 1915 the spray was applied most effectively August 12; in 1916, where it was necessary, August 28; and in 1917 on August 12. In two years out of the four the recommended date for applying the summer application of arsenate of lead was the same; with the extremes there was more than a month's difference. Those of you not entirely familiar with codling-moth control might ask the question: What material difference would it make if the spray were applied even ten or twelve days before egg hatching? The answer would be in terms of obtainable results; in ordinary seasons of infestation the difference between complete control as against one-half, or even less, control. In other words, an application of spray cannot be completely effective during a period not to exceed twenty days at this time of the year owing to the rapid growth of the fruit and its necessary partial uncovering. If a spray is applied ten days in advance of the brood hatch, one-half of its complete effectiveness is forfeited at the time the application is made. Effectiveness in codling-moth control rapidly decreases at the end of twenty days. Egg hatching, on the other hand, under normal conditions, is usually approaching its height ten to twelve days following the hatching of the first eggs. At this time, then, a maximum need for protection is demanded and the effectiveness of the application of spray is rapidly decreasing. A large percentage of the losses that result and poor control obtained on the part of orchardists can be traced to this source.

The reduction of time of application of a spray to the shortest safe period preceding egg hatching will only be productive of good results. Very close timing, in the case of protracted egg hatching, will often save an extra application of spray and much unnecessary expense. To accomplish this end it is necessary to obtain a very intimate knowledge of the insects' seasonal behavior and demands a careful investi-

gation in the different sections by a thoroughly competent investigator.

It is the belief of the writer that the losses due to the activities of the codling moth in the Northwest can only be reduced to the minimum through the establishment of observation stations in the widely-separated apple-growing sections. An investigator located in some of these sections during the past year could have saved his community enough to maintain a station for at least twenty-five years.

Steinhardt & Kelly, who have always been a big factor in handling Northwestern box apples, is one of the firms that is not only progressive, but great advertisers and great believers in publicity. But even in the rush of their big business season they never forget their many friends or the people with whom they have done business, one of the last evidences being a large thermometer, about eighteen inches in length, which BETTER FRUIT desires to acknowledge, with many thanks, receipt of one of these thermometers, which is certainly very attractive and very useful in our office.

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By man who is not afraid to work. An experienced orchard man wants position as superintendent or foreman. Understands irrigation thoroughly; also stock raising and truck gardening. 18 years' practical experience. Can make good anywhere. Address

F. A. O., care Better Fruit

## Foreman or Superintendent

Wants position on large ranch or orchard where he can buy home and small tract of land. Thoroughly competent to handle place of any size. Have put several losers on paying basis. References furnished.

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## ATTENTION

### This May Interest You

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For particulars address

**The United States National Bank  
LA GRANDE, OREGON**

## 130-Acre Orchard

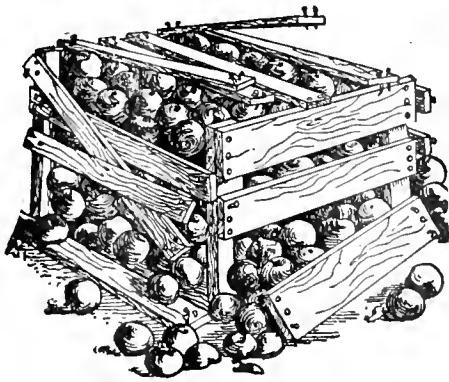
Practically immune from frost, principally

**Winesaps, Jonathans, Y. N. Pippins and Rome Beauties, with Elberta and Salway Peach fillers.**

One and a half miles average distance from depot, packing house, school, church and stores. The land is platted park style and can be sold in tracts of one acre and upward.

**S. J. HARRISON  
Benton City, Washington**





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Our Cement Coated Nails are always of uniform length, gauge, head and count. Especially adapted to the manufacture of fruit boxes and crates. In brief, they are the Best on the Market.

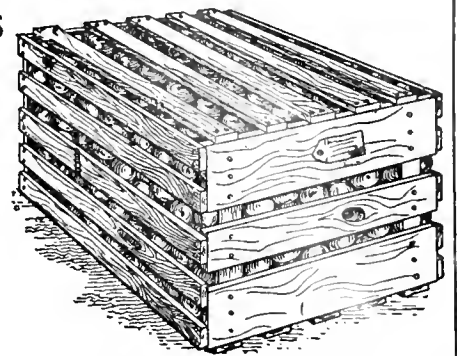
Write for Growers' testimonials.

### Colorado Fuel & Iron Co.

DENVER, COLORADO

Pacific Coast Sales Offices

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Los Angeles



AFTER use of C. F. & I. Co.'s Cement Coated Nails

## Pruning Stone Fruit Trees

By Professor O. M. Morris, Horticulturist Washington Agricultural College, Pullman, Washington

THERE has been a great deal more experimental work done in pruning the apple tree than in pruning the stone fruit trees. There has been a good deal of helpful information written on the latter subject, and the work has not been without very careful study and observation, but very little careful experimental work has been recorded and published. Stone fruit trees are very regular and bountiful in their blossom production, and if the climate and soil permit the securing of a regular crop is assured. The trees have several undesirable characteristics. They have short lives, inferior fruit borne on old trees, and trees develop in such forms that fruit is out of reach and difficult to gather. Correct pruning practices have eliminated to a very great extent these undesirable features.

The fruit of the tree is borne on the side of the last year's season growth of wood. Very few fruits are borne on spurs, and the vigorous shoots, as well as the shoots of more moderate or even slow growth, will bear their normal crop of fruit. This distribution of the fruit makes it possible to control to a very large extent the amount of the fruit crop by the character of pruning that is given the tree in late winter and early spring. To cut away one-half of the fruit crop means that one-half of the length of last year's growth of wood should be removed. This may be done by taking away one-half of each twig, or by removing one-half of the twigs. If the latter process is followed, it means that more hand thinning must be done under ordinary circumstances to insure a crop of fair size fruit. On the other hand, if the crop is thinned by heading back the twig's growth over the entire tree top the results of a few years of such practice develops a bush rather than a tree, with an outside growth of wood that is very dense. The result is the death of a great portion of short twigs and stubs and an unsatisfactory development of tree tops.

The ideal peach tree is one with an open top or center so that the light may filter through, and some sunlight will reach the ground through the entire

tree top. The small twigs of the peach are not able to endure heavy shading, and when so enclosed in the top of the tree soon dies. The fruit borne on weak twigs are always small and inferior. The tree responds well to pruning, and renews its vigor quickly when severely pruned. The new crop of shoots sent out from previously developed or adventitious buds soon lose their watersprout characteristics and become normal fruit-producing branches. There is a much greater tendency in the peach than in the apple to grow only from central or leader

branches, and a much less ability to develop a vigorous but stocky side-wood material. It is often necessary to cut out branches from the center of the tree and open out the top, but this is seldom done with the idea of developing fruit throughout the entire head of the tree, as is done with apples and pears. One branch may be taken out of the tree top and let in more light. The following year, or within a short time, part of the remaining tree top is cut away, so that new shoots start nearer the base of the tree, and the

Continued on page 18

### Arsenate of Lead Costs for Spraying Apple Orchards

Comparison of costs in paste form at average price in 1917, and at anticipated prices for 1918. Showing cost per acre and cost per box, according to production for three and four applications each season. By S. W. Foster, Entomologist for General Chemical Company, San Francisco.

Gallons of Spray per Acre Each Application	No. of Appli- cations	Tot. Gals. per Acre	Amt. Lead per 100 Gals.	Price per lb.	Cost per Acre	Boxes Per Acre and Cost Per Box			
						700	500	300	
1917— <i>a.</i> 300	3	900	4	36	.09	3.24	.0016	.0061	.0108
<i>b.</i> 300	1	1200	4	48	.09	4.32	.0061	.0085	.0144
<i>c.</i> 300	1	1200	5	60	.09	5.10	.0077	.0108	.0180
<i>d.</i> 600	1	2100	4	96	.09	8.61	.0123	.0173	.0288
<i>e.</i> 600	1	2100	5	120	.09	10.80	.0151	.0216	.0360
1918— <i>a.</i> 300	3	900	4	36	.15	5.10	.0077	.0108	.0180
<i>b.</i> 300	1	1200	4	48	.15	7.20	.0103	.0144	.0240
<i>c.</i> 300	1	1200	5	60	.15	9.00	.0128	.0180	.0300
<i>d.</i> 600	1	2100	4	96	.15	11.10	.0206	.0288	.0480
<i>e.</i> 600	1	2100	5	120	.15	18.00	.0257	.0360	.0600

With a Crop of	Boxes Per Acre		
	700	500	300
1% wormy means a loss of...	7	5	3
2% wormy means a loss of...	11	10	6
3% wormy means a loss of...	21	15	9
4% wormy means a loss of...	28	20	12
5% wormy means a loss of...	35	25	15
10% wormy means a loss of...	70	50	30
15% wormy means a loss of...	105	75	45
20% wormy means a loss of...	140	100	60

Take for example an orchard sprayed four times, using 300 gallons per acre at each application, or 1,200 gallons during the season, and using 5 pounds of paste lead to each 100 gallons of water, or 60 pounds per acre during the season, and producing 500 boxes per acre. Two per cent of the crop at \$1.00 per box will more than pay for all the arsenate of lead used. If the orchard produced only 300 boxes per acre, about three per cent of the crop will be required to pay for the lead used in 1918.

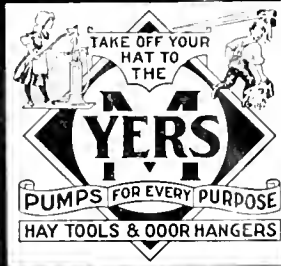
Then consider the large trees, requiring 600 gallons of dilute spray per acre, or 2,400 gallons for four applications, and using 5 pounds of paste lead

per 100 gallons, or 120 pounds per acre during the year—less than four per cent of the crop will pay for the lead used, if the orchard produces 500 boxes per acre. If the orchard produces 700 boxes per acre, less than three per cent of the crop will pay for all the lead used.

For the man who thinks he may omit one or more of the late applications to save money, he should seriously and carefully compare the cost of the application with the cost in the loss of apples, if by omitting the application any of the apples may become wormy.

When we remember that one per cent of the crop will pay for the arsenate of lead used for one application, it is dangerous business to try to save expenses when the loss at the other end may be many times the amount supposedly saved. The difference between three and four applications is only about \$1.80 per acre for lead costs on the small trees and about \$3.80 per acre on the largest trees.

**SPRAY** Your Trees, Bushes, Vines, Shrubbery, Flowers, Plants and Vegetables with  
**MYERS SPRAY PUMPS**



**WHITEWASH** and Paint the Inside or Outside of Your Buildings, Greenhouses, Fences, Cellar Walls, Etc., with

**MYERS SPRAY PUMPS**

**DISINFECT** Your Henneries, Pig Pens, Barns, Sheds, Stables, Toilet and Closets with

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**ASK** Your Dealer or Write us Direct about Myers Cog Gear Easy Operating—Require 33% Less Power to Pump—Knapsack, Bucket, and Barrel Spray Pumps and Complete Spray Outfits for Hand Operation.

Myers Automatic—They Automatically Control the Pressure and Do Not Require a Relief Valve—Power Spray Pumps and Complete Power Spray Rigs for Extensive Spraying Operations in Large Orchards or for Custom Work. Myers Proven Nozzles and Fittings, Reliable Hose, and Spraying Accessories.

**LATE** Catalog, Showing Complete Line—Myers Bucket, Barrel and Power Spray Pumps, Nozzles, Hose and Fittings, for Every Spraying Requirement, and Giving Reliable Spraying Information, Spraying Calendar and Standard Formulae for Best Spraying Mixtures, Mailed Free to Anyone on Request.

**F.E. MYERS & BRO.** ASHLAND PUMP AND HAY TOOL WORKS.  
 No. 120 ORANGE ST. ASHLAND, OHIO.

Continued from page 17

outer and older wood growth is later removed. In this way the tree top is kept down within a definite limit.

Peach pruning is a comparatively simple process of pruning trees, although it requires careful judgment and thought, there is less difference of opinion about the systems than with the apples. The tree responds well to pruning, both in the production of new wood and in the healing of the wounds made by pruning. There is a great tendency in pruning peaches to do the work rapidly and carelessly, leaving stubs as an invitation for disease to take hold of the tree. This invitation is usually accepted, especially on the larger branches, and in the smaller branches, the wood is killed back from the edge of the wound, usually in a greater area than is true with many other plants. However, the pruning process that can be practiced on peaches does not of necessity weaken the vitality of the plant and is a necessity for the maintenance of the production of satisfactory crops of good fruit.

The apricot can be pruned very much the same as the peach. The trees grow

in very much the same fashion. It bears more fruit, however, on spurs, and also bears a large proportion of its crop on the side of the last year's twig branches. The same general type of tree and general method of pruning can be practiced on this plant. It is, however, very susceptible to ill effects, age of wood, and good fruits are seldom produced on old woods. In apricot-growing sections, it is a very common practice to head back very severely, sometimes to the extent of dehorning, and losing one or two crops on the trees, for the sake of renewing the top. But it is profitably done. There is a strong tendency in the apricot to develop only a few terminal buds on the strongest branches, and for these few to make all of the wood-lengthening growth of the tree. This tendency unchecked by cutting back produces the tree top composed of several long poles with only a few very small twigs and short spurs for fruit production. The life of a spur varies from two to five years in extreme cases. It does not average above three years, and the largest and finest fruit is produced on the one and two-year-old spurs and on the side of the vigorous, growing

branches. The trees are vigorous and grow rapidly, but are generally short-lived. The young trees respond to pruning and cover the wounds well, but the old trees do not. It is generally better to grow a new orchard than to attempt to rejuvenate an old one.

The American and European varieties of plums require very little pruning. The dead branches should be cut out and the strongest shoots cut back. The top is often thinned out like peach trees. The Japanese plum grows and fruits very much like apricots and should be pruned in about the same way.

The prune trees belong to the European plum class, and while they require comparatively little pruning, that pruning should be regularly done, and should be severe enough to prevent the formation of long and drooping branches. The general growth of the tree should be in an upward direction, and should be of stocky, vigorous wood. This tree has a good ability to renew its top with watersprouts when severely cut back, and good progress will be made if such work is done. This tree is able to care for its wounds in good shape, and if the wounds are reasonably cared for it is very seldom that rot gets started into the heart of the trees through such openings.

The sweet cherry bears most of its fruit on the side of small spurs. The blossoms are produced from buds on spurs of the previous season's development. Spurs more than one year old often produce fruit, but the blossom bud is produced on the growth of the

BEST SERVICE-  
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**SIMPSON & DOELLER CO.**  
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**E. SHELLEY MORGAN**  
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WE CARRY—AND CAN SHIP IN 24  
 HOURS—STOCK LABELS FOR PEARS,  
 APPLES, CHERRIES & STRAWBERRIES.

# THE NIAGARA DUSTER

**The Labor Saver**

**Use Only Niagara  
Dusting Sulphur  
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Dusting Mixtures**

They have been PROVED and approved by those who have made a success of dusting.

A leading fruit grower of White Salmon Valley (Washington) says: "It took three men fifty hours to apply one spray of liquid in my orchard, while two of us DUSTED it with equal thoroughness in eight hours."

Reports like these come from Hood River, Yakima, Wenatchee and every place where the Niagara has been used.



# The Niagara Dusting Machines

WITH

**NIAGARA  
DUSTING  
MATERIALS**

are responsible for the

**Success of  
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They make possible the best DISTRIBUTION in the most effective form.

**Niagara Dusting Machines  
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Are distributed from  
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**F. A. FRAZIER, Western Distributing Agent, 325 13th St., Oakland, California**

**Use Niagara Soluble Sulphur for Dormant and Spring Spraying**

previous season. A few rudimentary leaves are borne in each winter blossom bud, and each spur bears its own terminal leaf bud. Fruits are produced also from winter buds on the side of the previous season's growth of twigs, but these form a relatively small proportion of the cherry crop. The sour cherry, however, very commonly bears a large proportion of its crop from these side buds of the twig and branch growth. The sweet cherry tree is ordinarily a very vigorous grower, as the young trees, and even in middle life. The young trees grow very vigorously and very tall. Constant cutting back and heavy pruning appears to simply extenuate this characteristic. Ordinarily the best process of handling the tree is to so modify its tillage and general cultural condition that a smaller amount of stimulus is given to wood production and to encourage the coming into fruit production at an early date. As young trees they can be handled more nearly the same as pear trees than any other of our fruit plants. After fruit production is begun the trees normally assume a broader and more open oval type. However, the general tendency of the tree is to grow very tall, making the fruit picking a very difficult task unless very great care is exercised to keep the trees down within reach of normal operation. This plant is not able to endure heavy shade, and the small fruit spurs become weak and unproductive if severely shaded, and

will bear irregularly or only one or two crops and then die. The best process is to cut back and prune out the top constantly so that the fruit spurs may be productive for a period of three or more years. The general plan of operation would be to so prune the tree in its early life that a good framework from three to five main branches will be formed, and that in later life this can carry a load of well-distributed wood. Constant cutting back and thinning of the tree top is required. This plant can be pruned more to suit the ideal of the pruner or grower, and still have good results, than can the peach tree. The most difficult point of the work appears to be for the average grower to make up his mind that the tree will endure pruning. After he has fully satisfied himself on that, the general type of the tree that he has and the type of the tree that he knows he should produce will normally solve to a very large extent the type of work that should be done. The tree responds well to pruning, being invigorated by it, and the general character of the fruit crop produced is improved. The wounds made by pruning usually heal over well and seldom result in any disease or trouble to the tree.

Sour cherries are very frequently entirely neglected and not pruned at all. In fact, it is frequently advocated that they require, or need, no pruning. The facts are, however, that they respond quite as well to pruning as most of our other fruit plants, and in careful or-

chard work it is a profitable operation. The plants can be pruned very much after the same fashion as the peach tree, although it requires less vigorous work.

In all of the stone fruits the plants have a normal capacity to reproduce their new tops after the old is cut away, particularly if this cutting back has not extended into wood more than four or five years old. The same general principle applies, however, to these plants as to others. That the influence of pruning extends only a relatively small district from the part pruned. Pruning one side of a tree does not ordinarily directly nor indirectly affect the development of the other side. The stimulus developed from cutting off a branch is seldom distinctly noticeable more than three feet from the point at which the cutting was done.

In the treatment of wounds on fruit trees, it may be worth while to state that paint and washes are seldom necessary or advisable. About the best paint that can ordinarily be used is some antiseptic material. A good, heavy coating of lime-sulphur or bordeaux mixture, or a solution of corrosive sublimate is probably as good as can be used. In the pruning of most of the stone fruit trees, less care is exercised generally than in the longer-lived trees. The work is done more rapidly and more frequently in a sort of cut-and-slash method. Rapid work should not be discouraged, but careless work should always be discouraged.

# maximum Nutrition minimum cost

That's the cry of the world today. The food that qualifies is the food for every home.

Drink a cup of Ghirardelli's Ground Chocolate every day in place of more expensive foods. Ghirardelli's Ground Chocolate is made of pure cocoa and sugar, the two great nutrimental foods, and blended in the right proportions to insure its distinctive taste-appeal, its easy assimilation and unusual nourishment. A tablespoonful, 1c. worth, with milk added, makes a cup—a true conservation food beverage.

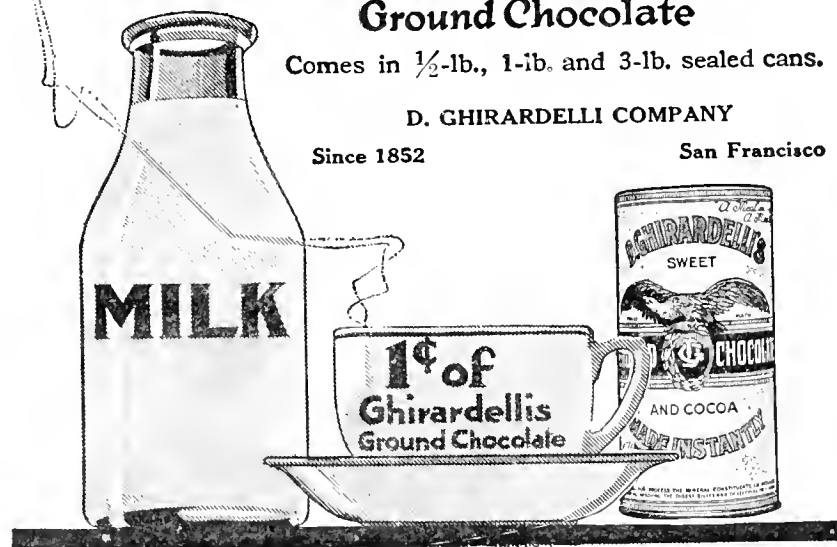
## Ghirardelli's Ground Chocolate

Comes in 1/2-lb., 1-lb. and 3-lb. sealed cans.

D. GHIRARDELLI COMPANY

Since 1852

San Francisco



## Banking the Fruit Crop

THE article by Mr. J. J. Rouse, cashier of the Fidelity National Bank, Spokane, appears elsewhere in this edition. It is the most valuable contribution by a banker to the fruit industry that has ever appeared in print. Every fruit grower should read the article, re-read it and carefully study it. The editor of BETTER FRUIT has made a few extracts, not in the writer's words, but somewhat condensed, of a few the most important facts and advice.

A new phrase, "Good as an apple in the box." Standardizing the fruit product so that "Good as an apple in the box" will mean "Good as wheat."

Do not judge the fruit industry by occasional years of good prices, but take the average to size up the business.

Your banker will not be influenced in granting credit by one year's good results—it is the average he wants. A well-kept set of books showing the annual income and expense will create confidence with your banker.

The production of food is the biggest industry, but less is known about it from accurate bookkeeping. Not one farmer in five hundred knows the average cost of production and selling price for a period of five years. This applies to fruit growers as well.

All are agreed that the farmer (fruit grower) gets skinned, but there are no figures to prove it, other than the fact he has not much left. Perhaps if he kept books he would find he is making

a living and doing as well as the average other fellow.

Bookkeeping for the fruit grower is a simple business, showing the cost of production, different prices received and net gain or loss. Well-kept records in bookkeeping will put the fruit industry on a solid foundation.

Fruit growers should advertise. Duck eggs are just as good as hen eggs, but the hen cackles, the duck does not. This is advertising. The banana and orange people advertise—the fruit grower of the Northwest does very little. The average American family buys a great many more bananas and oranges than Northwestern box apples. When the Northwest is knit together with good selling organizations and proper distribution and proper advertising so that it is just as easy for the consumer to get "An apple a day to keep the doctor away" as it is to get sun-kissed oranges, then a demand will be created, which will go far toward allaying fears of overproduction.

The fruit grower who has gone through ups and downs, who is not intoxicated with success of the good years or broken hearted over the poor years, is in better position to talk "turkey" to his banker when he needs help than ever before.

Co-operative marketing associations, the fruit growers' own property, are what the fruit growers make them. If they do not suit you it is up to you to correct them. Their success or failure is up to you. The future of the fruit industry in the Northwest is entirely

## Trees and Shrubs

Prune, Cherry, Apricot, Pear, Apple and Peach in all the staple varieties, besides small fruits, etc. Buy now.

**ROSES**—Over one hundred varieties. Two-year hardy field grown.

**SHRUBS**—Of the favorite kinds, such as Spirea, Althea, Deutzia, Lilac, Hydrangea, Snowball, Weigela and many others.

**SHADE TREES**—To suit every need.

## Vrooman Franquette Walnuts

Both second generation and grafted. The proven hardy nut for Northwestern conditions.

Our stock is grown on clean new volcanic ash soil in the heart of the Yakima Valley. It is free from disease or pest, stocky, splendidly rooted, fully matured. It is well grown, carefully packed and delivered to customers all charges prepaid, backed by our guarantee as to genuineness, quality and condition.

For fifteen years we have served our customers with first-class stock. Our field work is in charge of a Nurseryman with 40 years' experience.

Write us for prices.

**Washington Nursery Company**  
Box 2067, Toppenish, Wash.



## Great Little Tractor for Orchards

A Masterpiece of Simplicity  
with Patented Front Drive  
Send Now for the Book

Horses are 143% higher than during past decade. Feed is 100% higher. Labor is more scarce. There's a *double need* now for tractors.

Don't take chances. Tractor material is becoming harder to secure and the demand for tractors is constantly increasing. If you expect to have a tractor this spring, order now for future delivery and thus be sure of getting this tractor. No other tractor meets the needs of orchardists like this.

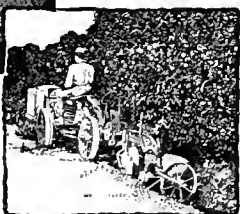
### Note these Features:

1. Pulls instead of pushes itself over the ground. All power goes to pull.
2. Can be "gee-ed" and "haw-ed" out of holes and soft places like a team.
3. Has full-power pull on turns as well as on the straight-away.
4. Turns clear around in a 10-foot circle (5-foot radius).
5. Plows or harrows as close up in the corners of fields as a team.
6. Plows as close to vines and trees as a team.
7. Goes under branches of trees that no team can get under.
8. Pays for itself in what it saves.
9. Light weight—3100 pounds—on long track surface. Less weight to square inch than man's foot.
10. Simple 4-cylinder automobile type engine. Burns engine distillate.
11. Runs stationary machinery up to 10 h.p. when not working in fields.

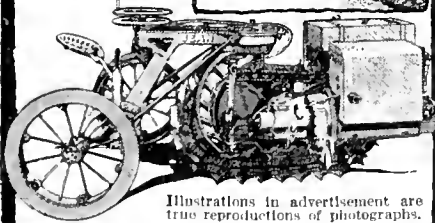
## BEAN TrackPULL Tractor Patented Front Drive



**For Orchards**  
The Bean is built for  
this kind of work.



**Mail Coupon for Book**  
Send coupon to-day for full information. A few days' delay now may mean doing without this tractor for another year. Price NOW \$1215.



Illustrations in advertisement are true reproductions of photographs.

**BEAN SPRAY PUMP CO.**  
713 W. Julian St., San Jose, California

Please send me your Tractor Book with full information about the Bean TrackPULL Tractor.

Name.....  
Street.....  
City.....  
County..... State.....

dependent upon these institutions. Their success, your success, will be measured through co-operation—your support.

The two principal weaknesses of co-operative selling agencies are, lack of capital and straying into other fields of activity. If the fruit grower attempts to establish his own line of communication direct to the consumer, eliminating all middlemen, the middlemen will have to raise their own fruit in their own back yards and the fruit grower will have to eat his own fruit.

The fruit grower should reinvest in his own association to create a surplus for carrying on the business part of the money the association has made or saved for him. If he is afraid to do so how can he expect his banker to do so?

With the progress that is being made in standardization and the safeguards being put into effect in moving the crop it is reasonable to expect a ready sale for output each year, and the industry will soon be placed on a sound basis.

### Omission of the General Chemical Company Advertisement in the January Edition

FRUIT BETTER desires to say that it is with sincere regret, through an oversight in the advertising department, the advertisement of the General Chemical Company, which has been appearing regularly and will continue to appear for some time, was omitted in the January edition.

### TENTH ANNUAL NATIONAL APPLE SHOW, SPOKANE, JANUARY 14, 1918.

EDITOR BETTER FRUIT:

I want to thank you on behalf of the trustees of the National Apple Show for the splendid publicity you have given our institution in the January issue of your magazine. You are certainly a splendid friend to this institution and I want you to know how thoroughly we appreciate what you have done in this instance and also in the advance articles which you have printed from time to time.

When I agreed to accept the presidency of the Apple Show, I was told that I would find co-operation among the business men, fruit growers, and especially the publishers of horticulture papers. In this case this promise has certainly been more than fulfilled and I am frank to say, Mr. Shepard, that it has only been through the thorough willingness of everybody, like yourself, to do his share, that the 1917 show has been made a success.

I am told that in the years past you have always been a staunch friend of this annual exhibition, and it seems to me this is showing a fine, big spirit on your part to give such valuable publicity as you do.

Very truly yours,

JAKE HILL,

President Tenth National Apple Show.

SPOKANE CHAMBER OF COMMERCE.

Spokane, January 12, 1918.

EDITOR BETTER FRUIT:

That was a dandy layout you gave the National Apple Show in your January issue. I don't know how to express our appreciation because you have done the whole thing on such a magnificent scale that it is difficult to say just how we feel about it. You even put one of the cuts on the first page and, of course, added that much more to the usefulness of the story.

I distributed copies among our trustees and each and every one of them wanted me to try and express his appreciation of what you have done. However, it is the old story—Shepard always has come through and given the most valuable space to anything connected directly, indirectly or even remotely with the fruit industry.

I sincerely hope BETTER FRUIT will have a good year and that its good-fellow publisher will have more time to keep acquainted personally with his old friends this year.

Your sincerely,

RLN H. RICE.



ORCHARD BRAND  
ARSENATE OF LEAD  
IS USED FOR KILLING  
CODLING MOTH AND  
CHEWING INSECTS.

This is one of the important materials used in spraying trees.

The Mechanical or Physical condition of Arsenate of Lead is of more importance than usually realized. Coarse, gummy materials cannot be easily mixed or kept in good suspension in the spray tank. A fine Mechanical or Physical condition is one of the great merits of our Arsenate of Lead. As now manufactured, it can be readily stirred in the original container into a creamy consistency and put directly into the spray tank, without the trouble of rubbing to a thin paste, as is necessary with other makes. This saves TIME in preparing, insures good suspension in the spray tank, which means an **even distribution** of a thin film of poison over the surface of the sprayed area and **obtaining satisfactory results**.

**Orchard Brand Powdered Arsenate of Lead** is double the strength of the Paste, and when used in water only one-half the quantity of the preparation is required. It is finely divided, fluffy, white powder that mixes readily with water and remains in good suspension when diluted in spray tank. To control Codling Moth and similar insects, use 2 pounds to 100 gallons of water.

It may be used for dusting truck crops and other plants by combining it with Land Plaster, air-soaked lime or flour.

When combined with these, care should be exercised to thoroughly mix the materials in order to get a uniform coating of poison.

**General Chemical Co.**  
Insecticide Dept.  
**SAN FRANCISCO**



# Fruit Tree Stocks

Apple, Doucine, Paradise, Mahaleb, Mazzard, Peach, Plum, Quince, Japan Pear and Kieffer Pear Seedlings. We can ship Mahaleb and Mazzard direct from Oregon

## Apple and Pear Grafts ANY STYLE

Complete Assortment of  
General Nursery Stock

There is a small stock of apple seedlings this year, and with the increasing demand for apple trees, it will pay to put out a plant. But act now, do not wait until the top of the market has been reached.

**SHENANDOAH NURSERIES**  
D. S. Lake, Pres.  
SHENANDOAH, IOWA

# FISH!! FISH!!

100 lbs. salmon in brine, shipping weight  
165 lbs. \$11.00  
Smoked salmon, 20 lbs. net 3 25  
Dried True codfish, 10 lbs. 1 75

Ask for our fresh and cured fish price list.

T. A. BEARD, 4322 Winslow Place, Seattle, Wash.

# Cherry Trees

Fruit and Ornamental Trees, Shrubs, Vines, etc. *Free Catalog. Agents Wanted. Special Terms.*

**MILTON NURSERY COMPANY**  
MILTON, OREGON

## RAW FURS

I am in the market to buy large quantities of Mole, Muskrat, Coyote and Rabbit Skins.

Send for Price List and Tags.

**OSCAR GARD**

75 Marion Street Seattle, Washington

\$100 TO \$1000  
In Five Years

A 10-acre orange grove in Florida sold recently for \$10,000—five years ago the land brought \$100 an acre. Present value is based on earning capacity of grove. If you own or contemplate buying land in Florida adapted to citrus why not plant oranges or grapefruit? Write us today for "Florida Facts," free. **Buckeye Nurseries, 1214 CITIZENS BK., TAMPA, FLA.**

# Richey & Gilbert Co.

H. M. GILBERT, President and Manager

Growers and Shippers of

## Yakima Valley Fruits and Produce

SPECIALTIES:

Apples, Peaches, Pears and Cantaloupes

TOPPENISH, WASHINGTON

## Cheese Playing Center

Now that we are "doing sums" in short division with American food, we are ready to profit by the hard-earned war experience of Europe and her struggle on short rations. For instance, in Europe cheese is a very real part of the diet and not, as with us, the "something extra." However, with meat at present prices the American housekeeper thinks hard when told that cheese has about one and one-half as much muscle-building value as beef, pound for pound. She cuts out the "something extra," combines cheese with milk and eggs and makes a dish that rules out the roast, leaving beef for the soldiers and the Allies. Here are a few substantial cheese dishes that may be served sometimes instead of meat. They call for any hard commercial cheese, cottage cheese or the cheese like your grandmother used to make, now being revived in the farm kitchen:

**Duchess Soup**—½ onion, 2 tablespoons fat, 2 tablespoons flour, 3 cups milk, ¾ cup grated cheese, salt and pepper. Cook the onion in the fat until tender but not brown. Add the flour, then the milk gradually. Cook until smooth, add seasoning to taste. When ready to serve, put one tablespoon of the grated cheese in each plate and pour over it the hot soup.

**Cheese Roll**—½ cup rice, 1 cup milk, 1 tablespoon chopped onion and parsley, ¾ cup grated cheese or cottage cheese, ½ cup mashed potato, pepper and salt to taste. Cook the rice in the milk with the chopped onion and parsley, then add the mashed potato, pepper and salt. Form into a roll, brush with fat drippings and brown in oven. This roll can be made up with many variations. Bread crumbs, beans and cheese may be combined, using enough of the liquor in which the beans were cooked to moisten the mixture so that it can be made into a loaf. The beans should be mashed. Still another combination is made by substituting for the beans spinach or chard chopped fine.

**Cheese Fondue**—1 cup milk, 1 cup bread crumbs, 1 cup grated cheese, ½ teaspoon salt. Boil the milk and pour over the bread crumbs, cover and let stand on the stove fifteen minutes. Mix in the grated cheese and add salt and, if desired, a little red pepper or paprika. Pour into a greased baking dish and bake twenty minutes. A richer dish may be made by adding two or three eggs. Add the well-beaten yolks, then fold in the whites beaten until stiff. Bake thirty minutes in moderate oven and serve at once. This is really a soufflé. Cooked rice may be used in place of the bread crumbs in making this dish.

**Macaroni and Cheese**—Besides the familiar dish of macaroni and cheese there are many others not so well known to the average housekeeper. Macaroni boiled in salted water drained and served with either grated cheese or cheese sauce is an easily prepared dish. Be sure that the macaroni is piping hot. Macaroni with cheese custard is particularly good. Place in a greased pudding dish two cups of cooked macaroni,



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cover this with a cheese custard made as follows: Press through a colander or mash smooth one cup of cottage cheese, add one well-beaten egg, one-half cup of milk and salt and pepper to taste. Pour over the top of the macaroni and bake in a moderate oven thirty minutes.

**Cheese Sauce**—1 cup milk, 1 tablespoon cottage cheese or 1/4 cup grated cheese, 2 tablespoons flour, salt and pepper. Thicken the milk with the flour. Just before serving add the cheese, stirring until it is melted. This sauce may be used on hard-boiled eggs, toast, cabbage, cauliflower, macaroni or rice. Double the quantity of cheese when it is to be eaten with macaroni or rice.

**Wider Distribution by One Association**

For several years the editor of BETTER FRUIT has carried on an aggressive campaign in an editorial and advisory way to increase distribution. In 1916 a number of articles appeared on this subject, causing a great deal of favorable comment and some criticism. It is a pleasure to note that the articles have had a wonderful influence in stimulating and increasing distribution. This is evidenced by the fact shown in November and December issues of BETTER FRUIT. In 1916, for a period of two months, the total number of towns shipped to were 611. In twenty days during the month of November, 1917, the distribution covered 550 towns, almost as much in twenty days in 1917 as in the sixty days in 1916. It must be borne in mind that in connection with this statement that more fruit rolled to diversified points this year than ever before, consequently the full number of towns is not shown, and during twenty days in November the number of towns exceeded the total number of towns shipped last year. A very significant and much appreciated letter has reached this office from one of the sales organizations through the courtesy of the sales manager. This concern up to the time reported had shipped about 500 cars of apples, distributed to 187 different towns. A very significant feature in connection with the information contained in the letter is the immense number of towns that have bought in carloads. There is no question if all the selling organizations will put on a sales force sufficient to cover their territory thoroughly to cultivate trade in small towns, distribution will continue to increase, relieving the pressure in the big cities and maintain a high average price, and the fear of overproduction will have passed. Again we repeat, we do not believe it is a case of overproduction, but a lack of distribution. This year's results have been conclusive evidence—the Northwest has moved by far the heaviest crop of box apples ever handled in less time, with the widest distribution, bringing more satisfactory prices than for several past seasons.

Put the farm machinery in first-class order during odd times this winter. An hour spent in repair may prevent later on a day of despair.

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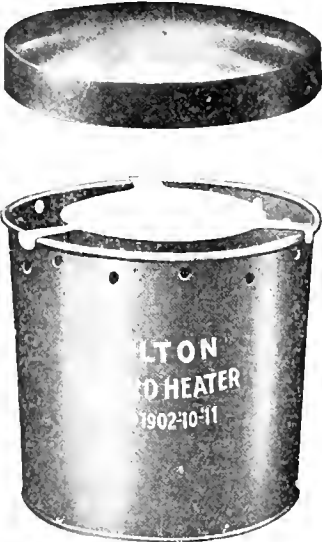
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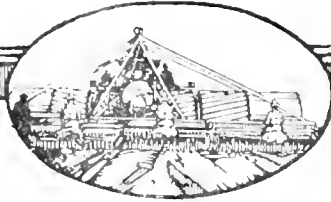
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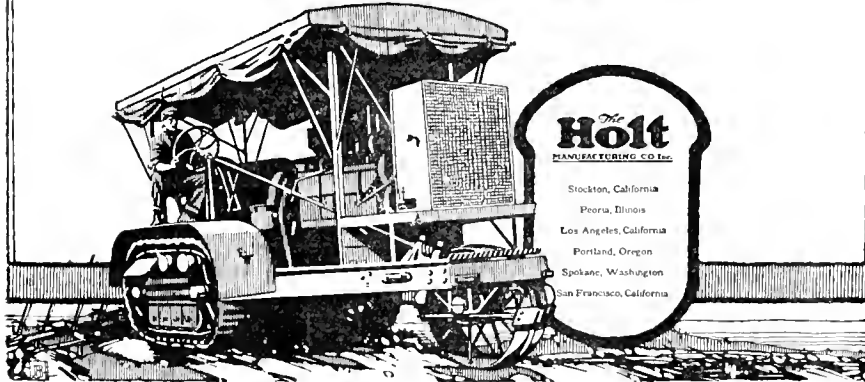
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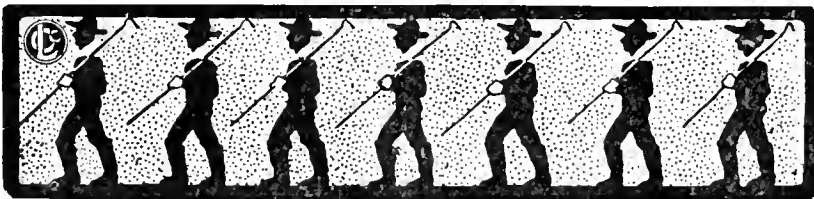
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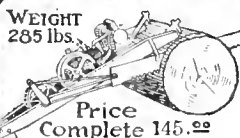
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The Washington State Horticultural Meeting held at Kennewick, Washington, in January was a most successful meeting. Unfortunately the editor of BETTER FRUIT was unable to be present, but the secretary, in a personal letter, has stated that the address on pruning by Professor Gardner was unquestionably one of the best on this subject ever given. The address on transportation by J. Curtis Robinson of the Northwestern Fruit Exchange was highly instructive and valuable. Incidentally, the editor wishes to call attention to the fact that no matter how clean your crop is or how large, if transportation facilities are not adequate the fruit grower is up against it. Therefore transportation is primarily the first consideration of the fruit grower. The subject "Alfalfa as Conserving Moisture," by Mr. P. S. Darlington was especially good, and "The Abuse of Water," by Mr. Fisher gave the fruit grower some valuable information, so that these few talks, not mentioning any others on the program were so valuable that the expense of attending was only a small item, comparatively. Unfortunately weather conditions and flood damages prevented many growers from being present. One hundred and fifty had bought tickets at Yakima, but on account of the washouts were unable to reach Kennewick.

The orchardist, especially if he has young trees, or where the orchard is in cover crops, should watch out for gophers this spring, because they do damage that cannot be repaid, frequently eating off the roots of the tree so that the fruit grower loses the tree. Whenever a grower is troubled with gophers he should make it a point to rid his place of them as rapidly as possible. There are two ways to get rid of gophers—by the use of poisons or the use of traps. There are a number of good traps on the market and a few brands of gopher poison that have given the growers who have used them excellent results. If you buy poison for killing gophers be sure and get a first-class brand, one that is known to do the business. If you buy traps be sure to buy a kind that has proved effective.

The Great Northern Railway Company of St. Paul has issued a very attractive booklet, "The Silo, a Mark of Progress," which gives some very valuable information about silos in general, which can be secured by any of the fruit growers in Minnesota, North and South Dakota, Idaho, Washington, Oregon and Montana by having their banker inform the Great Northern Railroad of St. Paul that they are thinking of purchasing a silo.

Mr. Gerald Da Costa of London, through FRUIT BETTER, sends very hearty greetings to his friends in the Western States wishing them a prosperous New Year, and fervently hopes that the promise of brighter times may be fulfilled in order that business may be resumed with America, as previously.

**Studies in Fruit-Bud Formation**

By J. R. Magness, Assistant in Research Laboratory, Oregon Agricultural College.

Continued from last issue

In considering the conditions in the tree associated with fruit-bud formation, it is necessary to have clearly in mind how the tree is nourished, and the functions of the different parts of the tree. The roots absorb water, with dissolved minerals from the soil, transport them to the trunk, and serve as a storage place for the products of the leaves. They also, of course, serve to anchor the tree. The trunk, branches and twigs support the leaf area, serve to carry the water and mineral foods from the roots to the leaves, and foods from the leaves to all parts of the tree, and act as a storage place for elaborated food from the leaves. In the leaves, air is taken into the plant, together with the carbon dioxide contained in it. Water and mineral foods from the soil are supplied by the roots. The substances are all brought together, and in the presence of light from the sun, are combined by certain of the leaf organs into sugars, starches, etc. These so-called elaborated foods formed in the leaves, are the only ones which are directly available to the plant for tissue building.

The kind of growth made by the tree at any particular time, varies very largely with the relative amount of the different kinds of food it has available for use at that time. For example, if there is a large amount of the unelaborated food from the roots being supplied, and a relatively small amount of elaborated food from the leaves, vegetative growth in shoot length is stimulated. When a relative abundance of elaborated food is present, fruit-bud formation and increase in thickness of shoots occurs. Fruit-bud formation is apparently associated with a relative abundance of elaborated food in the immediate region of the bud. This con-

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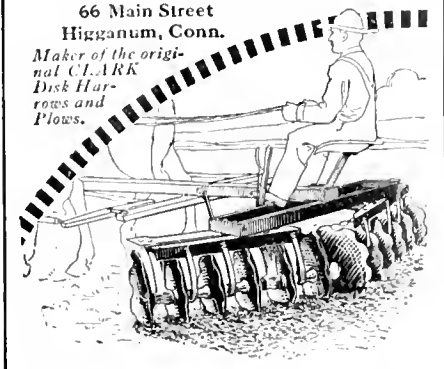
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clusion is supported by the following facts:

1. The time of initial fruit-bud formation, and the position in which it occurs, shows a correlation to the amount of elaborated food present. It has been mentioned before that fruit buds do not begin to form before late June and July, and they may not form until much later than this. The leaf area of the tree, and hence the food

manufacturing area, is at its maximum expanse by this time, while usually the intake through the roots is less than earlier in the season, due to dryer conditions. Thus the elaborated food is coming into relatively greater abundance. Also it was mentioned that in spurs, on the average, this initial flower part formation occurs earlier in the season than on the one-year-old wood. On each spur, we have a number of



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leaves intimately associated with a single bud, while on the year wood there is but a single leaf subtending each bud. Consequently, it is to be expected that the elaborated food supply would become abundant at an earlier date in the region of the larger leaf area. Hence, the fact that these buds are formed at an earlier date indicates that their formation is associated with the elaborated food supply.

In our deciduous tree fruits, regardless of whether the fruit buds are formed on one-year wood or on spurs, they are usually found in that region of the tree in which the largest leaf area has the best exposure to the light. This is the region in which the greatest elaborated food manufacture is going on, and is another indication of the association of elaborated food manufacture and fruit-bud formation.

2. The influence of removing a ring of bark, or partially girdling the tree, upon the formation of fruit buds in the tree is another indication of conditions in the tree essential to fruit-bud formation. When we cut through the bark, it becomes impossible for any elaborated food from the leaves to pass down into the roots, since the elaborated food is transported through bark. Consequently, such a treatment will usually soon lead to the accumulation of elaborated food in the top of the tree. In such trees, a large number of fruit buds are almost invariably formed. We have often seen trees almost girdled by winter injury, which during the following summer formed flower parts in almost every bud on the tree.

3. Finally chemical analysis has shown that fruit buds are formed on those spurs and branches which show the highest percentage of starch stored during the winter. While this work has been carried on only on a very limited scale, results that have been obtained in those instances in which it has been done entirely bear out the theory that fruit buds are formed when the elaborated food supply is abundant.

From a consideration of all these facts, we reach but one conclusion, namely, that whatever the real cause of fruit-bud formation may be, it is very closely associated with the elaborated food supply. We must emphasize again, however, that it is a relative abundance of elaborated food as compared to the raw food from the roots, rather than the absolute amount, that is correlated with fruit-bud formation.

The question that naturally arises then in connection with such a discussion is this, What is the practical application of this study of fruit buds? How, if at all, is orchard practice to be regulated by this knowledge of conditions in the tree associated with fruit-bud formation?

1. How are we to induce fruit-bud formation in very vigorously growing trees that have reached bearing age, but do not produce blossoms? We must work for a relative abundance of elaborated food in the tree. The methods of regulating elaborated food supply may be grouped under two heads. (1) Regulating leaf area, and its exposure to the light. (2) Regulating the intake of raw

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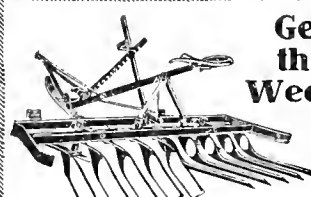
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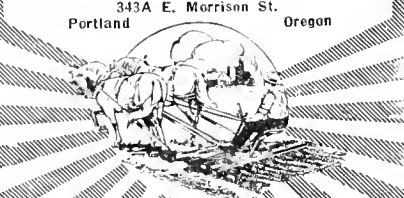


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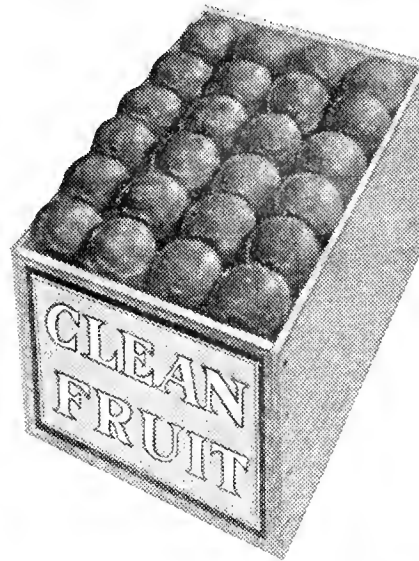


material from the soil. Leaf area will be regulated by the pruning which the tree receives.

This pruning should be such as to stimulate as far as is consistent with tree form, the formation of that portion of the tree which produces the greatest leaf area relative to the amount of wood growth. With most kinds of fruit, this is the spurs. Any type of pruning which tends to reduce the number of spurs, tends to reduce the relative leaf area, and reduces the tendency to form fruit buds on spurs. Winter pruning reduces the potential leaf area by removing buds that would otherwise have formed leaves, hence tends to delay bearing. No pruning at all will usually result in the largest leaf area, and consequently an entirely unpruned tree will usually come into bearing first. Needless to say, however, we cannot afford to allow our trees to become badly out of shape to get a small amount of fruit somewhat earlier. Our pruning should be such as to allow the largest number of leaves possible, per unit of wood present, with the best possible light exposure, and still keep the tree in shape.

Pruning is not the only consideration in bringing about the formation of fruit buds. One of the easiest ways to increase the relative amount of elaborated food is to lessen the intake through the roots. If irrigation is practiced, allow the ground to dry out somewhat during late summer. If clean cultivation has been given, diminish it for a year or two. If the soil is very rich, and the trees vigorous, it may be advisable to plant a grain crop for one or two years. Anything that will cut down the moisture supply for the trees will tend toward fruit-bud formation. This kind of treatment, with pruning that will leave a good leaf area, should be successful in inducing fruit-bud formation in trees that do not bloom.

2. But how about the treatment for those trees which tend to produce a great crop of bloom, but lack vigor to mature a good crop of fruit? Usually in such trees we find a large number of spurs, with a considerable leaf area, while the soil is somewhat depleted. The leaves receive enough raw food from the roots to manufacture some elaborated food, and fruit buds are formed, but the large number of buds with the small raw food intake renders the elaborated food supply too small to mature fruit. Again, the treatment must be two fold. The number of buds must be reduced, and the root intake must be stimulated. Rather than removing all the buds from certain parts of the tree, it is essential that we remove some of the buds from all over the tree. In other words, instead of removing a few big limbs, we must remove a large number of small twigs and spurs from all parts of the tree. The stimulus of the pruning comes in that part of the tree in which the pruning is given, and if the buds that are left are to receive more food from the roots, other buds adjacent to them must be removed.



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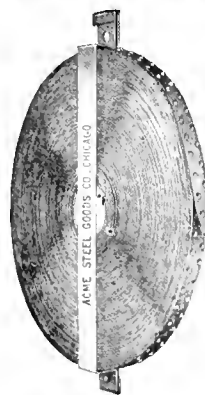
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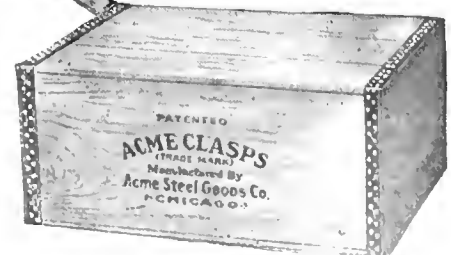
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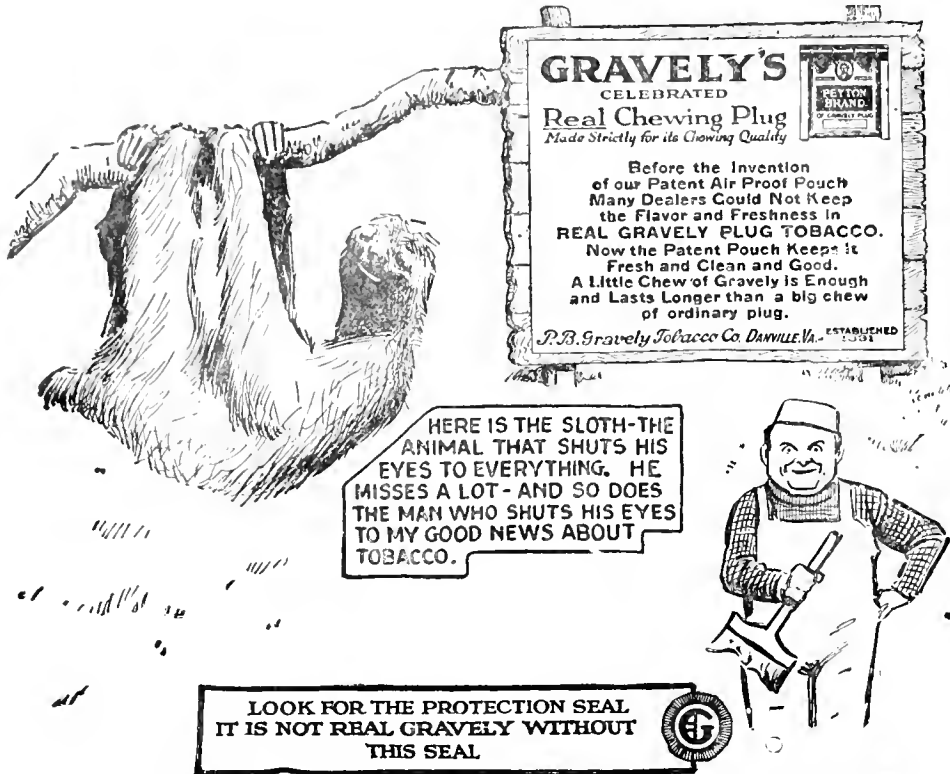
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**REAL GRAVELY PLUG TOBACCO.**  
Now the Patent Pouch Keeps it  
Fresh and Clean and Good.  
A Little Chew of Gravelly is Enough  
and Lasts Longer than a big chew  
of ordinary plug.

*P. B. Gravelly Tobacco Co. DANVILLE, Va. ESTABLISHED 1904*

HERE IS THE SLOTH-THE  
ANIMAL THAT SHUTS HIS  
EYES TO EVERYTHING. HE  
MISSES A LOT - AND SO DOES  
THE MAN WHO SHUTS HIS EYES  
TO MY GOOD NEWS ABOUT  
TOBACCO.

**LOOK FOR THE PROTECTION SEAL  
IT IS NOT REAL GRAVELLY WITHOUT  
THIS SEAL**



In connection with the reduction in the number of buds in all parts of the tree, the soil must be so managed that root intake will be stimulated. If any element of fertility is lacking, it should be supplied in the form of fertilizer. Barnyard manure is always good for trees in this condition. Especially are cover crops valuable to improve the condition and fertility of the soil. If the orchard has been in sod, cultivation will be advisable. Soil treatment for such trees is fully as essential as the pruning given.

3. Finally, how does this knowledge of fruit-bud formation help us to deal with the alternate bearing habit of many varieties of apples and pears? It is essential that we maintain conditions in the tree such that fruit buds will be formed every year, if the tree is to bear every year. If the tree is allowed to produce a very heavy crop one year, it is extremely likely that so much elaborated food will be used up in developing the fruit that very few, if any, fruit buds will be formed. Hence, it is essential that we so thin the fruit that an excessive crop is never produced. It is also essential that in thinning, all the fruit be removed from many of the spurs, for a spur will usually not produce fruit buds during the same year it matures a fruit. Finally, the thinning should be done as early as possible. Fruit-bud formation begins by July 1, and thinning should be completed as soon after this as possible. This method of thinning, with regular pruning and cultural treatments, should go far toward preventing trees from assuming the alternate-bearing habit. When the habit is once firmly established, it is very hard to break.

In conclusion, then, we may say that in all our orchard operations we should bear in mind how they will affect the conditions of nutrition in the tree, and how these conditions will affect fruit-bud formation. Each orchard, and in fact, each tree presents a different problem. We must bear in mind the conditions we are seeking to bring about in the trees, and regulate our pruning and cultural practices accordingly.

The progressive fruit grower is interested not so much in the idle claims made in advertising Arsenate of Lead, but he is intensely interested in the actual results to be obtained from the use of the various brands. Read the label on a keg of Dow Lead Arsenate Paste and then compare the GUARANTEED analysis with that of any other brand. Also ask the man who used it. For a product that goes easily into suspension, remains longest in suspension, for the lowest per cent of soluble Arsenic Oxide (the burning property) and for persistent uniformity, compare the DOW BRAND with any other make. Write for booklet.

**THE DOW CHEMICAL COMPANY**  
MIDLAND, MICHIGAN  
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Mr. McAdoo, Director General of Railroads, has just issued a most earnest appeal to shippers and to everyone in any way interested in freight transportation to unload and release cars with all possible expedition.

He calls attention to the circumstance thoughtlessly overlooked by the average shipper that every hour a car is detained unnecessarily adds dangerously to freight congestion and is more instrumental than any other one thing in causing disastrous freight blockades.

Individual shippers are apt to feel that an hour or two, or possibly a day, does not amount to much, while the haste necessary would inconvenience him considerably and entail additional cost. He forgets that a hundred thousand others are feeling and acting the same way, that the aggregate delay means hundreds of thousands of days



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Clear your stump land cheaply. No expense for teams or powder.  
One man with a can outpull 16 horses. Works by leverage—same principle as a jack. 100 lbs. pull on the lever gives a 48-ton pull on the stump. Made of the finest steel—guaranteed against breakage. Endorsed by U. S. Government experts.

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Works equally well on hillsides and marshes where horses cannot operate

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PORTLAND, OREGON

per. Stir for one minute, then add a well-beaten egg. Turn the hash into a baking dish and bake twenty minutes.

### Roast Goose or Duck Stuffing

Four onions, four apples, four leaves each of sage and thyme; fry these in two tablespoons of fat till brown; add boiled rice until of a desired stiffness. Season with salt, pepper and cayenne.

### Codfish Balls With Rice

One pint of codfish, two pints of potatoes, one cup of boiled rice, one tablespoon of fat, two beaten eggs, three teaspoons of milk. Mix together and make into balls and fry in deep fat. Serve hot.

### Rice Stew

Boil together one can of English peas, one-half cup of rice, one teaspoon of salt, pepper to taste, one tablespoon of fat, and one cup of sweet milk. Thicken with flour. Serve very hot in a hot dish. Cover the top with grated cheese before sending to the table.

"The Housekeepers' Apple Book," by Miss L. Gertrude Mackay, published by Little, Brown & Company, Boston, price 75 cents, postage extra, is a very interesting and valuable book for every housekeeper. If a large sale and distribution of this book could be made it would certainly be a factor in increasing the consumption of apples. The average family, properly supplied with apples for eating fresh and as dessert, will consume two boxes a month during the winter months. There are from ten to twelve thousand fruit growers in the Northwest. If every fruit grower would buy three or four of these books and send to his friends or relatives in the cities in the East, such a method could easily be a factor in creating a sale for nearly half a million boxes extra. Those who receive the book would undoubtedly speak of it to others and in this way consumption would still further be increased. It is surprising to see how many apples a family will eat when they learn to serve them many different ways. The editor's family consume about a box of apples every week during the season.

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Drills through any formation. Five years ahead of any other. Has record of drilling 130 feet and driving casing in 9 hours. Another record where 70 feet was drilled on 2½ gallons distillate at 9c per gallon. One man can operate. Electrically equipped for running nights. Fishing job. Engine ignition. Catalogue W-8.

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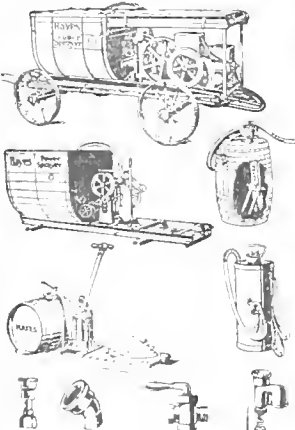
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The smaller outfits are built to give maximum pressure with a minimum of power to operate.

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Rid your trees of life-sucking insects and diseases! Keep them clean with FRUIT-FOG! Behold your ordinary trees producing bountiful yields of clean, sound fruit!

Some experts claim that 47% of the fruit damage, due to diseases and pests, is done by hidden pests. Ordinary, heavy, low-pressure spraying can't reach those hidden lairs, where crop-destruction breeds.

FRUIT-FOG, the super-spray, produces such amazing results because it roots out all these hidden pests and diseases that infest microscopical crevices and niches in bark, foliage and buds.

Look for a FRUIT-FOG orchard in your locality and prove it.

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FRUIT-FOG is like a fog or mist. Its amazing results are due to fineness—not to FORCE! Gives greater capacity with the same size nozzle. Being superfine it will not knock off leaves or flowers like heavy, coarse, low-pressure sprays.

It works in and around the foliage—filters into tiniest crevices in bark; gets under bud scales; beneath fleshy stamens of apple blossoms; reaches both top and bottom of leaves!

FRUIT-FOG deposits a light film of solution over everything—enough to quickly

exterminate all diseases and pests without injury to the trees. Will not form drops which run off. This means a big saving.

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Dept. K, GALVA, ILLINOIS  
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Big success where time and speed is the important factor. One man handles full capacity of power sprayer. Combines convenience and labor saving with the wonderful thoroughness of FRUIT-FOG, the superfine high pressure spray.

One man does 4 days work in 1. Simple twist shoots long spray to top of trees or wide spray for close work. Half turn opens wide or shuts tight. Made of high grade brass. Mechanically perfect. Fully guaranteed. **\$12**



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# A MESSAGE

In conformity with the suggestion and at the request of the National  
Food Administration under the direction of

**MR. HERBERT C. HOOVER**

ASSISTED BY

**Messrs. G. Harold Powell and E. W. J. Hearty**

IN THE FRUIT DIVISION

## Steinhardt & Kelly NEW YORK

desire to advise the trade in general, and their out-of-town customers in particular, that their entire holdings of purchased apples and other fruits, will, during the duration of this war, be only sold within the limits of the Metropolitan district for consumption and use by the people of Greater New York.

Under no circumstances will we allow any of our salesmen to sell to speculators, our sincere intention being to get as close to the actual consumer as legitimate business tactics will permit.

Being unquestionably the largest holders of box apples in the country, it will be our earnest endeavor to keep prices on an even, equitable basis of values and we will permit no manipulation of our holdings that might tend to create abnormal prices.

To prove our sincerity at this critical time in our country's history, we will not, during the war, allow a single car of our holdings, no matter where stored, to be diverted from New York to other markets for speculative purposes.

The pyramiding of prices as practiced in some industries at this time is a crime against the nation of which we trust no firm in the fruit and produce trade will be guilty.

We feel certain that our stand in this matter will result in stabilizing values, thereby bringing fruits, which are so necessary and healthful, to consumers at a fair and reasonable price.

## Steinhardt & Kelly NEW YORK

# BETTER FRUIT

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VOLUME XII

MARCH, 1918

NUMBER 9

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# save

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**1-wheat**

*use more corn*

**2-meat**

*use more fish & beans*

**3-fats**

*use just enough*

**4-sugar**

*use syrups*

---

**and serve  
the cause of freedom**

U. S. FOOD ADMINISTRATION

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ORCHARD BRAND  
ARSENATE OF LEAD  
IS USED FOR KILLING  
CODLING MOTH AND  
CHEWING INSECTS.

This is one of the important materials used in spraying trees.

The Mechanical or Physical condition of Arsenate of Lead is of more importance than usually realized. Coarse, gummy materials cannot be easily mixed or kept in good suspension in the spray tank. A fine Mechanical or Physical condition is one of the great merits of our Arsenate of Lead. As now manufactured, it can be readily stirred in the original container into a creamy consistency and put directly into the spray tank, without the trouble of rubbing to a thin paste, as is necessary with other makes. This saves TIME in preparing, insures good suspension in the spray tank, which means an **even distribution** of a thin film of poison over the surface of the sprayed area and **obtaining satisfactory results.**

**Orchard Brand Powdered Arsenate of Lead** is double the strength of the Paste, and when used in water only one-half the quantity of the preparation is required. It is finely divided, fluffy, white powder that mixes readily with water and remains in good suspension when diluted in spray tank. To control Codling Moth and similar insects, use 2 pounds to 100 gallons of water.

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When combined with these, care should be exercised to thoroughly mix the materials in order to get a uniform coating of poison.

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Insecticide Dept.  
**SAN FRANCISCO**



## Hardie Orchard Gun \$12<sup>00</sup>

Here it is, the new Hardie Spray Gun that is revolutionizing spraying methods. Does the work quicker and easier than ever before. This device shoots an enveloping spray, carrying the spray to the tree tops. Takes the place of the cumbersome spray rods and tower. With the Hardie Orchard Gun you can spray all day and hardly notice it. Spray easily regulated. No complicated parts to get out of order. Lasts for years. Made by Hardie Manufacturing Company, manufacturers of Hardie hand and power sprayers and spraying devices for over 18 years. See one at your dealer's or send direct to us. Guaranteed satisfactory or money back.

## Hardie Spray Pump

Without question the simplest pump ever put on a sprayer, gives high pressure and big capacity—smoothest working, saves gasoline. Many growers are increasing the capacity of their sprayers by putting on Hardie spray pumps. Easy to install and made in sizes to fit your needs. Same design pump as used on the famous line of Hardie Power Sprayers. Contains all Hardie features such as Manganese steel crankshaft, phosphor bronze bearings, threadless valve cages and pressure regulator—an integral part of the pump. The one pump that has made good everywhere.

Write for Hardie Catalog. Describes Hardie 1918 sprayers and spraying devices. Know about the Hardie line before you buy.

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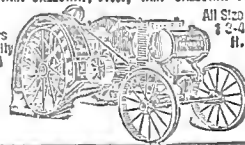
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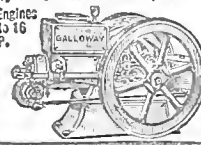
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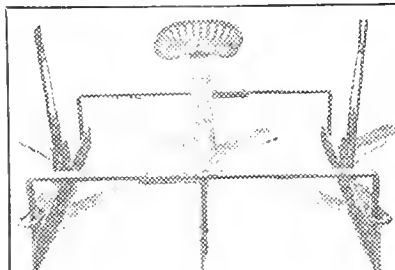
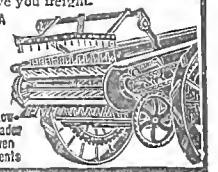
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PORTLAND, OREGON





# BETTER FRUIT

AN ILLUSTRATED MAGAZINE PUBLISHED MONTHLY IN THE INTEREST OF MODERN, PROGRESSIVE FRUIT GROWING AND MARKETING

## Growing Vegetables for the Cannery and Evaporator

By A. G. B. Bouquet, Division of Horticulture, Section of Vegetable Gardening, Oregon Agricultural College

TIME was when vegetables were of minor importance in the packing of various horticultural products in canneries, and more recently in evaporators. The packing of a few vegetables was done between the handling of fruits and so helped to keep the plant running more uniformly and somewhat enlarged the output. This situation has now been considerably changed, for the quality of Oregon products being more widely and favorably known and with vegetables playing an important part in the feeding of the warring nations, there has been an increased activity in the vegetable market and the packs in all canneries have been greatly enlarged. At the present time the Oregon output is of considerable importance, and offers to the vegetable grower a market for all or part of his crop which formerly did not exist. Vegetable growers are interested in the welfare and advancement of the canning and evaporating industries, for they have made it possible for them to grow many tons of perishable produce and many growers have been in a large measure dependent upon the factories for the sale of their products. In view of the somewhat limited opportunities for marketing fresh vegetables in the markets of the state, the cannery and evaporator have stimulated production in districts where they are operating and elsewhere, and in case of a glut on the market of a certain vegetable this crop could be diverted to a factory handling it for the purpose of processing it.

With some crops such as celery there is a great amount of waste due to the strippings of the stalks in the preparation of the bunches for the crates. I saw in a celery field recently strippings which I later figured to be worth not less than two hundred dollars to the grower at the price ordinarily paid for celery, namely, thirty dollars per ton. In the case of some other crops such as onions, the smaller bulbs which may be graded out for lack of size would make just as good onions for dehydrating as the larger bulbs. Cabbage that is burst slightly will be as fully acceptable as that which is solid if the cabbage is going to the kraut factory.

Oregon has already made a reputation for itself in the vegetables which it has packed and is packing. A letter to me recently from a cannery manager here in the state reveals the fact that, according to one of the best authorities on the subject, the Northwest will be looked for in the future for the largest amount of string beans in the country. What is true of the quality of the beans is true of practically all of our canned

vegetables. Premium prices, or prices above par, have been paid for Oregon products. The growth of the industry is on an upward grade and undoubtedly will continue in its growth.

As far as the success of the cannery or evaporator is concerned it is necessary, for the greatest economy, to have the same located in an area where vegetables of all kinds may be suitably grown. A strictly fruit-growing area may not be well suited to vegetables and vice versa. Some of our best vegetable-growing districts in the state are at the present time producing little fruit, so that the factory may not always be able to be so located as to be supplied with both kinds of products from nearby territory. Growers should be able to receive more money if the majority of the produce is nearby grown, so that the factory is not put to the expense of paying costly freight bills, as some of our factories are forced to do, going even into other states in order to get their raw material. Our problems in regard to this business do not lie in the ability of the soil and climate here to produce quality vegetables, if the grower will do his part in proper production and delivery.

Where one knows the price that he will obtain for a certain crop and he is sure of the market where it is to be sold, growing a vegetable under contract will be found satisfactory and ordinarily profitable, provided, however, the grower meets the conditions that are necessary for producing vegetables of good quality, obtains no less than a normal yield, and delivers the product in suitable condition. The success of the grower in these particulars and the prosperity of the factory are, therefore, two correlated factors. The success of the one cannot be accomplished without the success of the other.

Two important factors in profitable vegetable gardening on a contract basis or for a co-operative concern are: (1) The securing of a normal yield or more than a normal yield, and (2) the reduction of the items in the cost of production to a minimum. When no more than the contract price is to be obtained it can readily be seen that, to put this business on a profitable basis, there must be obtained a certain tonnage which will offset the cost of production and give the grower a reasonable profit. I will refer to this proposition a little later on.

One of the greatest problems in the relation of the factory to the grower at the present time, or at any other time, is the amount of raw material that will be delivered to the factory by the

grower. Very often this is a shortage rather than an oversupply. The factory management is never certain of their possibilities of securing their needs of the raw products. This uncertainty was well exemplified by this last season's pack, when, due to the dry summer season and the late spring, many vegetable areas failed entirely to deliver anything near a normal yield. One acreage of beets, for example, that normally would have given an average yield from forty-five acres produced no more than would be obtained from ten acres. In a similar way, another cannery found that the pack of string beans this year did not equal the output of last year, although the contract of acreage was almost twice as large as in 1916. This shortage of delivery may be due to classes of factors—one controllable and the other uncontrollable. Unfavorable weather conditions are beyond our dictation, but we can have something to say about soil selection, soil fertilization, maintenance of moisture, planting and caring for the crop, and the conditions of the vegetables at delivery. Crop shortage is unprofitable to the grower and disappointing to the factory which relies upon him to fill a contract delivery, the plant in turn being looked to for a definite supply by the brokers or jobbers. The controllable factors affecting what kind of a delivery will be made and whether vegetable growing for the factory is profitable or not are some of the important problems which I have in mind.

Concerning the distribution of seed to growers, I do not doubt but that considerable care is used in getting the best that can be obtained. It is well to bear in mind, however, that merely the question of what variety is to be distributed is not entirely solving the seed problem from the grower's standpoint. Of great importance is the question of the seed strains, the quality of which may be good, bad or indifferent.

Recent field trials by experiment stations show that the differences in the yield and type of different strains of the same variety are caused entirely by the quality and breeding of the strain to such an extent that in growing cabbage, for instance, the marketable value of one strain would be worth twice as much as that of another, the poor strains not paying the cost of production of the crop grown from them. Just what plan is to be followed in buying seed to secure the best is not for me to say here, but it is of the utmost importance that more attention be given to seed quality and seed strains which are to be given growers to plant. The question of what beets your grower

delivers to you is not so much of one whether he is growing Detroit Dark Red or Early Model or some other variety, but more of a question of uniformity of color and shape and quality, which are not characters of any one variety any more than may be brought about by the care in selection of a good strain.

It cannot be too strongly urged upon factory managers to use every possible precaution to select seed of the highest quality for their growers. This part of the business lies in the hands of the factory. We must educate the farmer also to be willing to pay more money for seed that costs more money to grow and upon which is spent extra time and money in selection. It is well to realize that in growing a vegetable for market the cost of the seed is from one-twentieth to one-hundredth of the gross receipts. Here, then, is one of the smallest items in the cost of production and yet one of the most important. It is unreasonable for us to expect a high-grade product at an unreasonably low price. It may not always be that the price charged and the quality of the commodity are commensurate, but as a general rule there is usually a suitable degree of parallelism between the two.

Going back for a moment to the question of a profitable yield, it is noticed that this has always been one of the reasons why in many cases growers have not made money in growing vegetables on a contract basis or for co-operative concerns. With beets at \$25 to \$30 per ton, it is necessary that there be a yield of two tons before the crop is paid for and profits are begun to be realized. It will cost approximately eight dollars per ton to raise the crop. If cabbage is grown there must be a yield of five tons before a profit is started, for it will cost approximately six dollars to grow the crop. Ordinarily half of the gross receipts of a normal yield will equal the cost of production, although this will vary with the individual vegetable, but when the yield is above normal there is less cost per ton in production and the net receipts are greater. If good yields are necessary to put the vegetable business on a profitable basis, they can only be obtained by an observation of the following: (1) The proper choice of a crop for the soil or a soil for the crop. (2) Fertilization sufficient for the crop needs. (3) The best preparation of the ground for the seed. (4) Proper seeding and maintenance of the crop. (5) Giving the crop due attention and not considering it of minor importance with other crops that are being grown in such a way that the vegetable is neglected.

In any community where farmers are solicited to grow a few acres of vegetables for the factory, there are a number who, beyond the fact that they have had a home vegetable garden, have never produced vegetables on an acre basis. They do not realize the intricacies of vegetable growing as a business and possible underestimate the necessary conditions under which a vegetable will best grow. Possibly it is taken for granted that farmer A or B

knows just the best method of growing so many acres of beets, beans, carrots, or what not. After seed is furnished him he may or may not be left to his own resources of selection of land, best methods of fertilization and cultivation, etc. Is it not a wonder that our factories do as well as they do in getting a uniform product in view of the variation in conditions of growing?

The discrepancies, therefore, that are to be noted in the yield of vegetables and the profits made by a grower are largely determined by the personal experience, and the attention he gives to his vegetable growing and the conditions which he has provided for growing the crop. Fortunately vegetable growing is no more than a one-season business, at the end of which mistakes which have been made can be rectified in the next year's work. I was talking recently to a traveling man who is in the habit of observing field conditions closely, and who mentioned an instance of the difference in yield which he observed where the same crop was grown under like conditions. In this case the railroad cut a certain field in two parts. On one side of the track the yield was twice that on the other side. This was due to nothing more nor less than the way in which the land had been farmed on the two respective portions of the tract.

If the farmer is not a gardener by profession he may not fully understand the soil requirements for vegetables. He must study closely the relation of the soil to the vegetable and endeavor to harmonize the two. A Willamette Valley soil in good fertility may produce satisfactory yields of grain, but planted to string beans, beets or cabbage, or the like, the yield might be light and possible unprofitable. Land that has been built up with manure or cover crops is the only suitable soil for vegetables outside of those lands that are naturally fertile. There must be quality, size and appearance and yield in the crop, which cannot be done with soils of ordinary fertility.

Commercial gardeners of the state, you will notice, are today operating on land that is slightly, if not very much, superior to the ordinary run of farm land—superior in texture and either in natural fertility or by actual fertilization. Many general farms have pieces of richer land than found on the rest of the farm, areas of swale and organic matter, which if well drained and utilized will make big yields of the best crop. These are the parts of the farm that can be made most profitable by growing vegetables. There are many hundreds of acres of land of organic nature in the state which will in the future be largely used for vegetables marketed fresh or delivered to canneries or evaporators. Such land is exemplified by the Lake Labisch district near Salem, and the many acres in Northwestern Oregon from Portland to the Astoria coast. These lands, together with other Columbia River acreages, are highly productive, are easily worked, and have unusual moisture-holding capacity. The amount of vegetables that could be produced on these

lands ought to be fully sufficient to take care of the demand for such stuff by the factories. Cabbage, spinach, onions and celery can be safely counted on to produce large yields of these vegetables. Under most circumstances it would be possible to get two crops off the same area, using spinach, followed by cabbage or celery. Such double cropping is possible when the soil is fertile and the first crop is a short season one. Early peas or beets make a good first crop, to be followed later by late cabbage or late string beans, or possibly fall cauliflower.

Fruit growers and farmers who have as their specialty crops other than vegetables but who are putting in a small acreage for the factory will have to consider the factors which I have mentioned in regard to a crop for the soil and what they can best grow with the cheapest labor. Crops that can usually be grown between trees or that can be handled somewhat cheaply on land unplanted to orchard are potatoes, cabbage, squash and possibly roots and onions.

In a recent visit to the cabbage-growing districts of a certain county I noticed many soils which were planted to this crop which, in my estimation, should never have seen a cabbage plant set on them. Many of these soils were lacking in moisture-holding capacity and general fertility. If possible to select such a soil, the land for vegetables should be easy working, inexpensive to prepare, given to holding considerable moisture and reasonably fertile. If the soil of a farmer who is figuring on growing vegetables for a factory does not begin to compare favorably with these characters, it had better be planted to something else.

Last summer furnished a good illustration of the fact that, no matter how rich the soil may be, its moisture was the determining factor in the yield of the same. With our dry summer the possibility of supplying the crop with sufficient moisture is the dominating factor. In looking over the various cabbage fields which I mentioned there were but few in which there were normal yields of the same, the exceptions being in those cases in which the soil was of such a character so as to hold an unusual amount of moisture. In some cases, it was the inability of the farmer, due to the season, to put the land in proper condition that was responsible for the losses. If moisture is the potent factor then thorough spring preparation of the land is necessary. Clods must be crushed if the fullest value of the moisture is to be held. The soil that will not crush and pulverize will not ordinarily make vegetable growing profitable.

The style of soil preparation for a grain bed will not suit a vegetable seed. Fall or winter plowing is to be encouraged and the soil in the spring should be stirred constantly from the time that it is workable until planting time. It is necessary to use skillful cultivation if big yields are to be obtained. Soil fertility is one thing from the vegetable grower's standpoint and another thing from that of the general farmer. Good beans cannot be grown with the

best quality and yield on prairie land. It takes a fifty-bushel crop of wheat per acre to equal the amount of nitrogen and phosphoric acid removed by an average crop of cabbage, turnips or onions, and the vegetables remove five times as much potash as the wheat in addition to a much larger amount of water. This means, therefore, that the yield is proportionate to the amount of available plant food that the soil has and its ability to conserve moisture. In the delta regions cabbage yields have been running this year as high as twenty-five and thirty tons per acre, the cabbage selling for fifteen dollars f.o.b. shipping point. This high yield is due to combination of the soil qualities that I have just mentioned.

Manure is getting scarcer than it formerly was, which makes it almost necessary that more vegetable land be cover-cropped and built up by green manures. In this way we can use much less manure than we have been using in the past. In a discussion of the subject "Can Vegetables Be Grown Commercially Without Animal Manures" at the recent meeting of the Vegetable Growers' Association of America, which I attended at Springfield, Massachusetts, it was the conclusion of the speakers, after visiting many acres where vegetables are grown for canneries, etc., that when the manure supply is short, light applications are wonderfully effective in rolling the organic matter of the green manures and increasing the availability of the plant food which they contain. A limited amount of manure, a cover crop, and fertilizers have brought results in numbers of cases. An answer to the above question was, "Yes, for truckers and cannery growers. All over the country we find men who are doing it."

There seems to be somewhat of an aversion by some regarding the use of commercial fertilizers, but I do not agree with such an attitude, provided the soil conditions are studied and care is taken in obtaining a standard fertilizer. I am not here to say that the artificial fertilizer will make for increased yields in every case, but I know that in many regions where the land is being fertilized with cover crops the yields are being brought up through proper applications of some fertilizer that particularly fits the needs of the crop. It will be necessary, in every case, to check up on the value of the fertilizer to the crop. Very often the use of a small fertilizer will make all the difference between half a crop and a full crop or nearly so, with a resulting net profit which will be satisfactory after deducting the cost of the fertilizer. Time will forbid me from going into this part of the crop growing to any length.

The requirements of some vegetables as regards the amount of labor necessary to handle them is of considerable importance in determining what crop will be grown. The cost for labor in handling a crop will vary with the individual crop. One man, for example, can take care of twice as much acreage of cabbage as of onions, and possibly one-third less celery than onions. The

labor item considers not only the cost in growing the crop but also whether the labor is possible to be obtained. This is true in the case of growing string beans for the factory, in which case the profits of the crop are reduced to a comparative small amount if an expensive wage must be paid to pickers.

There must be careful inspection on the part of the farmer as to the character of the vegetables which are delivered. Toughening of fiber through long standing in the field or elsewhere causes the vegetable to lack the desirable quality. There is, in some cases, a tendency among some growers to allow their products to become too mature before delivery. Fancy stock for processing, therefore, is impossible to be obtained. If the majority of farmers do not pay strict attention to this factor in delivering there must of a necessity be a lowering of the entire grade and a cheapening of the product. This is not just to the grower who is careful about his stock at delivery time. The production cost is practically the same for either first or second grade, while the gross receipts may be twenty-five or fifty per cent less. In this re-

gard, therefore, there must be the strictest co-operation. The grower must be given a fair price for his vegetables that will enable him, with a normal yield, to pay the cost of production and receive a fair interest on his investment. Likewise the grower should endeavor to deliver good quality produce rather than try to get rid of poor, unmarketable vegetables. In matters of this kind, some growers have not always been fair, for they have had a tendency to try to unload some stuff on the cannery which would not be desirable to process.

I have in this article only touched upon some of the many phases of crop production. We can confidently expect that if care is taken in obtaining all available data before the choice of vegetables is made and if the grower will give them the proper care, there should be not a great deal of difficulty in getting satisfactory returns in the growing of one vegetable or another. I have endeavored to emphasize particularly the fundamentals underlying the success of vegetable production, hoping that these points mentioned may furnish subjects for discussion.

## The Codling Moth Trap

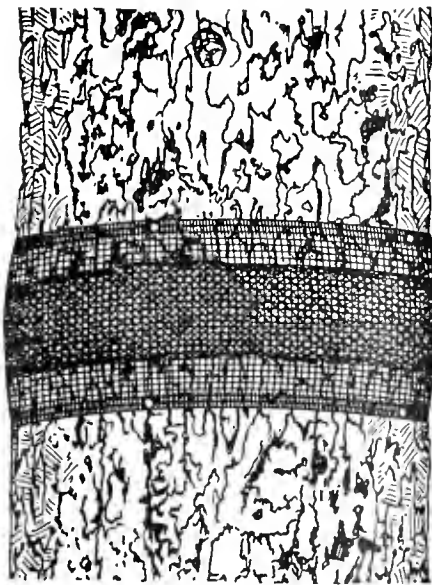
By Alfred M. Wilson, Clifton, Colorado

THE following are some of the reasons that should commend to apple growers the codling-moth trap thought out and perfected by E. H. Siegler, the codling-moth expert of the United States Department of Entomology: (1) The traps will do the work they are designed to do. The worms can get into the traps, but the moths cannot get out. They are trapped for good and die in the traps for lack of sustenance. (2) The traps reinforce the bands. They do not do away with the bands, but they do make the bands more effective by removing the element of uncertainty in the running of the bands. If they are not properly cared for, the bands, as too many growers know to their cost, may become sources of infestation; but that source of danger is

entirely removed when the bands are reinforced and strengthened by the use of the traps. (3) The traps do away with the necessity of running the bands. In other words, the traps, if they are properly attached to the trees, do their work automatically and without further assistance from the grower. (4) The traps are, therefore, great time savers. This at the present time when labor is so scarce and so costly is an important consideration. (5) The traps can be made by the growers themselves. The only unavoidable expense is that for material. (6) The traps can be attached to the trees at any time in the year most convenient to the grower. For example, the traps can be attached to the trees in the fall and winter when the work is somewhat slack. (7) The traps need not be renewed oftener than every two years. (8) The cost for the material and the expense involved in making the traps and in attaching them to the trees should not exceed the cost for labor to run the bands during one season.

The traps are simple contrivances made out of twelve-inch wire mesh screen cloth. The mesh is first cut into strips six inches wide. The strips are then "crimped" and cut into the desired lengths. The crimping may be done either by hand or by means of a crimper such as is used by tanners in crimping stove pipe. But the main thing is to attach the traps properly. So important is this matter that the experts emphatically state that unless the bands are attached as they should be, the growers have no right to expect the traps to do the work they are designed to do.

In the first place colored bands, folded once, are put on the trees. Then over the bands the traps, which, by the



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**PROPERLY  
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appealing pictures  
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way, should preferably be made out of the wire mesh known to the trade as Japan wire. In attaching the traps to the trees the following points should be carefully observed: (1) The upper and lower edges of the trap must be tacked to the tree in such a way that they both fit snugly against the bark. (2) There should be a free space of at least one and one-half inches between the upper edge of the band and the upper edge of the trap and an equally free space between the lower edge of the band and the lower edge of the trap. (3) The trap must have a bulge which shall raise the trap at least an half inch above the band. It is vital that the trap must not at any point come in contact with the band; otherwise the moth, if it should at the point where the band is in contact with the trap, emerge from the chrysalis state, might be able to escape from the trap. And if it did, that, to use an homely phrase, would be to "spill the beans." Hence the necessity for a lasting bulge to the trap. The desired bulge can be secured by driving the proper distance into the tree through the band a certain number of nails such as are used in nailing

down slate roofing. (4) The strip of wire mesh out of which the trap is made should be long enough to allow for an overlap of at least two inches. An overlap of three or four inches would be better.

For two years Mr. Siegler carried on, in the fruit section of the Grand Valley, Colorado, investigations into the habits and life history of the codling moth. During the second year he had the assistance of H. K. Plank, also of the Department of Entomology. The third year (1917) Mr. Plank was in sole charge of the work. But it was Mr. Siegler to whom credit for the discovery of the trap is due. In October, 1916, Mr. Siegler published the results of his investigations in the *Journal of Economic Entomology*. In December of the same year he read a paper on the same subject before the American Association of Economic Entomologists.

During the past year two of the most prominent growers in the Grand Valley, J. Lee Morse and C. E. Wixon, tested out the traps in their orchards near Grand Junction. During the same year Mr. Plank, Mr. Siegler's assistant, was experimenting with the traps in

the orchard of Charles Lamb, a successful orchardist in Highland Park, midway between Clifton and Grand Junction. These three orchardists are convinced that the traps are invaluable.

## South America's Taste in Dried Fruits

Department of Commerce, Bureau of Foreign and Domestic Commerce, Washington, D. C.

THE failure to sell important quantities of American dried fruits in South America is due in part to the native's preference for dried fruits that may be readily eaten out of hand without further preparation, according to a bulletin entitled "South American Markets for Dried Fruits," issued today by the Bureau of Foreign and Domestic Commerce of the Department of Commerce.

The predominance of European dried fruits (prunes, raisins and figs) is especially marked in Brazil, and only slightly less so in Argentina and Uruguay, says the report. Home-produced fruits practically displaced all others in Chile, with the United States ranking second only to the United Kingdom in the small trade in imported fruits. Peru is the only country considered in this report in which California fruits outrank those from all other sources. Chilean fruits practically monopolize the markets of Bolivia. During the last year or so there has been a decided tendency in South America to buy in the United States certain lines of fruits that formerly were purchased almost exclusively from Europe, and it is thought that proper attention to the requirements of the market will make permanent at least a part of this trade.

The report points out the shortcomings in American methods of competing with European countries in the South American markets and offers constructive suggestions for making more of our opportunities in the future. Copies can be obtained at the nominal price of five cents from the Superintendent of Documents, Government Printing Office, Washington, D. C., or from the district or co-operative offices of the Bureau of Foreign and Domestic Commerce.

"Principle and Practices of Pruning," by M. G. Kains, is the title of a very interesting and instructive book which is well worthy of every fruit grower's reading. The price of the book is two dollars. Published by Orange Judd Company, New York.

Howard Ewerts Reed of Beaverton, Oregon, has published a small book, "Profit From Spraying," which contains much information about spraying of the different kind of insects and pests that infect orchards and vegetable gardens. The price is 25 cents.

Liberty Bonds.—The next Liberty Bonds will probably be offered in April. A word of advice seems timely. It is the duty of every citizen of the United States to begin saving and prepare to participate in the Liberty Bond sale in February.



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**QUICKLY AND EASILY MIXED**—No working up; no straining needed; no sediment; no lumps; no waste—*never clogs nozzles.*

No evaporation—no leaks—no loss of strength. But an *absolutely standard spray mixture*, the uniform strength of which you can depend upon—and know that you have the *highest per cent of killing power.*

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## Fruit and Its Effect on the War

By W. F. Gwin, of Fruit Growers' Agency

THE exclamation of the food editor of an important newspaper after reading an article recently issued by the Fruit Growers' Agency which discussed the food value of the apple was: "Who would have thought that of the lowly apple!" One might wonder why a food editor should have confessed to ignorance in so important a food as the apple, but there are further wonders "coming up" on the apple, for here now comes a great and serious authority warning the military authorities of Great Britain that her soldiers must have apples for proper "nerve nutrition" and health. The authority in question is Dr. Josiah Oldfield, Senior Medical Officer to the Lady Margaret's Fruitarian Hospital of England, and his essay is "Fruit and Its Effect on the War," and is as follows:

"In the early weeks of the war I gave an interview to one of the London dailies, and ventured to prophesy that the end of the contest would be influenced largely by dietary problems, and in these problems I did not consider that the question of protein and scale calorific values for muscular substance would be of so much importance as those of foods which supply nerve nutrition, i. e. fats and salines. It is very difficult to deprive any besieged country—or even any besieged city—of all sources of muscular nourishment so long as any other cellulose remains to

be transformed by chemical agencies into a more digestible form of carbohydrate. The difficulty for Germany as a beleaguered country was therefore not really either meat, or cereals, or potatoes, but fats and fruits and salads.

The joining up of Turkey threw my prophesy out of gear as to time, because it opened up the great stores of oil and figs and other fruits of Asia Minor. This source is slowly failing, and today, in spite of a complete calorific dietary, the people of Germany are beginning to develop the disease of mal nerve nutrition. There are beginning in Germany

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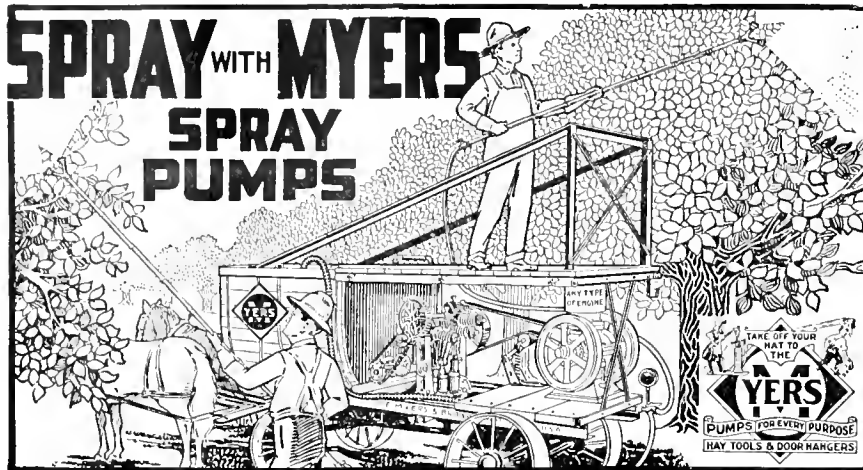
GREENFIELD, OHIO

Canadian Branch: Chatham, Ontario.



Pat. in U. S. Dec. 1, 1914.  
Pat. in Can. Apr. 6, 1915.





Those neglected fruit trees—you will find them everywhere—perhaps you have them in your own yard or out in the orchard, that for some reason or other you have failed to take care of in years gone by and now class them as non-producers, worthless except for shade.

You are surely going to give them attention this spring as well as every other tree, vine, shrub, bush or plant about the place, on which you depend for your fruits, berries and vegetables. Start early with this work before gardening and planting time. Trim up your trees and plants and put new life into them, so they will amount to something and do their bit when the time comes.

Whether you raise fruits or vegetables, you will need a spray pump of some kind so we recommend the MYERS LINE of Bucket, Barrel and Power Spray Pumps to your attention—the Easy Operating Cog Gear Bucket and Barrel Pumps for hand use, and the Myers Automatic Power Pumps and Complete Outfits that do not require a relief valve for extensive power operations.

Go where you will, you will find these Spray Pumps doing things in the spraying world—spraying trees and plants, whitewashing and painting, disinfecting and innumerable other jobs—because they are recognized for their easy operation, speed, capacity and economical use of mixtures, and for these reasons are the choice of fruitmen and gardeners everywhere—Veteran or novice, you will appreciate the efficient spraying service of Myers Spray Pumps.

Ask your dealer or write us immediately about them—Time is limited until you must get busy, and when you start we want you to have a real fighting machine in a Myers Spray Pump.

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For Quick Attention Address Your Letter or Card,

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concentrated form of proteid; rice and wheat and maize, the most important of the cereals; olive oil, sesame oil, peanut oil and almond oil, the finest forms of fat; apples, lemons, oranges (and onions) are immeasurably the most important of fruits, which are nerve foods, and without the presence of whose salts physiological functions fail. It will be a grave risk to England's home stamina if her supply of apples is cut off, because during winter conditions in this climate they are superior to either lemons or oranges, and cannot be replaced by any other fruit."

That there is a vast message to humanity in the above article is apparent on its face. Slowly but surely we are beginning to understand "physiological chemistry," of which science "nutritive salts therapy" is a most interesting and most vital branch. The old simile of the human body being like a machine may again hold good roughly here when it is said that no machine can function without all its parts and all its offices being served—and just so the human body cannot live unless those cells which compose it are all fed with the "chemicals" they need for their life. Without the mineral salts which are in apples or other fruit there will be nerve cells and other cells which will not function. Pellagra, due to continuous corn and syrup diet, scurvy, a foul disease in its worst form, and other such diseases are caused by false diet, and there would be no such ailments had the victims apples to eat. In a word, when Dr. Oldfield warns the British military to look out for its apples, he not only talks deep science, but just common horse sense.

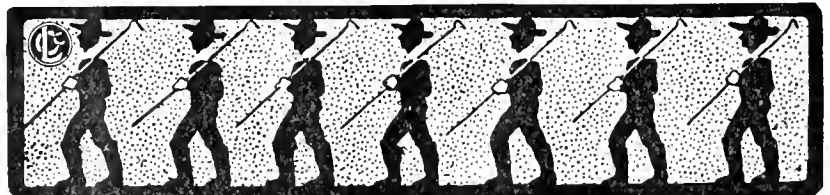
#### Loyalty in Little Things

The whole great problem of winning the war rests primarily on one thing, the loyalty and sacrifice of the American people in the matter of food. If we are selfish or even careless, we are disloyal; we are the enemy at home. Now is the hour of our testing.—U. S. Food Administration.

already grave manifestations of the basic origin of many diseases. The latest is a widespread oedema in the legs and feet and face, of which particulars are given in a late issue of *The Lancet*. This will steadily get worse and worse as another winter comes on unless fresh fruit, and salads and seed oils, can be introduced largely into Germany. I have dealt at length with Germany and her fate, to emphasize the great importance of avoiding a similar catastrophe for England. English stamina, courage, endurance and heart for the war depend on complete nerve nutrition. Now for this the calorific values of wheat, or beans, or beef, affords no criterion. The danger is that laboratory scientists will measure the comparative importance of cargoes by calorific values, and will on this ground tend to debar juicy fruits as being very light cargo compared with legumes or cereals. Every effort should be exercised to prevent this, or else, when the mischief is done, there will be a panic importation of anti-scorbutic fruits. I note that a small number of ships are still allowed to run to the West Indies for bananas, and this is excellent, but weight for weight and bulk for bulk, the most important

fruit to be imported during the winter and early spring of 1918 is apples. Were I food controller in Germany and allowed the choice of free import of one article of food from November to April, I should select the apple. So, in England, while for importation purposes legumes and peanuts are the most

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**A Meat Stretcher**

Many recipes for combinations of rice and meat have come to us from those parts of Europe where meat is used mostly for the flavor it gives other foods. In our efforts to cut meat consumption rice becomes interesting as the most useful meat stretcher. It can be used freshly cooked or as a left-over. In its many varieties Pilaf is most popular among the Oriental people and is frequently served at dinner as the principal dish.

**Rice Stew.**—Wash a knuckle of beef and place in three quarts of cold water for an hour. Put it on the stove and let it gradually heat, then simmer for two hours. Any scum rising when it first begins to boil should be skimmed off. Prepare one-half cup each of chopped onions, carrots, cabbage, tomatoes, one-fourth cup of turnip, three cloves, a pinch of cayenne, black pepper and one and one-half teaspoons of salt. Add these to the simmering meat and let boil for one hour; then add a cup of rice and a bay leaf. Boil, stirring occasionally until the rice is cooked. When the kettle is closely covered there is little need of adding water. Add boiling water if needed.

**Scalloped Rice.**—To prepare this economical dish use two cups of boiled rice, one cup of white sauce and one-

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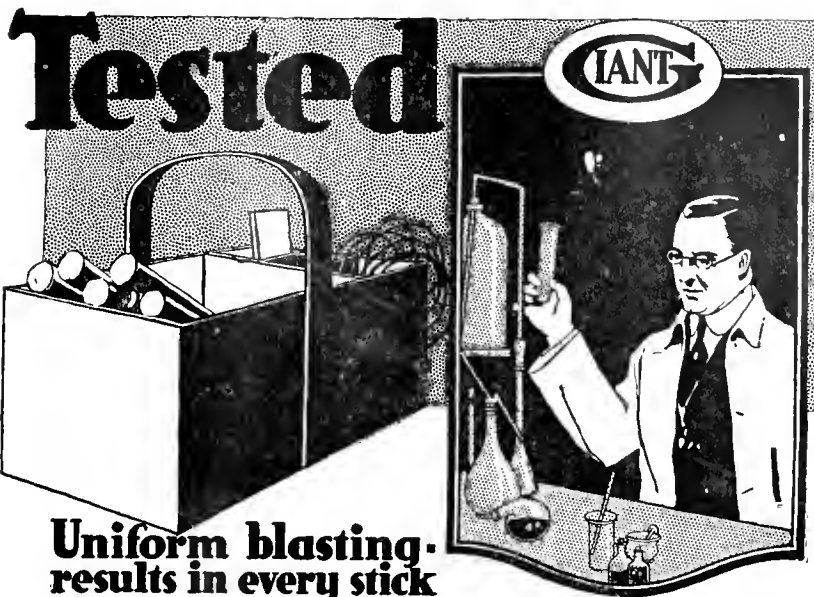
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fourth cup of finely shredded codfish which has been parboiled ten minutes in hot water. Cover the bottom of an oiled baking dish with rice, then add the codfish and cover with white sauce. Sprinkle the top with bread crumbs and bake in a moderate oven until brown. Eggs may be used to top this scallop instead of bread crumbs. Arrange fish and rice in alternate layers, finishing with rice. Add white sauce to each layer and sprinkle with paprika. Carefully break four eggs on top, dot with sauce and season with salt and paprika. Bake in oven until eggs are "set."

**White Sauce.**—Melt two tablespoons of fat, and add two tablespoons of flour, and salt and pepper to taste. Cook thoroughly until blended. Pour in gradually one cup of milk, stirring constantly. Cook until smooth and glossy.

**Cheesed Rice.**—Put in a double boiler or chafing dish two cups of boiled rice, one-half cup of hot milk, and heat thoroughly over water. Then sprinkle lightly over it half a cup of grated cheese and a few shreds of pimiento. Cover tightly and let stand over the hot water until the cheese is melted. This is acceptable for Sunday tea.

# We Must Fill That Basket



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## LILLY'S

Established 1885

## Growing Orchard Crops

By Prof. C. I. Lewis, Oregon Agricultural College

ORCHARDISTS are asking themselves at this time what they can grow in their orchards to help the food situation. In young orchards from one to five years of age, under normal conditions, the best crops to grow are such crops as strawberries and hoed crops such as tomatoes, melons, squash, peas and beans. To a certain extent, even under war conditions, such crops should still be produced, but the acreage is somewhat limited—at least the market for the acreage of some of these hoed crops is somewhat limited—and orchardists should see to what extent they can grow crops requiring the minimum of labor and yet give large returns of the world's food. Navy beans should be considered. Seed potatoes, corn for ensilage or for hog feed, strips of vetch such as purple vetch to be raised for seed purposes, or vetch and oats for hay, such grains as wheat, barley, oats and buckwheat may also be planted. In these young orchards, however, good wide strips should be left close to the trees so that the grain will not take away any food and moisture which the

trees need. If you are not careful, you will be robbing the trees in order to grow a temporary crop and will injure the orchard more than the money you will obtain for the crop.

Where hogs are to be kept on the farm, a rotation of crops could be grown to good advantage. In the early spring, Canada field peas should be planted, and this will give some very good feed to help in turning off the hogs. For summer planting, about the middle of July drill in such crops as Aberdeen and Cow Horn turnips, vetch and rape. This will make most excellent hog feed in the fall and winter. In orchards six to eight years of age which are not bearing heavily, but which are very vigorous, grain is the ideal crop. Such grains as barley and oats can be sown for hog feed and the hogs can harvest such grains to very good advantage. Another crop which should receive more consideration from the orchardist is buckwheat. This crop allows for late seeding. It should be put in an orchard where climatic conditions have ruined the crop for the coming

year. It will grow with a relatively small amount of moisture and can be handled fairly easily among the trees and is a good cash crop and a good substitute for wheat in our food ration. A much larger amount of buckwheat should be raised among the orchardists than has ever been raised before. The buckwheat, in addition, has a tendency on the heavier soils to make them lighter and less compact and improve their physical condition. Orchardists should not neglect the possibilities of sheep feeding. Right now in many orchards in Western and Southern Oregon there is most excellent sheep feed. Sheep could be turned into those orchards and could be allowed to run until about the time of the spring plowing. Of course if the ground is poorly drained and too heavy, this practice might be questioned, but in the majority of orchards this is not true, and mild winter has given us a wonderful amount of feed which could be turned into mutton and wool. Orchards which have very good cover crops will support sheep at this time to very good advantage and the manure from the sheep will compensate to a large extent for the loss of organic matter. If sheep injure trees they must be removed, but this seems to be the exception where there is plenty of feed.

Where orchards are mature and in bearing and are unirrigated, there is practically nothing that can be grown to advantage unless one could pasture off some of the cover crops this spring. In irrigated districts where alfalfa and clover can be grown abundantly, sheep can be used to good advantage. In all these practices, however, one should watch the trees carefully to see that there is no injury by the animals or by having all the moisture and food taken away from them.

## Rice with Vegetables

Rice can be combined successfully with vegetables, and some of the dishes are substantial enough for meatless days. Red beans with rice make a favorite dish in many parts of the world.

**Red Beans and Rice.**—Soak over night a pound of red beans. Then simmer for at least four hours in two full quarts of water. When the beans are quite soft, add a teaspoon of salt, a teaspoon of fat, a small onion (minced) and half a red pepper. Continue the simmering process for two hours longer. Serve with hoiled rice. The combination is not only good but represents a complete ration.

**Cabbage with Rice.**—Boil a head of cabbage until tender, drain and cut out the heart and center, fill in the opening with a cup of boiled rice, which has been highly seasoned with salt, pepper and fat. Pour over all a cream sauce. Chopped pimientos may be added to the rice or paprika dusted over the whole after the sauce is added. This makes an excellent dish when the meat course is light.

**Rice and Onions.**—Chop six onions and put them into a frying pan with one tablespoon of fat. When tender

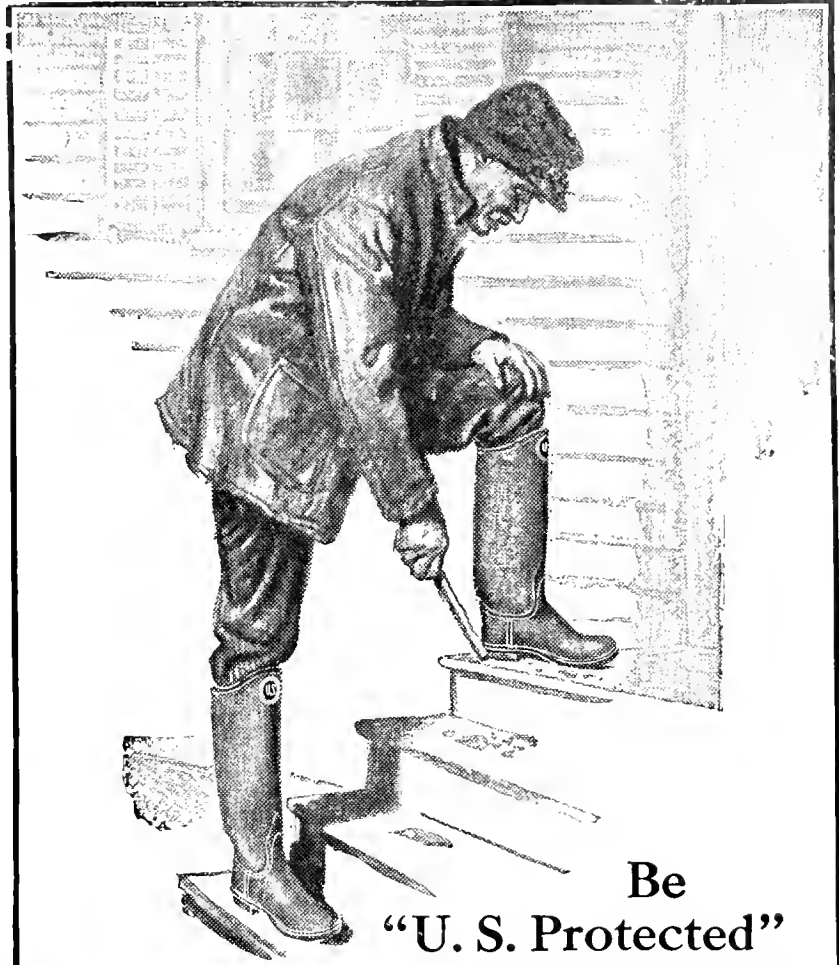
add an equal quantity of boiled rice, and season with salt, paprika, one teaspoon of kitchen bouquet and one teaspoon of lemon juice. Stir lightly together, heat thoroughly and serve very hot.

**Rice Farcie.**—This combination of vegetables makes a flavory accompaniment for warmed-up left-overs of meat: 1 pint chopped tomatoes, 1 cup rice, 1 cup chopped celery, 1 cup chopped olives,  $\frac{1}{2}$  cup chopped peppers, 1 tablespoon minced onion, 1 teaspoon salt,  $\frac{1}{4}$  teaspoon paprika. Rub the tomato through a sieve and heat, then add the rice, chopped celery, seasoning and other ingredients and boil for five minutes. Then put it on the side of the range and simmer for one hour until the ingredients are thoroughly blended.

**Spanish Rice.**—This is a deservedly popular dish and, like rice farcie, is excellent to serve with beans for meatless dinners: 4 teaspoons fat, 2 green peppers, 1 onion sliced, 1 cup rice,  $\frac{1}{2}$  tablespoon paprika, bit of bay leaf, 4 large ripe tomatoes or  $\frac{1}{2}$  can tomatoes, 2 tablespoons sugar, 2 teaspoons salt,  $\frac{1}{4}$  teaspoon white pepper, ground thyme. Heat the fat in a heavy frying pan, and in it brown delicately the peppers and the onions. Remove and brown the rice. Add all other ingredients. Cover and let simmer on the back of the stove until rice is soft; add boiling water as the rice swells.

These numerous ways of using rice recipes do not cover the usefulness of rice. Soups and desserts have not been touched. A whole volume could be filled with recipes on rice cookery. Less meat and less wheat, more rice might be adopted as the conservation program of America while the world shortage of food lasts. Get acquainted with rice, the food of millions.

The Pacific Northwest Tourist Association is an association embodying the States of Oregon and Washington and British Columbia. The association is formed for the purpose of acquainting Eastern people of the wonderful scenery of the Northwest, and its magnificent climate—the object being mainly to give the tourists some idea by illustrated booklets in order that more people may be induced to spend their vacations with us, feeling that in doing so frequently many will be sufficiently impressed as to come to the Northwest to live. The association has issued several very handsome booklets or folders, as follows: Mountaineering in the Pacific Northwest, Golfing in the Pacific Northwest, Fishing in the Pacific Northwest, Yachting in the Pacific Northwest, and The Pacific Northwest. These booklets can be obtained from the Pacific Northwest Tourist Association, 1017 L. C. Smith Building, Seattle, Washington. BETTER FRUIT takes this opportunity of suggesting to the subscribers and readers of BETTER FRUIT that they send for one or all of these booklets, mail them to Eastern friends and relatives who they think would be interested, particularly those who might be induced to make a tour of the Northwest during the coming year.



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# BETTER FRUIT

HOOD RIVER, OREGON

Official Organ of The Northwest Fruit Growers' Association  
A Monthly Illustrated Magazine Published in the  
Interest of Modern Fruit Growing and Marketing  
All Communications Should Be Addressed and Remittances  
Made Payable to

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**Growing Vegetables.**—Last year on account of the Government propaganda for increased production of vegetables as well as many other products, fruit growers very extensively increased their garden patch, many of them planting sufficient to have a surplus for sale. Those who did were successful in selling the surplus at splendid prices. The propaganda was a big factor in stimulating fruit growers to conserve vegetables for winter use by canning or evaporating. The amount saved by canning your own vegetables is not generally realized by fruit growers. The editor has in mind one particular instance where the grocery bill of a family was around \$50 per month. In this instance the mother of the family canned sufficient vegetables and fruits to last the entire winter, the result being it made a difference in the grocery bill of \$20 per month. The editor takes pleasure in advising every fruit grower to plant a good-sized vegetable garden this year, and to urge the canning or evaporating of enough vegetables to last during the winter. Steam pressure canning outfits for this purpose, which will make the work much easier and enable the canner to do it in much less time, can be purchased at a very reasonable price, running from fifteen dollars up. The increased number of canneries in the Northwest will mean an increased demand and an increased market for the surplus supply which the grower has to sell. With the object of stimulating an increased production of fruits and vegetables with fruit growers for canning purposes and a surplus for marketing during the season and for the many canneries in existence, BETTER FRUIT is publishing one of the most excellent articles for growing vegetables by Professor A. G. Boquet, of the Experiment Station, Corvallis, that has ever appeared.

**The 1917 Apple Crop and Prices.**—To February 23 there had been shipped 20,143 cars of apples from the Northwest. It is estimated there are 3,000 more to go. This crop is about double the 1916 crop, the heaviest previous crop. So far as can be determined at the present time it appears that the crop will average the growers about 25 cents more per box. Our selling organizations are certainly entitled to the credit and the fullest appreciation of the fruit growers, at least those who rendered good returns, for the reason that the crop was the largest we have had, which made it more difficult. War conditions and saving have been factors in effecting the market, and the embargo preventing export, so it was necessary for the marketing concerns of the Northwest to market a great many more apples in the United States this year than ever before. Undoubtedly results are due to improved salesmanship, better energy, and certainly wider distribution. The subject of distribution has been covered in a series of articles in BETTER FRUIT, appearing in 1916 and 1917. The distribution for twenty days in 1917 was 550 cities, while the distribution in 1916 was 611 cities in sixty days.

**Thrift Stamps.**—While it must be admitted there are some people who cannot afford to buy Liberty Bonds and pay cash for them, it is unthinkable to imagine there is a grown person in the United States who cannot buy a Thrift Card. A Thrift Card holds sixteen thrift stamps costing 25 cents each. The Thrift Card when full represents a value of four dollars. When the Thrift Card is filled take it to the postoffice, or almost any bank, and exchange it for a War Savings Stamp, paying the few cents difference between the four dollars represented by your filled Thrift Card and the selling price of the War Savings Stamp. Up to March 1 the difference is thirteen cents. After that date the price advances one cent each month. This Thrift Card will have a cash value on January 1, 1923, of five dollars. If the time should arise when you need money and simply must have it, you can get it back with interest by simply taking the War Savings Stamps to the nearest money order postoffice and present them for redemption. The interest will be paid you on the sum already deposited even if it is but one War Savings Stamp.

**Income Reports.**—Official announcement is made that the time for filing income reports from individuals and corporations is extended to April 1, 1918. The income tax law, as passed by Congress, is a just and equitable law. It is the duty of every single citizen having an income of \$1,000 to file a report, and every married man with an income of \$2,000. It is a duty required by law that everyone must comply with, and one that everyone should cheerfully comply with. Additional taxes, on account of the war, are levied, which every true American should feel mighty glad to pay, because every true

American must and should feel that it is the prime duty of the United States to win this war and win it as quickly as possible. If the Allies are successful this war will make democracy safe for the world. Every American citizen should bear in mind we are fighting for self-respect and self-protection, the freedom of the seas and many other things too numerous to mention in a brief editorial. The longer the war continues the heavier the loss of life and the greater the expense will be, so it is purely a matter of business to go at it in the most forceful way and end the war in the quickest possible time. In order to do this it is necessary that every American should contribute liberally to every request of the Government, but a good deal more is necessary—production should be increased in every way possible and saving should be practiced to the fullest extent.

**Some Orchard Crops.**—To win this war it is absolutely necessary that the United States must produce the largest and fullest crop possible. Among our Allies so many are already engaged in fighting or manufacturing ammunition that labor on the farm and orchard is very much reduced, consequently it is the duty of the United States to supply them. It is estimated the United States will have to feed 30,000,000 to 50,000,000 people this year in addition to our own population. This means increased production. The fruit grower can do his share, because there are many crops which the fruit grower can grow between the trees. Valuable information is given in a most excellent article on the subject by Professor C. I. Lewis of the Experiment Station, Corvallis, whom everyone recognizes as the most able and practical horticulturist in the United States.

**Fruit and Effect on War.**—A very interesting article, "Fruit and Effect on the War," appears in this edition, which is of immense importance in connection with the fruit industry as well as the war. It is the opinion of Dr. Oldfield, one of the ablest physicians in England, that some of the nations at war at the present time are suffering from a certain disease due to lack of fruit. There is no question but what a great many people do not eat enough fruit, and in all probability more or less people suffer from a lack of sufficient fruit, which is shown by Dr. Oldfield to be a vital necessity to keep one in perfectly good health.

**Advertising.**—Advertising the apple, without any doubt in the editor's mind, was the big factor in helping to dispose of the largest crop the Northwest ever produced, at better prices than received for some years. Therefore the editor urges every organization to begin now to plan for an advertising campaign. In order to do so it will be necessary to tax growers the small sum of two to five cents per box, which they can well afford, as they get much more back than they contribute, through increased prices.



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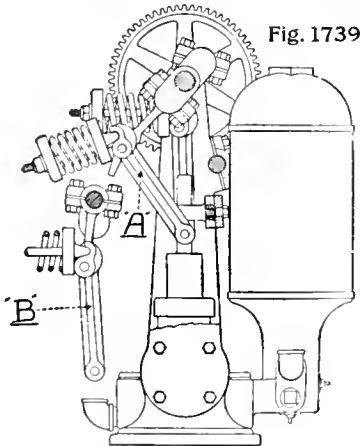
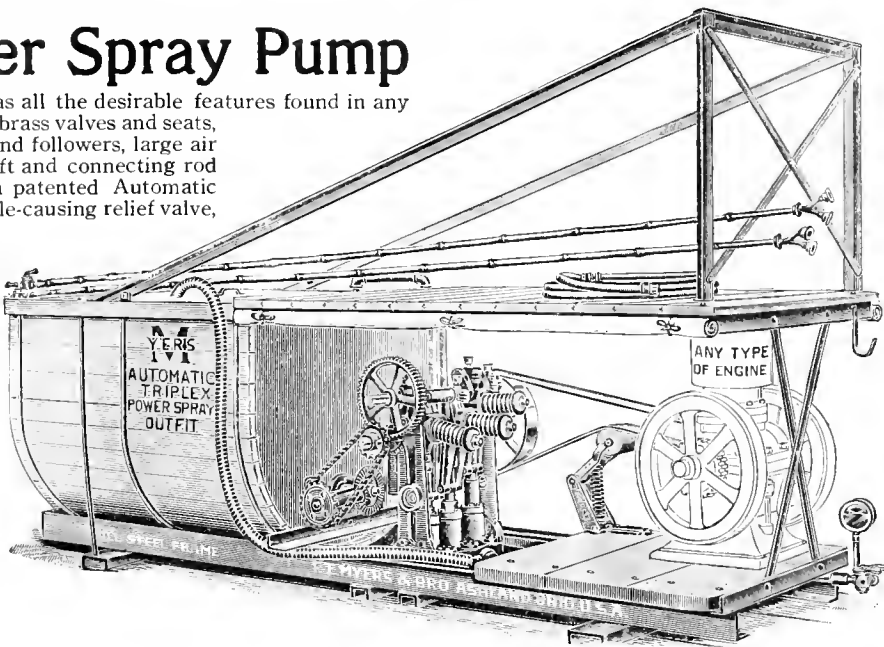


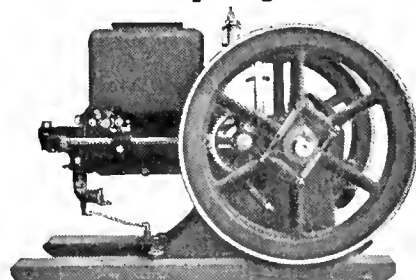
Fig. 1739

In operation the Automatic Pressure Governor has for its object the positive control of the pump pressure. This is accomplished by a simple arrangement of a combined lever and spring on each plunger connecting rod. [See A and B, Fig. 1739] which, when the pressure reaches a predetermined limit, automatically stops the operation of the plungers without interrupting the driving power, and again permits them to resume operation when the pressure falls below this limit; also removes the entire load on engine causing it to run idle [saves gasoline]. All wearing parts thoroughly lubricated.

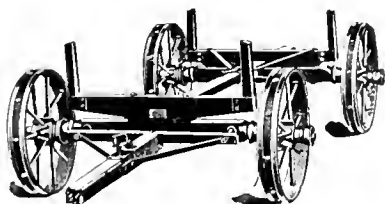
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"A"—Position of Plunger Connecting Rod un-locked from crankshaft while not pumping.  
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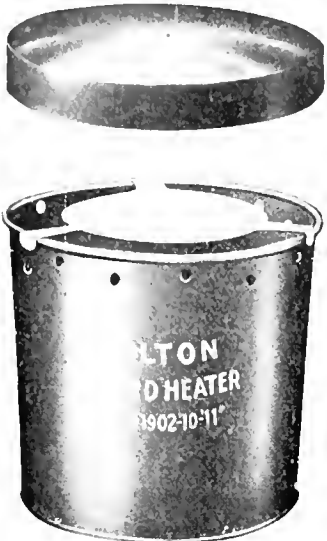


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**AMES-IRVIN CO.**  
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**Government Inspection.**—One of the best moves ever made in behalf of the vegetable grower and the fruit grower is Government inspection which is being carried on in a number of cities in the United States. A list of the cities and the names of the inspectors is published elsewhere in this edition. In previous years the fruit growers and fruit-shipping concerns have been largely at the mercy of the man at the other end, if he is inclined to be otherwise than straightforward. By this system of Government inspection the fruit grower is given protection. If the Government inspector passes on the fruit the buyer is compelled to carry out his contract and does not have an opportunity of making a claim or rejecting on account of off-condition, if the Government inspection is O. K.

**Codling Moth.**—In this edition appears an article on "Trapping Codling Moth," by Alfred M. Wilson. Growers frequently have appreciated the value of banding the trees and killing the codling moth under the bands. Mr. Wilson's method is an improvement, as the trap holds the codling moth after they have emerged and prevents them from getting away. While the editor has never seen one of these traps and cannot say how successful they may prove to be, he is inclined to believe the suggestion is well worth trying, and therefore has published in this edition a contribution from Mr. Wilson showing how the traps are made, with the hope it may be a benefit to the fruit growers.

**Spraying.**—The spraying season for some diseases and pests will commence in March or April, according to the weather conditions. Ordinarily spray for San Jose scale should be applied late in March or early in April. The first spray for fungus should commence about this time; therefore if the fruit grower does not already possess a first-class power outfit he should buy one immediately. It does not pay to depend on hiring your neighbor to spray your orchard, because if you do he sprays his own orchard first and yours afterward, and yours is sometimes sprayed too late.

**Pruning.**—Strange to say pruning is one of the subjects the least understood by growers. Most growers have had a vague idea of what they ought to do, but comparatively few have had a complete understanding of just why they pruned in a particular way. The importance of thinning out and heading back in connection with production is very ably covered in an article by Professor V. R. Gardner, appearing in this edition. Professor Gardner's article is not one of opinion, but is founded on actual observation and practical experience.

**Sugar.**—All fruits contain more or less sugar. The system requires a certain amount of sugar, and the more fruit you eat the less sugar you will have to buy. What is equally important, the sugar in fruit is in a far more digestible form than ordinary sugar which you buy.

## Cherry's "Dependable" Seeds

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Never before has there been such a necessity for everyone to plant a garden.

**You will save money by ordering "Cherry's Dependable Seeds" from our special list**

Realizing that everyone must plant a garden this year, and in view of the fact that present seed shortage necessarily makes higher prices, we are not getting out an elaborate illustrated catalog this year. Instead, we will send you an advance Price List in which the **Price is at Least 25 per cent Lower** than would have been possible had we published a big book. We are grateful for your past orders, and hope you will appreciate our effort to give you low prices. Write for special Wholesale Price List.

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### Statement of the Ownership, Management, Circulation, Etc.

Required by the Act of Congress of August 24, 1912.

#### of "Better Fruit," Published Monthly at Hood River, Oregon for October, 1917

State of Oregon, }  
County of Hood River, } ss.

Before me, a notary public in and for the state and county aforesaid, personally appeared E. H. Shepard, who having been duly sworn according to law, deposes and says that he is the editor and business manager of "Better Fruit," and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, (and if a daily paper the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor and business manager are:

Publisher, Better Fruit Publishing Company, Hood River, Oregon.

Editor, E. H. Shepard, Hood River, Oregon.

Managing editor, E. H. Shepard, Hood River, Oregon.

Business manager, E. H. Shepard, Hood River, Oregon.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding one per cent or more of the total amount of stock.)

Better Fruit Publishing Company, Inc., Hood River, Oregon.

E. H. Shepard, stockholder, Hood River, Oregon.

3. That the known bondholders, mortgagees, and other security holders owning or holding one per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above giving the names of the owners, stockholders and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is: (This information is required from daily publications only.)

(Signed)

E. H. SHEPARD,  
Editor and Business Manager.

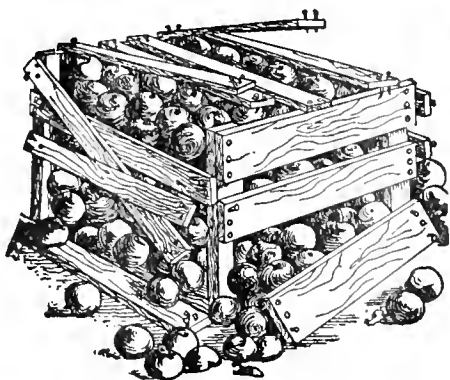
Sworn to and subscribed before me this 13th day of February, 1918.

ALTON W. ONTHANK,

(Seal)

Notary Public for the State of Oregon.

(My commission expires May 29, 1919.)



BEFORE using Cement Coated Nails

## Western Cement Coated Nails for Western Growers

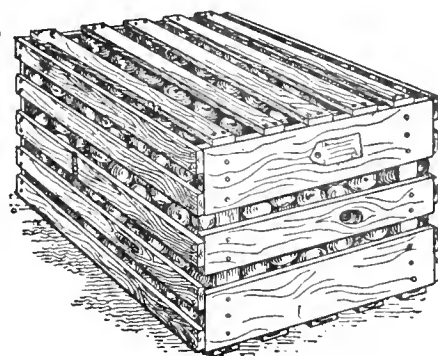
Our Cement Coated Nails are always of uniform length, gauge, head and count. Especially adapted to the manufacture of fruit boxes and crates. In brief, they are the Best on the Market.

Write for Growers' testimonials.

### Colorado Fuel & Iron Co.

DENVER, COLORADO

Pacific Coast Sales Offices  
Portland, Spokane, San Francisco  
Los Angeles



AFTER use of C. F. & I. Co.'s Cement Coated Nails

## A Rapid Method of Tree Planting

By Harry Gough, Maryland

SO many people make hard work of tree planting that I believe a description of my rapid and economical method will be of interest. I will describe how I planted a thousand fruit trees for Mr. L. B. Schram of Elberon, New Jersey, in April, 1913.

There were fifty stumps on the orchard site. These were disposed of by blasting. That part of the work was finished in less than a day. After the

field had been cleared, the ground was staked off to show where the trees were to stand. Cross furrows were then made with a plow, the intersection coming at the points where the stakes were set.

While the man was doing this plowing, I occupied my time in cutting fuse into 2½-foot lengths and in crimping each length of fuse onto a No. 6 blasting cap. As it was intended to use a


half a cartridge of dynamite in each tree hole, the cartridges were next cut in two. This is a very simple operation, although a good many people seem to be afraid to do it. Dynamite comes in heavy paraffined paper wrapping. Hold the stick in one hand, run a sharp knife around the center, letting the blade sink into the dynamite about a quarter of an inch all around. Then take one end of the cartridge in each hand and gently break it in two. Next insert the blasting cap to which the fuse has been attached in a hole punched in the side of the cartridge of dynamite and tie it in place. It doesn't do to insert the cap into the dynamite at the cut end because there is no way of tying it in place and it is almost sure to pull out when one attempts to put the charge into the bore hole.

A mark on the side of the punch indicated the depth of the bore holes and made it easily possible to get them of uniform depth. The charges were pushed to the bottom of the holes with a broom handle and the holes then tightly tamped with moist earth. The protruding fuse ends were then lighted.

After the holes had been shot, men followed who dug out the holes and filled them to the proper depth. Subsoil was used for the filling, the richer top soil being reserved to fill in around the roots. After that the earth was thoroughly firmed to prevent settling and to prevent wind from blowing the trees over.

By this method, a crew of four men were able to plant 1,028 trees. The planters followed the blasters so rapidly and worked so systematically that the planting was all finished within four or five hours after the blasting had been completed.

Although the trees were planted three years ago, there has been but one per cent of loss, which to me indicates that the beds were well prepared. The stump blasting and the tree planting required 320 pounds of a low-strength dynamite, 1,040 blasting caps, 60 electric blasting caps and about 2,600 feet of fuse. The total cost of the work, labor included, amounted to \$122, which Mr. Schram thought was decidedly cheap for the amount of work done.



# SPRAYING HOSE

## HAMILTON MADE

"THE STANDARD OF AMERICA"

Spray your trees with hose made to withstand the chemicals and acids which cause ordinary fruit hose to deteriorate quickly. Hamilton Fruit Spray Hose will give several years' service for one cost. Used by leading fruit growers who recognize Hamilton quality and ultimate economy.

**½ in. Perfect Hose**  
In 50-foot pieces coupled. 6-ply fabric and fine rubber

**½ in. Sterlingworth Hose**  
Reel Spray Hose in 500-foot lengths, the best.

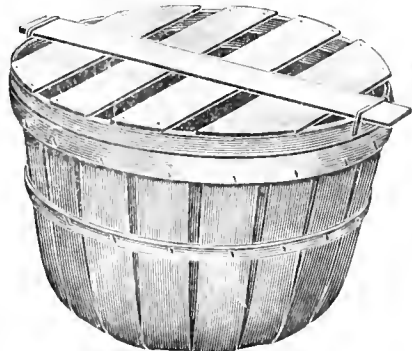
**\$15.00** for 100 FEET. Either kind will stand 600 pounds test. Satisfactory for any power or hand sprayer. \$15.00 for 100 feet. Cash with order. Express paid to your station. Shipments immediate.

**HAMILTON RUBBER MFG. COMPANY**  
203 Meade Street, Trenton, N. J.

## The Bushel Shipping Basket—The Universal Package

For Shipping All Kinds of

### Fruits and Vegetables



Comes made up ready to use; is easy to pack, convenient to handle and delivers contents in best condition.

98% of Southern Peaches are shipped in these baskets.

WRITE FOR PRICE NOW

**Package Sales Corporation**  
106 E. Jefferson St., South Bend, Ind.

# Cold Storage Apple Holdings Feb. 1, 1918

By Charles J. Brand, Chief U. S. Bureau of Markets

REPORTS from 519 storages show that their rooms contain 2,202,808 barrels and 5,118,438 boxes of apples. The 513 storages that reported for February 1 of this year and last show a present stock of 2,091,636 barrels and 4,962,898 boxes, as compared with 2,121,206 barrels and 3,790,499 boxes last year, a decrease of 1.4 per cent in the barreled apples and an increase of 30.9 per cent in the boxed apples, which is the equivalent of the total increase of 361,229 barrels, or 10.7 per cent. For the purposes of this comparison, it is considered that three boxes are equivalent to one barrel. The 511 storages that reported for both December 1, 1917, and February 1, 1918, showed a decrease of 16.9 per cent in the barreled

apples and 12.3 per cent in the boxed apples, or a total decrease of 15.6 per cent during the month of January, while the 448 storages reporting their holdings for both December 1, 1916, and February 1, 1917, showed a decrease of 18.6 per cent in the barreled-apple holdings and 8.3 per cent in the boxed-apple holdings, or a total decrease of 15.3 per cent during January, 1917. As a few storages have not responded to our inquiries, this report does not include all holdings. Upon request any or all of the information contained in cold storage reports will be telegraphed immediately upon its release. These reports are free except for the telegrams, which are sent charges collect.

	Number of Storages Reporting	Barrels	Boxes	Combined Holdings Expressed in Bbls.*	Comparison of Holdings on a Per. Basis
Holdings reported on Feb. 1, 1918.....	519	2,202,808	5,118,438	3,908,954	.....
Comparison of holdings—					
February 1, 1917.....	513	2,121,206	3,790,499	3,384,706	100.0
February 1, 1918.....	513	2,091,636	4,962,898	3,715,935	110.7
Comparison of holdings—					
December 1, 1916.....	448	2,615,174	3,626,401	3,823,974	100.0
February 1, 1917.....	448	1,732,831	3,322,220	2,840,238	71.3

\* Three boxes to the barrel.

### COMPARISON OF HOLDINGS BY SECTIONS

	Number Storages Reporting	December 1, 1917		February 1, 1918		Increase or Decrease
		Barrels	Boxes	Barrels	Boxes	
New England.....	26	162,225	37,881	131,794	17,778	-15.5
Middle Atlantic.....	106	781,117	506,821	493,951	907,322	-16.4
South Atlantic.....	51	640,903	92,704	424,099	89,197	-32.4
North Central (E).....	95	766,620	522,945	613,796	717,017	-9.4
North Central (W).....	87	447,027	581,428	327,431	611,319	-17.0
South Central.....	70	239,641	373,904	136,299	498,277	-17.0
Western (N).....	39	.....	1,343,046	.....	971,113	-27.5
Western (S).....	31	.....	968,760	.....	903,702	-6.7
Total.....	511	3,040,533	4,427,489	2,127,370	4,751,755	-17.8

### PERCENTAGE OF DECEMBER 1 HOLDINGS MOVED FROM STORAGE

MONTH	Season 1915-1916			Season 1916-1917			Season 1917-1918		
	Barrels	Boxes	Comb'd	Barrels	Boxes	Comb'd	Barrels	Boxes	Comb'd
December.....	12.2	11.5	12.0	15.1	0.1	10.4	13.1	+19.6	2.2
January.....	14.2	16.5	14.7	18.6	8.3	15.3	16.9	12.3	15.6
February.....	19.9	20.9	20.1	18.6	30.9	22.4			
March.....	20.4	18.1	20.0	19.4	28.1	22.2			
April.....	17.3	14.6	16.7	12.0	12.3	12.2			
May.....	12.2	11.5	11.9	11.3	15.1	12.4			

**Distribution of Cars for Food and Feed**  
 Director-General McAdoo and the Food Administration have arranged to co-operate in the distribution of cars for the food and feed trades: (1) The grain and grain product and feed shippers are to first apply for cars in the usual way through railroad agents; in case of not being furnished within a reasonable time they may then apply to the Zone Representatives of the Food Administration Grain Division at the

various terminals, stating the cars required, point at which it is desired cars should be set, character of the product to be loaded, the destination of shipment and the consignee. (2) The shippers of sugar, beans, rice, vegetables, live stock, meat and perishables generally, should first apply for cars in the usual way through railroad agents; in case not being furnished within reasonable time they may apply directly to the Food Administration in Washington, stating the cars required, the point to be set, the character of the commodity to be loaded, the consignee and destination. (3) Diversion of shipment in transit except for perishables will not be permitted from destination given by the shipper to the forwarding agent of railroad where cars have been placed and loaded on the specific request of Food Administration as outlined above. (4) The Food Administration does not undertake to secure cars nor can the Director General of Railroads in these uncertain times of blizzards and winter storms undertake to supply all cars applied for, but it is hoped that the new arrangement will

## WANTED!

A wideawake, active man to buy one of the finest commercial orchards in Oregon, consisting of 70 acres of ten-year-old, clean, vigorous, full bearing apple trees. 42 acres Rome Beauty, 18 acres Gano, 10 acres Jonathan. Soil of highest quality. Good dwelling house, barn and frost-proof warehouse of 25,000 boxes capacity. Complete equipment, including one of the latest model Cutler Apple Grading machines. Everything ready for immediate possession and operation. A bargain if sold before May 1st. Will give terms.

For particulars address

**The United States National Bank  
 LA GRANDE, OREGON**

## Fruit Buyers

"Caro Fibre" Fruit Wrappers  
 "Prolong the Life of Fruit"

Buy "Caro" Wrapped Fruit

## Fruit Growers!

The above ad appears in the leading fruit buyers' journals throughout the United States.

Use Your Brains to Wrap Your Fruit  
 Take Advantage of Our Advertising

You can prove what we say. We can prove it by letters from the largest fruit buyers in the United States.

Use "Caro" Fibre

Print your own name on your fruit. Use our "slogan" on every wrapper: "This is a 'Caro Fibre Wrapper.' Caro prolongs the life of fruit."

Samples FREE at

**Union Waxed Parchment Paper Co.**  
 MANUFACTURERS

F. B. DALLAM, Sole Agent  
 112 Market Street San Francisco, California

## HOMES AND FARMS



### IN THE "SUNNY SOUTH"

Nature has blessed this favored section with mild, healthful climate, productive soil and all that makes life worth living. You can buy good farm land in Virginia, W. Va. and North Carolina at \$16 per acre and up. Fruit, truck, poultry and general farming will prove successful here. Write for information, illustrated literature, etc.

F. H. LaBaume, Ag. & Ind. Agt., N. & W. Ry. 228 Ry Bldg., Roanoke, Va.

## N. Z. Fruitgrowers' Federation, Ltd.

The Third National  
 Apple Show

WILL BE HELD IN THE

Harbour Board Store  
 Auckland

2nd to 4th, May, 1918

This Exhibition offers an  
 unique opportunity for  
 displaying  
 Orchard Requisites

For terms of Advertising in Catalogue  
 or exhibiting at the Show  
 apply:

THE EDITOR  
 Better Fruit Publishing Co.  
 Hood River, Oregon

give the Food Administration definite information, which it can give in turn to the Director General of Railroads for his assistance in the distribution of cars into the territories and trades of the most acute needs.

Farm Diary, Business Record and Account Book has just been published. The publishers state the book was prepared after the plan outlined by Mr. E. H. Thompson, Department of Agriculture, with an introduction by Mr. W. J. Spillman, Chief Office of Management, United States Department of Agriculture. The title page is a splendid recommendation for the book. The book is so arranged for keeping accounts of expense and receipts for each day of the year. Published by The World Book Company, Yonkers on Hudson, New York. Price \$1.50.

#### Government Inspection of Fruits and Vegetables

The Food Products Inspection Service is now available to shippers in the markets named below and it is expected that within the next thirty days the service will be established also in San Francisco, Denver, Detroit, Indianapolis, Atlanta, Birmingham, Buffalo and Omaha. Applications for inspections in any market should be addressed to the inspector in charge of that market, or to the Bureau of Markets, Washington, D. C.

Baltimore, Maryland.—Washington office.  
 Boston, Mass.—C. E. Merrill, Inspector, 408 Fidelity Building, 118 State Street.  
 Chicago, Illinois.—B. B. Pratt, Supervising Inspector, 604 Distributors' Building, 236 N. Clark Street.  
 Cincinnati, Ohio.—Howard E. Kramer, 307 Johnson Building.  
 Cleveland, Ohio.—B. C. Butner, Inspector, 8 Exchange Building.  
 Dallas, Texas.—Forth Worth office.  
 Fort Worth, Texas.—L. G. Schultz, Inspector, 505 Moore Building, Tenth and Main Streets.  
 Galveston, Texas.—Houston office.  
 Houston, Texas.—Wesley V. Stephens, Inspector, 307 Southern Pacific Building.  
 Jacksonville, Florida.—T. C. Curry, 909 Biscoe Building.  
 Jersey City, N. J.—New York office.  
 Kansas City, Missouri.—F. E. DeSelle, Supervising Inspector, 202 Produce Exchange Building.  
 Memphis, Tennessee.—L. J. Weishaar, Inspector, 801 Exchange Building.  
 Minneapolis, Minnesota.—W. F. Selleck, Inspector, 300 Market State Bank Building.  
 New Orleans, Louisiana.—F. H. Lister, Inspector, 311 Metropolitan Building.  
 New York, N. Y.—E. L. Markell, Supervision Inspector, 707 Fruit Trade Building, 204 Franklin Street.  
 Oklahoma City, Oklahoma.—F. A. L. Bloom, Inspector, Bureau of Markets.  
 Philadelphia, Pa.—R. J. Russell, Inspector, 315 Insurance Exchange Building, Third and Walnut Streets.  
 Pittsburg, Pa.—F. G. Robb, Inspector, 303 Kellerman Building, Eighteenth and Pennsylvania Avenue.  
 Providence, R. I.—Boston office.  
 St. Louis, Missouri.—Fred T. Bryan, Inspector, 400 Old Custom House, Third and Olive Streets.  
 St. Paul, Minnesota.—Minneapolis office.  
 Washington, D. C.—Supervision: W. M. Scott, C. T. More, Bureau of Markets.

## The New Fruit-Fog Catalog IS READY!

Send Postal for Your Free Copy

This new catalog of Hayes Fruit-Fog Sprayers should be in every fruit grower's hands. It means thousands of dollars in added fruit yields.

Tells all about Fruit-Fog, the scientifically atomized super spray which is producing phenomenal yields by stamping out all hidden pests. Pictures and describes the complete line of

## HAYES FRUIT-FOG SPRAYERS

including the highly perfected HAYES FRUIT-FOG GUN.

Send a postal at once for a free copy of this complete catalog. We will include "Successful Spraying," a guide that shows how and when to spray and what to use. Now being used by thousands of growers and by prominent agricultural schools.

Mail the coupon at once! Get these books which tell how to increase your fruit yields by stamping out all hidden pests.

There is no obligation. Write today!

**HAYES PUMP & PLANTER CO.**  
 Dept. K, GALVA, ILLINOIS



## A Message for Fruit and Vegetable Growers

We desire to get in touch with Fruit and Vegetable Growers in all parts of the country in order to establish Fruit and Vegetable Drying Plants for single firms that want to build new and up-to-date drying plants for themselves and with two or more Growers that would favor the construction of a drying plant on a co-operative basis.

There are many millions of dollars worth of Fruit and Vegetables left to rotten on the ground and many more millions of dollars are paid in freight rates, tin cans and boxes that can and must be saved. We will invest some of our own capital, if you wish, as we are sure that it is to our mutual benefit, if you write us today for particulars. All information on this subject will be given cheerfully and free of charge. If you are in business for making the best profits write now.

**The A. A. A. Evaporator Manufacturing Co., Inc.**  
 2371-73 Market Street, San Francisco, California

## J. C. Butcher Company

HOOD RIVER, OREGON

MANUFACTURERS  
 —OF—

**Lime and Sulphur  
 Bordeaux Paste  
 Miscible Oil**

**YOU CAN EARN \$50.00 PER DAY**  
 WITH THE  
**Gearless Improved Standard Well Drilling Machine**  
 Drills through any formation. Five years ahead of any other. Has record of drilling 130 feet and driving casing in 9 hours. Another record where 70 feet was drilled on 2½ gallons distillate at 9c per gallon. One man can operate. Electrically equipped for running nights. Fishing job. Engine Ignition. Catalogue W-8.  
**REIERSON MACHINERY CO., Mfg., 1295-97 Hood St., Portland, Ore.**





PERFECTION IN  
**FRUIT LABELS**

**THE SIMPSON & DOELLER CO.**  
1423-24  
NORTHWESTERN BANK BLDG.  
PORTLAND, OREGON.  
**E. SHELLEY MORGAN**  
NORTHWESTERN  
MANAGER

WE CARRY IN PORTLAND,  
STOCK LABELS FOR  
APPLES, PEARS,  
STRAWBERRIES  
& CHERRIES

SEND FOR SAMPLES AND PRICES

OFFICE OF THE SECRETARY  
ASSOCIATION OF NATIONAL ADVERTISERS,  
INC.

Rochester, New York, December 1, 1917.

EDITOR BETTER FRUIT:

Perhaps it is because I was once a farmer and am now an agriculturist that I have been called into this matter, but, at any rate, I have promised Dr. Dunn, of the Conservation Department of the Fuel Administration, that I would write you, asking for editorial help. We want to get a message over to the whole people, impressing the necessity for the conservation of fuel. And we want to talk to every man in terms that he can understand, and that is why, instead of sending you a "mat" story, I am giving you some facts and suggestions and asking you, through your paper, to talk to your people.

The facts are that we need a hundred million tons of coal more than in a normal year. Production has been increased fifty million tons. There is, therefore, a fifty million tons shortage. The people can save that fifty million tons if they will. All classes of people are being asked to help. A kitchen shovelful of coal per day saved by every householder means an annual saving of twenty-five million tons. More careful firing can bring this about. Again, Americans, as a rule, have their houses super-heated. Sixty-eight degrees is the healthful heat. This will be preached. Americans keep their houses too dry. A pan of water on the stove or register, giving off a little moisture, will make for health and comfort at a considerably lower temperature than is agreeable in a dry room. Unused portions of the house should be closed off. Storm windows and weather strips should be used more than ever. In many cases a distinct saving can be made by the use of oil stoves. Hundreds of thousands of houses have fireplaces that can be used with wood on cold evenings instead of booming up the furnace. This will be widely advocated.

In many localities the farmers especially are in a position to conserve coal by burning more wood—perhaps in the kitchen. Where this can be done it makes a double saving: It saves coal and saves the coal that is burned to transport that coal, saves cars and engines that are needed for other work. There are dead trees, dead limbs and old rails that can be burned now to the betterment of the farm. There are trees that can be selected, that should be cut and piled now against next winter's shortage. In many parts of the country farmers can accumulate a surplus of such wood for next winter's use. Your readers can save money for themselves and help in the proper equipment and care of the boys "over there." May we hope for an early editorial from you, urging the present necessity upon them and impressing them with the fact that every little bit helps.

Your very truly,  
L. B. JONES.

TREASURY DEPARTMENT  
Internal Revenue Service,  
Portland, Oregon.

I wish to inform you that I have been notified by the Treasury Department at Washington, D. C., that the time for filing the 1917 INCOME TAX RETURNS, including individuals and corporations, has been extended to April 1, 1918, thus giving an *additional month* to that provided by the War Tax Act of October 3, 1917. As soon as the blanks are received each corporation will be notified. I should greatly appreciate the EARLY filing of returns in order that the work of this office may not be unduly congested.

Very respectfully,  
MILTON A. MILLER,  
Collector.

War bread is wholesome, likeable. It saves for our Allies.

**For Sale**

One Deming Power Sprayer, "Victory," three h. p. Novo Engine, Duplex pump, 200-gallon tank, two 50-foot leads of hose, pressure gauge and tank filler. Used very little; in good condition. Cost \$380.00. First check for \$175.00 gets complete outfit, f. o. b. this station.

**A. F. PAGE**  
Stevensville, Montana

## Mr. Fruit Grower:

The 1918 apple crop will, in all probability, be the largest yet recorded. Also, there is certain to be the greatest scarcity of labor yet experienced, especially of experienced packers and sorters.

With a **CUTLER GRADER** you can teach inexperienced help to pack and sort and handle your crop quickly and at the least cost.

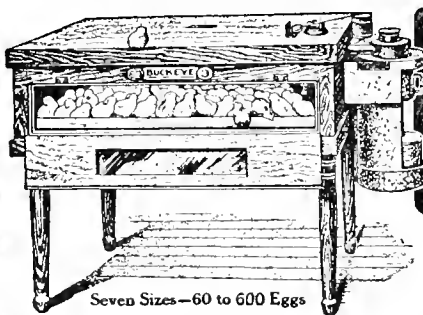
We are giving discounts for early orders and shipments.

WRITE NOW for circular and prices.

### CUTLER FRUIT GRADER CO.

New Address: 351 East Tenth Street, Portland, Oregon

## There is Profit in Poultry Raised by the "Buckeye" System



Seven Sizes—60 to 600 Eggs

**BUCKEYE**  
HOT-WATER  
**Incubators**  
HATCH EVERY HATCHABLE EGG

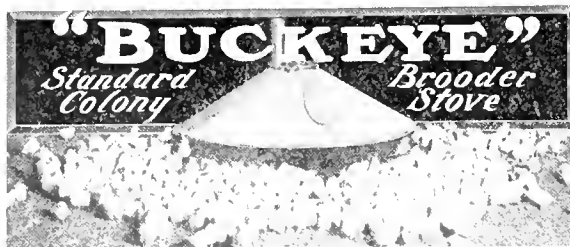
Keep the Lamp Burning and turn the eggs. The "Buckeye" does the rest.

No experience needed to successfully hatch chicks in a "Buckeye." Maintains its temperature in any location, from freezing weather up to 100 degrees, and once adjusted **will not** vary.

You can heat any "Buckeye" to 103° in LESS THAN ONE HOUR and the temperature is guaranteed to be uniform to the fraction of a degree at all times

### "Buckeye" Brooders

The new way Raises bigger, better chicks at one-quarter the cost of old style brooders. Will brood 100 to 1,000 chicks. Can be set up any place and will burn coal, coke, gas, briquettes or charcoal. Nothing to wear out or break.



"Buckeye" Portable Brooders come in 3 sizes—60, 100 and 150 chicks—See Catalog

OUR POULTRY SUPPLY CATALOG lists everything necessary for the profitable production of poultry; tells how to care for and raise chickens—a useful reference for all who are interested in poultry.

Ask for Catalog No. 202

Manufacturers of  
**Diamond Poultry Foods**



Western Agents  
**Lee's Foods and Remedies**



## The Orchard Ladder of Quality

must bear the name "Northwest." Thousands are sold on their merits. Ask your dealer to let you see our ladder.

If your dealer does not carry our Ladder and Pruner in stock, write us direct for prices. Information on our Orchard Supplies gladly given on request.

# N. W. Fence & Supply Co.

PORTLAND, OREGON

## A Pruner

which does the work twice as fast as any other make, and costs no more. Why not use the best?

### It's the Bastian



## Prune Evaporation

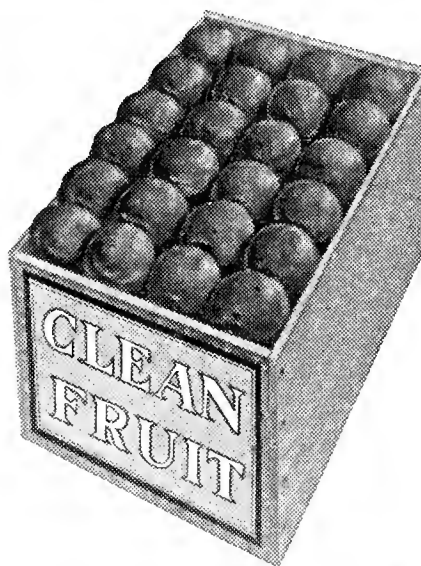
By F. R. Brown, Marion County Agricultural Agent, Salem, Oregon

A DISCUSSION of prune evaporation and all factors affecting such must necessarily commence with the harvesting methods. The normal season for harvesting prunes in the Willamette Valley is from September 10 to October 5. We find, however, that during the past few years there is an increasing tendency on the part of the growers to hurry the season. In other words, a great many growers are beginning as early as the 1st of September and finishing as early as the 25th, or ten days in advance of the normal season. With these facts before us, then let us consider the effect of this early harvesting. Through experiments carried out at the Oregon Agricultural College it has been found that the following figures are fairly accurate, showing the loss due to this early harvesting: There is a loss in weight of fresh fruit because the sugar contained increases very rapidly during the last three or four days that the prunes remain on the tree. Experience covering two years give the following figures: A loss in weight due to shaking 6 per cent. Since the sugar contained in the prune vitally affects the drying quality it is natural to find that prunes which are shaken from the tree dry lighter than those which drop naturally. The average difference over a period of three years shows a gain in weight in favor of prunes dropping naturally of 4.5 per cent. This means, then, that the grower annually loses 10.5 per cent of the weight of his dried prunes by harvesting too early. Add to this the cost of shaking, which runs from \$3.00 to \$6.00 per ton, and estimating the price on a basis of \$125 per ton of dried fruit, we find the total loss due to harvesting amounting to be from \$18 to \$20 per ton, or more than enough to pay the cost of cultivating, pruning and spraying the orchards. To further substantiate this fact, observations were made during the seasons 1912-14 and 1917, those seasons which were particularly noticeable on account of the difficulty experienced in getting the prunes from the trees. These observations reveal the following facts. First, that

after resorting to severe shaking and clubbing there still remained on the trees at the end of the season a number of prunes. An inspection, however, ten days later revealed the fact that not a single prune remained on the trees, but scattering prunes on the ground in-

dicated that at the proper time prunes dropped of their own accord.

Let us now take the question of tray-ing. There are many ways in connection with the traying of prunes where greater efficiency can be obtained. For instance, it is found in one case by careful experiments and substantiated in many others by observation that enough rotten prunes were placed in the trays to show a net loss of \$2.73 per



## The Final Test

Are you producing clean fruit at low cost?

This is the final test of your methods.

In the fall it is too late to repair errors.

Now is the time to review last season's results and plan for the future.

## Latimer's Dry Arsenate of Lead

Will help you produce cleaner fruit.

We can convince you of this.

Use Latimer's Dry on only a part of your orchard the first year. Compare your results. Then you will know.

High combined arsenate makes Latimer's Dry quick to kill.

Extreme fineness gives covering power and adhesiveness.

Uniformity in composition assures uniform results.

### The Latimer Chemical Company

GRAND JUNCTION, COLO.

# THE NIAGARA DUSTER

**The Labor Saver**

**Use Only Niagara  
Dusting Sulphur  
AND  
Dusting Mixtures**

They have been PROVED and approved by those who have made a success of dusting.

A leading fruit grower of White Salmon Valley (Washington) says: "It took three men fifty hours to apply one spray of liquid in my orchard, while two of us DUSTED it with equal thoroughness in eight hours."

Reports like these come from Hood River, Yakima, Wenatchee and every place where the Niagara has been used.



## The Niagara Dusting Machines WITH NIAGARA DUSTING MATERIALS

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ton, due to the fact that after drying these must be picked out. When left in they injure the quality of the product. Another factor is the tendency not to fill the trays to their greatest capacity. This has been found to account for a loss in the drying cost of \$4.27 per ton. This is based on the fact that it costs just as much to send a tray through the dryer filled to 80 per cent of its capacity as it would to send it through completely filled. I was glad to hear Mr.

Panlus make the statement that the prune which has been lyed heavily does not process as nicely as do those dried without the use of lye. I have this same statement from all of the principal prune-packing plants in Oregon. From experiments carried out on a commercial scale we have found out that with proper drying methods the use of lye is not necessary and not only affects the processing quality of the prunes but the appearance and quality of the product itself. I think some steps should be taken to grade the prunes into two sizes before they go into the evaporator, since it is a well-known fact that the small prunes on the same tray with the larger ones will not dry in the same length of time. This means that either the small prunes will be over-dried or the large prunes under-dried, or both. In either case hand sorting will be necessary.

There are a number of factors which influence the evaporation of prunes. For the most part growers are content to base their conclusion as to the efficiency of any particular evaporator on the time required to dry a tray of prunes. This is not necessarily a correct basis, since the difference in drying time very often is not sufficient to warrant the difference in dried weight. In other words, since we are selling by the pound it would seem the more logical way to base our conclusions on the weight of dried fruit obtained from any given amount of green fruit. Climatic conditions assert a marked effect under our present conditions. Experiments

and observations covering a period from 1911 to 1917 shows that the average weight of dried prunes per bushel of fresh is 17 pounds for rainy seasons and 19½ pounds for dry seasons. Careful experiments during the same period brought to light the fact that where conditions could be controlled 20.3 pounds for rainy seasons and 24.4 pounds per bushel for dry seasons could be obtained. An average increase of 4.1 pounds per bushel, or 22.5 per cent. This is no doubt too high, but shows that a great saving may be made.

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WHEN WRITING ADVERTISERS MENTION BETTER FRUIT

The effect of drying time on the drying percentage or weight per bushel is not very marked. For instance, a difference in drying time from 29 hours to 77 hours gave a difference in dry per cent of only 4 per cent in favor of the shorter time. There seems to be little or no difference in drying percentage so long as the drying time is kept below 30 hours and above 15 hours. An additional advantage of the shorter time is noted in the more attractive appearance of the finished product. In order to obtain a drying time within the limits noted above the following conditions were found essential: A temperature in the beginning not lower than 120 and preferably as high as 140 degrees. A finishing temperature not higher than 180 degrees and not lower than 165 degrees. The maximum temperature for the finish would depend largely on the circulation of air. At no time should the circulation of air drop below 660 feet per minute, and while we have no definite figures to give as to how high a circulation would be desirable, we have found that with the air circulation as rapid as 1,000 to 1,200 feet per minute, very excellent results were obtained. Another interesting fact in connection with the circulation of air is to the effect that the humidity of the air as it passes out is not sufficient to hinder its use a second, third or even greater number of times. In other words, there is no reason from a moisture standpoint why the air should not be returned to the furnace pit again and again. Since in most cases this could be returned at a temperature fully twice as high as that of the outside temperature. By reheating, with perhaps a small amount of new air added, a great saving of fuel would be made. The question in connection with this, however, is, can a means be obtained of returning this air to the furnace at a cost small enough to warrant its adoption? Summing up, then, some of the facts in relation to prune evaporation we find it possible to decrease our cost of harvesting and increase our profits by allowing the prunes to ripen more fully. We can make more attractive products by omitting the use of lye and substituting a more rapid circulation of air in the evaporator. Beyond this there is still considerable experimental work to be done, and we trust that the Oregon Agricultural College, with its new facility for carrying on the work, will be able to render some valuable assistance to the prune growers in the near future.

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Insect pests and fungous diseases are always with us and must be combatted. Due to transportation difficulties and a possible shortage of spray material, growers are urged to consider their seasonal needs and order their insecticides and fungicides now. Traffic congestion and freight embargoes threaten seriously to interfere, if not largely to prevent the timely shipment of large quantities of fungicides and insecticides for use in seed treatment and early summer spraying and dusting.

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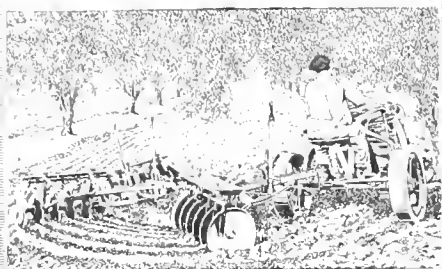
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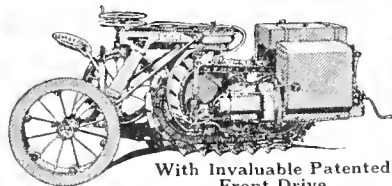
This remarkable machine is built on patented FRONT-DRIVE principle—you steer with the single track which does all the pulling whichever way you go. You can turn it back down the same row (see illustration above) without lifting out the tools making as short a turn as with a team!

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Both Prof. Lovett and Prof. Barss, Oregon Agricultural College specialists, think that growers had best order as early possible. Lead arsenate has practically doubled in price, and in many cases it may be advisable to substitute arsenate of lime (calcium arsenate). This material is satisfactory and safe when used properly. Representative samples of the material (one-half pound) should be sent to the chemist at the Oregon Experiment Station, Corvallis, for analysis and advice as to the dilution to use and the proper procedure when mixing.

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Now is the hour of our testing.

We must save, serve and sacrifice.

If we are selfish or even careless, we are disloyal; we are the enemy at home! "Food will win the war!" Whose food, German or American? The world awaits your answer.

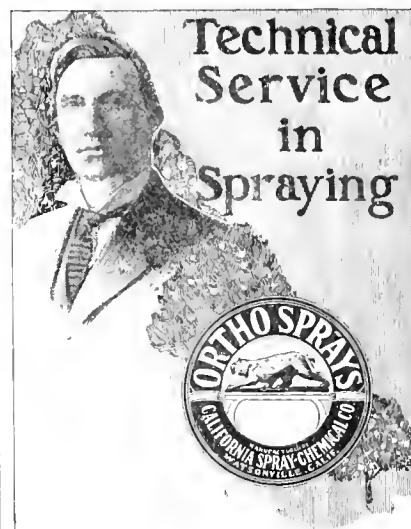
We must save, serve and sacrifice.

**The Task Ahead**

Germany's greatest ally is the false belief in the United States that the war will be short. Face the grim facts. Prepare in your own home, in your business and in your community.

The war is causing a shortage of men in all classes of labor. The fruit grower should realize that it is not going to be as easy to secure men in 1918 as in former years. Therefore he should provide himself with all kinds of machines that will save the work of men, consequently the tractor should be thoroughly investigated by the fruit grower. Tractor-manufacturing companies which have made large tractors for farmers have realized for a long time the necessity of devising and building a tractor adapted to orchard work which is low down, so not to rub against the trees, and one that can turn around in the orchard without taking up too much room. During the last few years a number of tractors devised for orchard work have been put on the market. Growers who have used them state they are proving highly efficient and extremely economical, claiming that one tractor will do the work of several teams, so it seems wise to suggest that the tractor is worthy of favorable investigation by every fruit grower, especially those who have the largest-sized orchards.

On account of the shortage of labor and supplies it is wise of the fruit grower to order his grading machine early. Grading machines have proved efficient and economical. Those who have used grading machines have reduced the cost of packing very materially, which is variously estimated from three or four cents per box to seven or eight cents. Fruit growers will save extra money, and on account of the scarcity of men, the economy and efficiency of grading machines no fruit grower with a good-sized crop of apples should fail to use a grading machine in packing out his crop.



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**ORTHO DRY Arsenate of Lead** has been used in all the fruit growing districts of the Pacific Coast, and has an army of friends who maintain that it is vastly superior to any other lead arsenate.

Successful control of pests depends largely upon the sprays used. You get the best results when you use **ORTHO DRY Arsenate of Lead**.

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*The Patent Pouch keeps it Fresh and Clean and Good*

*—It is not Real Gravely without this Protection Seal*

**Established 1831**



# Thinning-Out and Heading-Back in the Apple Tree

By V. R. Gardner, Oregon Agricultural College, Corvallis, Read Before the State Horticultural Society of Washington, January 4, 1918

**D**URING recent years few topics pertaining to fruit growing have been discussed more frequently and at greater length than that of methods of training fruit trees. So much has been said and written about the supposed advantages of the open-centered tree as compared with the "leader" type of tree, and vice versa,

that it would seem that this question would be practically settled, and that difference of opinion regarding it would no longer exist. Unfortunately this assumption is not borne out by the facts; for probably there never was a time in the history of fruit growing when growers were more completely divided on this question. If this is true regarding a question that has been discussed so often, it is not surprising that there is much uncertainty in the minds of growers when it comes to questions of methods of pruning fruit trees, questions that have received comparatively little attention in the horticultural press and that have been touched upon but casually at such meetings as this. This last statement may seem a little surprising to some; but it will be noted that two distinct terms, applying to two quite distinct practices, have been used—training and pruning.

degree inter-dependent, though this degree is probably much smaller than is commonly imagined. As a matter of fact, the two sometimes may be entirely independent. It would be possible to train a tree on a trellis much as we train American varieties of grapes, and that without a bit of pruning. Likewise it would be possible to prune a

At the outset it will be well to make clear the difference between these terms, for this article deals almost exclusively with the one and hardly at all with the other. Furthermore, it is believed that one of the main reasons for so many conflicting ideas regarding pruning is the failure to distinguish between training and pruning. Training includes those practices that in one way or another tend to develop or modify the general shape of the tree; on the other hand, pruning includes those practices that aim to modify function—what the tree does, as opposed to what it looks like—through the removal of parts. This does not mean that function is absolutely independent of form. Without doubt the two are to a certain

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tree lightly or even severely without changing its shape in the least. As a matter of fact most training effects some change in function and most pruning effects some change in form. Nevertheless, it will simplify an analysis of the facts and make easier the reaching of correct conclusions if the two operations are kept separate in the mind.

It has been stated that this article deals with pruning and not training. At this point it will be well to call attention to the fact that pruning necessarily must consist in a thinning-out or a heading-back of new or old wood, or both. That is pruning is necessarily of one or another or both of two kinds. The difference between these two kinds of pruning is pretty well explained by the terms used to indicate them. Heading-back removes a part of a limb or branch or shoot, leaving more or less of a stub from which new growth may reasonably be expected to spring. Thinning-out removes entirely a limb or branch or shoot, leaving no stub from which new growth may spring. Thinning-out cuts off down to a larger limb or branch or to a strong lateral. It is with the different results attending these two operations that we shall now concern ourselves.

#### Heading vs. Thinning Shoots

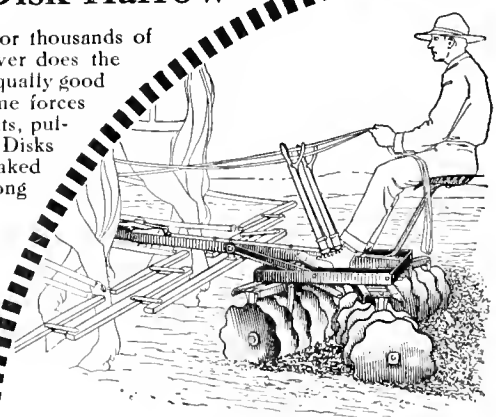
The first effect of any ordinary pruning operation is to reduce the number of buds, the number of active growing points. Let us see how equally severe heading and thinning operate in this respect. For example, a 50 per cent thinning, a thinning that removes one-half of the shoots, would remove just one-half of the buds. An equally severe heading would remove one-half of the lateral buds on each and every shoot and all of the terminal buds. This would result in a somewhat greater total bud reduction than the thinning, incidentally preventing any new shoot growth arising the following year from terminal buds. However, this difference in the number of buds left following these two kinds of pruning is comparatively small.

Careful experimental work indicates that the total amount of new shoot growth produced by a headed shoot is on the average not greatly different from that which would have been produced by the shoot if it had not been pruned. In other words, heading an individual shoot is neither much of a stimulus to, nor a check upon, new shoot production. Varieties vary considerably in this regard, but in general the statement will hold. Furthermore, thinning of shoots does not tend greatly to make those remaining produce much more new shoot growth than they otherwise would have produced in the unthinned tree. In some varieties thinning tends to increase the number of new shoots for each old one remaining, but they generally remain enough shorter so that the total amount of new growth remains about the same. The general effect of these two kinds or methods of pruning upon the new shoot growth of the tree, then, is to reduce it

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# Mr. Jones

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materially in the one case and to not change it materially in the other.

Fruit spurs develop from lateral buds on shoots. Ordinarily not all lateral buds on shoots develop into spurs. As a matter of fact some lateral buds generally develop into side shoots; still others remain dormant. Examination of the condition presented by the two-year-old or older wood of almost any bearing apple trees reveals the fact that normally the buds on the lower part of the shoot remain dormant; those well out toward the end are the ones that develop into shoots; and those along the middle of the shoot or between its middle and outer end are the most prone to form fruit spurs. The upper ones grow out into shoots and spurs because they are larger and plumper; they are larger and plumper because they, or more accurately the leaves that subtended them, were better supplied with light and consequently better nourished the preceding season. With these facts in mind let us see what the effect is upon spur formation of heading-back shoots. In the first place it is noted that heading removes practically all of the buds that normally would have produced new shoots. But new shoots are formed in as large numbers as before. Consequently buds lower on the shoot that otherwise would have developed into spurs are forced out into shoots. This automatically reduces still further the number of new spurs unless the heading forces the development of fruit spurs from the weak buds near the base of the shoot that normally remains dormant. Examination shows that very few of such weak buds are actually forced out by the heading-back, and those that do push out generally develop into weak shoots instead of spurs. Thus, the effect of heading-back is to reduce fruit-spur formation. If the heading-back is light the reduction is not a serious one; but if it is severe it may result practically in preventing it. On the other hand, an equally severe (say a 50 per cent) thinning of shoots leaves all those buds on the unpruned shoots. Furthermore, it does not force the development of new shoots from buds that usually would produce spurs. The result is that while it somewhat reduces new spur formation, it is much less of a check to it than equally severe heading.

However, the fruit grower is interested not only in fruit-spur production but in fruit-spur functioning as well. A tree with a thousand strong, vigorous, productive spurs is probably worth just as much, if not more, to the grower than one having twice that number of spurs, but half of them weak and unproductive. Therefore, the question arises as to the comparative influences of heading-back and thinning-out upon the behavior of already established fruit spurs. What a spur will or will not do in the way of fruit bud and flower production depends very largely upon the supply of elaborated food materials present—food materials classed by the chemist as carbohydrates, and including the starches and sugars. In the presence of relatively large quantities of these food materials fruit buds

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Congress, to increase next year's crops, has made this appropriation to bring Nitrate of Soda, at cost, from Chile. "What Nitrate Has Done in the Farmer's Own Hands" will be sent to you free if you send your address on a post card.

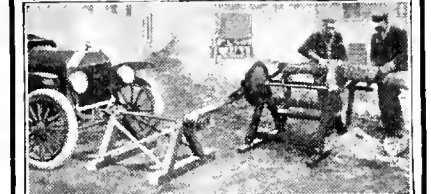
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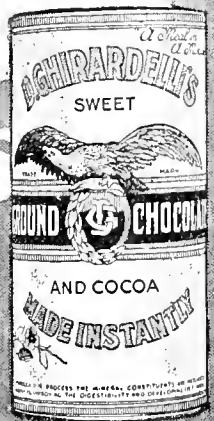
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are formed. If they are not present during the period of fruit-bud formation (under our conditions July and August for most apple varieties) the fruit spur remains vegetative—that is, it produces a terminal leaf bud and does not flower. Recent investigations carried on by the Oregon Agricultural Experiment Station indicate clearly that to a very large degree each individual spur is dependent upon its own resources for its supply of elaborated food. That is, each spur must manufacture in its own leaves the carbohydrates that it uses. It cannot draw any considerable quantity from neighboring spurs or from adjacent shoots. Plant physiology teaches us that the manufacture of starches and other food materials in the leaves is almost directly proportional to light supply, other conditions remaining the same. This means, then, that if the spurs in the two-year-old and older wood are to set fruit buds freely they must have an abundant supply of light. As has been pointed out, thinning-out of shoot growth admits more light to the interior of the tree, to the region of the fruit-spur system. On the other hand, heading-back the shoot growth tends to make the tree more compact and bushy, and thereby tends to decrease the light supply available to the fruit spurs. Thus it is seen that these two pruning practices tend in opposite directions so far as their influence upon fruit-bud formation is concerned—thinning-out making the trees more productive and heading-back making them less productive of fruit buds.

It is generally recognized that the color of apples is dependent to a very large extent upon the amount of sunlight that reaches them previous to and during their ripening season. Apples that are more or less completely shaded develop into second or third-grade apples, if color enters into the grading rules. After what has been said, the relative influences of thinning-out and of heading-back shoots upon the coloring of fruit will be obvious.

### Heading vs. Thinning Two-Year and Older Wood

Thus far the discussion has been limited to a consideration of the influences of heading and thinning shoots only. In the pruning of older trees we have to deal with two-year-old and older wood. The question may well be raised as to the comparative effects of thinning and of heading these older branches. Let us analyze the situation briefly. It is obvious that either heading-back into, say, a three-year-old growth or cutting it out entirely (thinning) would remove all the shoot growth that it produced the past season. Therefore, the two operations would effect exactly the same reduction in lateral and terminal leaf buds on shoots. Theoretically, then, the two operations should have the same effect on new-shoot formation and upon new fruit-spur formation—greatly reducing both. Probably the effects of the two operations are almost identical in their check to new-spur formation; but in many cases such a heading-back would

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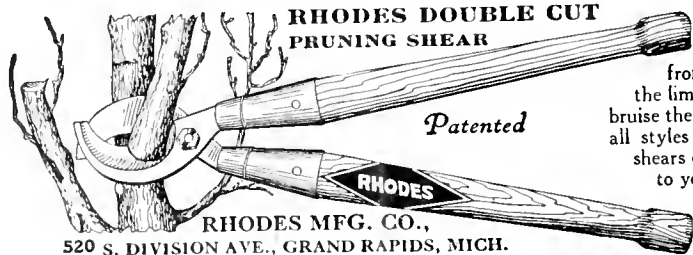
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not result in such a complete check to new-shoot growth, for the stub left is very apt to produce new shoots, or watersprouts, from dormant or adventitious buds. These watersprouts may fall short of, or may exceed in amount, depending upon conditions, the shoot growth that normally would have been produced from the new wood (shoot growth) of the headed limb. On the other hand, thinning of older wood is not apt to stimulate the production of such new-shoot growth.

It is evident that a thinning of two-year-old or older limbs will result in admitting to the interior of the tree a larger amount of light than would result from a heading of the same limbs. Heading-back into two-year-old or older wood may operate to let a larger amount of light into the tree than would be able to enter were no pruning afforded, but it is plain that it opens up a tree to a much less extent than a corresponding thinning. This being true, it is reasonable to expect the fruit spurs left in the tree to respond much more directly to a thinning than to a heading of the older limbs. Naturally this response is found in increased vigor and in greater fruit-bud formation. Furthermore, the fruits that develop in the interior of the tree will be better colored on account of their better supply of light.

#### Application to Pruning Practice

From what has been said it might be inferred that thinning only is to be recommended, because thinning exerts a much more favorable influence than heading upon the production of fruit spurs and fruit buds and upon the coloring of the fruit. However, these are not the only things in which the grower is interested. There are many other features of tree growth that must be given proper consideration. It is possible that at least some kinds of thinning might be carried to such an extreme that the result would be a very "rangy" tree, a tree unable to support its fruit without an undue amount of propping. Here is where attention must be given to the matter of training—to the question of form or shape.

Nevertheless, the principles that have been brought out have a bearing upon pruning practice; and they must be kept in mind constantly if the best possible results are to be obtained. Some trees, particularly those just coming into bearing, trees from four to eight years of age, have too few fruit spurs to bear the size of crop they could easily carry. With them the method of pruning to employ is one that will develop quickly an adequate fruit-spur system. Other trees, young or old, possess enough spurs for heavy fruit production, but they are weak and vegetative. They do not produce fruit buds and flowers. With them the pruning treatment should be such as will invigorate and make more productive the spurs that they possess. Still other trees, generally those that have been in bearing a number of years, have too many fruit spurs—more than they can care for properly. These spurs rob each other of food and water and, more especially,

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light. The method of dealing with this problem is obvious. Other old trees continue to produce good crops each year, but the bearing is rapidly shifting from the center of the tree to its upper and outer portions so that great strain is put upon the limbs and crotches by the load of fruit. There still are spurs in the interior of the tree, but they are weak and unproductive. The problem is to make them productive again and thus to shift a part of the load to a location where it can be held better and thinned, sprayed and picked more economically. No one pruning practice, as, for instance, thinning-out or heading-back is the means of solving all these problems. It may take thinning-out alone to handle one of them, heading-back alone to handle another, a certain combination of the two to handle a third, and a still different combination to handle the fourth. The thing to remember is that one series of results is reasonably certain to follow the one practice and that a quite different series of results will follow the other practice. The wrong pruning practice for any of the problems presented is apt to make conditions worse rather than to improve them.

As a kind of practical summary to what has been said the following suggestion is made. As each tree is approached by the pruner or by the person who is to decide upon the pruning treatment it is to receive these questions should at once occur to him: (1) What is needed to develop further or to correct its form? What does it need in the way of training? (2) Does it possess too few or too many fruit spurs? (3) Are its fruit spurs, particularly those in the lower and interior portions of the tree, strong and vigorous and sufficiently productive? With each of these questions in their turn answered correctly and with a knowledge of how the two pruning practices that have been discussed operate to influence shoot, fruit-spur and fruit-bud production, it is believed that approximately correct training and pruning may be done—pruning that will make the tree and efficient producer of high-grade fruit.

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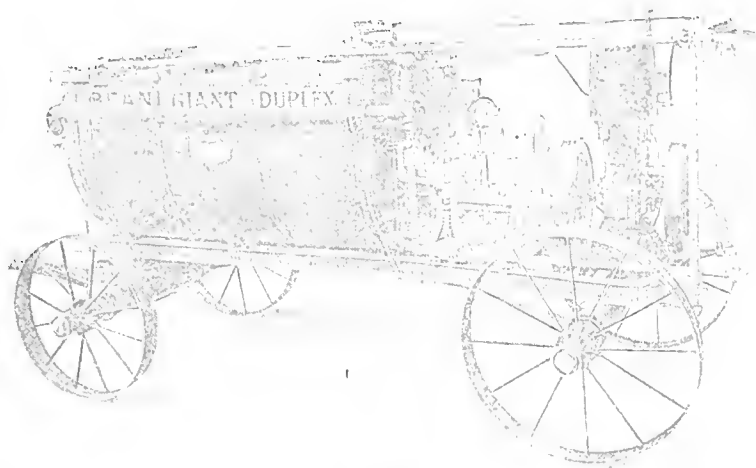
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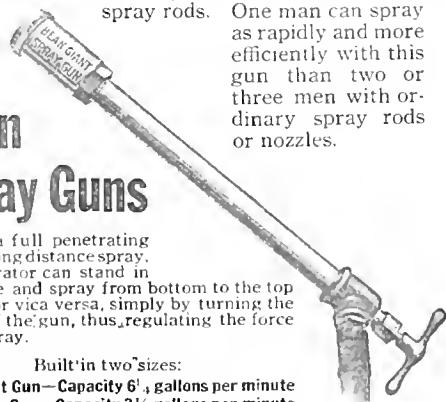
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VOLUME XII

APRIL, 1918

NUMBER 10

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FRUIT TREES

A SPRAYING PROBLEM FOR THE  
NORTHWEST APPLE ORCHARDS

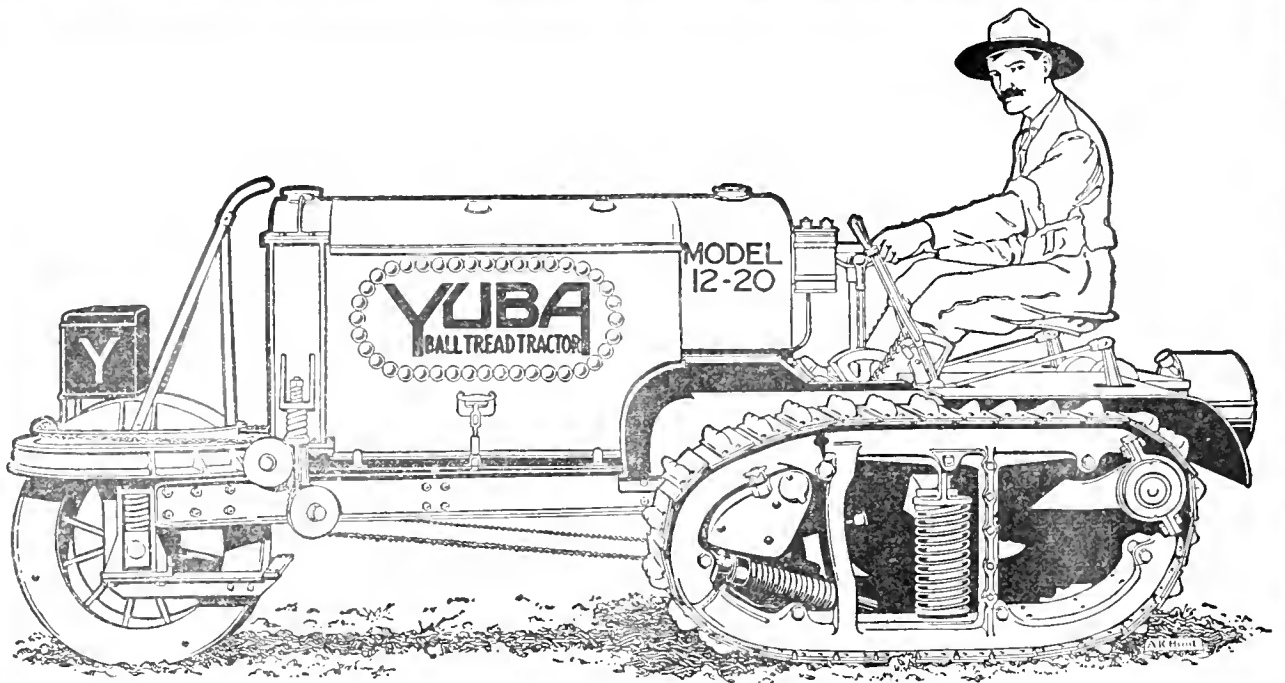
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# BETTER FRUIT

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## The Abuse of Water on Fruit Trees

By D. F. Fisher, Office of Fruit Disease Investigations, U. S. Department of Agriculture—Presented at the Annual Meeting of the Washington State Horticultural Association, Kennewick, Washington, January 3, 1918

IT may be somewhat surprising to hear that irrigation water, which is so essential to the production of fruit in many parts of the Northwest, can be and often is harmful both to trees and fruit. The indictment of water, however, cannot be limited to its use in irrigation, for water is water, whether applied in furrows or gratuitously supplied from the clouds. Perhaps it would be putting it too strong to say that fruit diseases due to soil moisture conditions are more prevalent in irrigated districts than elsewhere, but certainly we may say that they appear to be more aggravated and they have been more closely studied.

It is also true that such diseases can be more nearly controlled under irrigation than under conditions of natural rainfall, since the water supply is more nearly under the control of the grower. If irrigation practices were standardized it would be comparatively easy to point out in a general discussion such as this just what phases of irrigation are objectionable and the manner in which they could be corrected. But irrigation practices cannot be standardized; different conditions require different treatment and growers are required to exercise their own judgment in irrigating their orchards. This permits of a wide variation in practice and we find growers who would flood their orchards continually if they could secure the water, and others whose orchards are in a constant state of drouth, while in between the two extremes the balance of the growers follow individual ideas, many scientifically founded and highly beneficial, but some positively harmful. Injury from the use and abuse of water, however, is not always a direct result of methods of irrigation. But if other environmental factors, dependent on, or caused by soil moisture conditions, are concerned, they are usually within the power of the orchardist to remedy.

While more progress is being made in irrigated districts in the correction of this class of diseases than elsewhere, there is still a woeful lack of general knowledge concerning these problems and a failure to apply many of the principles which have been established. In every section we may still find the clean cultivation "crank," who continues to deplete his soil of plant food and exhaust the humus essential to the retention and penetration of irrigation water. His trees become yellowish in appearance, the foliage thin and sparse, the new growth stunted and weak, while the fruit crop constantly diminishes in size and quality. In his attempts to

correct these conditions he pours on more and more water, but usually without avail unless he resorts to subsoiling, and then the relief is only temporary. The surface of the soil may become saturated, but without humus the water will not penetrate to the roots. The "plow-sole" becomes a kind of "hardpan" and is so cemented as to exclude the water and starvation of the trees very naturally results.

We still find plenty of rosette in apple orchards, usually under the conditions just described, even though it is a generally accepted fact that an alfalfa shade crop planted in such orchards

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will in a short time correct this condition. While no definite study of this disease is available for report it seems probable that rosette is merely the response to a soil moisture condition, possibly complicated by nutritive problems or the poisonous effects of concentrated soil solutions which are corrected by the culture of alfalfa among the trees. Alfalfa roots penetrate deeply and, in decaying, humus is distributed through the area occupied by the tree roots. Channels for the penetration of irrigation water are thus provided through the "hardpan" and a balanced supply of plant food for the trees is insured. By this re-establishment of normal growth conditions the tree affected with rosette is soon able to overcome the disease.

There are numerous other diseases which are affected by the supply of soil moisture, some of which are generally understood, but which it may be profitable to review. The first class of such diseases which comes to mind is that caused by a lack of water or drouth. A state of chronic drouth is responsible for a lack of tree growth and small-sized fruit. Water is essen-

tial to the proper nutrition of the trees, since all of the plant food obtained from the soil is used in a water solution. Drouth, then, is starvation as well as acute thirst. Water is essential to the maintenance of turgor and activity of all the parts of the growing plant, so that when the water supply fails the plant not only starves but its cells dry out and die. A chronic drouth may not immediately kill the tree, but it causes so much devitalization that even after the return of proper soil moisture conditions the tree remains for a long time sick. Drouth kills the fine feeding roots which supply the tree with food so that the balance between roots and foliage is destroyed. The leaf surface is then reduced and new wood growth stunted. Due to the destruction of the delicate feeding roots the tree will require careful nursing for a considerable period if it is to completely recover from a prolonged drouth. Soil moisture conditions must be carefully watched, for the tree is then much more susceptible to drouth than before. The reduced foliage also invites sunscald and proper shading should be resorted to in order to prevent this injury.

It sometimes happens that a sudden and acute drouth is encountered following normal conditions of growth. In this case the tree invokes the law of self-preservation and extracts moisture from the fruit for the maintenance of its foliage and vegetative parts. It is more concerned in saving itself than in propagating itself. We find that the apples shrivel on the tree before the leaves show signs of wilting. With the early return of adequate soil moisture conditions many varieties of apples will recover their normal size and, apparently, be none the worse for the experience. But in the case of certain varieties, of the Winesap and Ben Davis groups especially, the drouth is accompanied by a spotting of the fruit which we have termed "drouth spot." After a certain stage in the drouth is reached irregular reddish, water-soaked spots appear on the apples and a sticky yellowish exudate is formed on the spots. This is sweetish to the taste and has sometimes been mistaken as a sign of blight infection on this account. But the taste of the apple tissue from the spot itself is extremely bitter, and this has caused some people to regard it as bitter rot. I know of cases where growers have sprayed for this disease, thinking it must be bitter rot because it tastes bitter, and of others who were on the point of pulling out their trees because they were sure it was a case of

Continued on page 18

# A Spray Program for the Northwest Apple Orchards

By Leroy Childs, Entomologist and Plant Pathologist, Hood River Experiment Station

THE accompanying spray calendar is so arranged that it will adequately cover the needs of the orchardist in most of the apple growing sections of the Pacific Northwest. It must be understood that this is not a blanket recommendation, for there are indeed but few localities that would demand all of these applications of spray listed in order to effect control of the different apple pests. The orchardist must determine, first, the pests that must be controlled in his orchard, and secondly in his procedure, with the assistance of his local adviser, determine whether seasonal conditions warrant the alterations of the program. The calendar presented is arranged to meet maximum adversities from the standpoint of weather conditions and pest development, with a result that during many seasons decided alterations may be necessary. In the alteration of these arranged sprays the advice of an expert orchard investigator should be obtained if possible.

Seasonal development is the most important factor in making the necessary alterations in any spray schedule. Usually a late spring is a decided advantage to the orchardist from the standpoint of the number of sprays that will be necessary during the season. This is especially true in the control of apple scab. In order to completely protect the orchard from the disease it is necessary to keep the foliage protected from the delayed dormant stage (Figure 1) until the spring rains are over. Under the conditions which exist at Hood River rains can be expected until

about the first of July. Two applications a month are necessary to keep the foliage and developing fruits coated, so that if the delayed dormant stage is reached by April 1, which often happens, it would be necessary to make five application of a fungicide in order to obtain complete protection. If, on account of delayed plant development, this is applied April 15, four applications will be effective, and should this be delayed until May 1, as was the case in Hood River in 1917, three applications in many cases gave excellent results.

### Discussions of Different Applications.

In connection with the different applications given in the calendar there are a few important factors that should be discussed somewhat at length; lack of space prevents this in the tables. For the sake of clearness, a discussion of each application follows, the paragraph number corresponding with the spray number given in the calendar.

1. **Dormant Spray.** The oil application is a dormant spray and is only advised in orchards where the leaf roller is present. When used for this insect it is incidentally effective in controlling both San Jose scale and brown aphid. However, under Northwestern conditions, rains following the application of spray within three to five days, its effectiveness is greatly reduced. Warm, settled weather conditions are absolutely essential to insure the leaf roller eggs being destroyed by the oil. The best results have been obtained by waiting until the buds are well swollen

and the tips of the first leaves are just beginning to show. For the control of San Jose scale and oyster shell scale lime-sulphur used 1-8 will be found less expensive and more effective, provided rainy weather follows the appli-



FIGURE 1—Delayed Dormant Spray.

cation. If the lime-sulphur is used as an early dormant application (before the buds swell) use Black Leaf for brown aphid control in Spray No. 2.

2. **Delayed Dormant Spray.** The delayed dormant spray is primarily a scab spray. Protection is needed at this time as spores of the fungus are being discharged in large numbers from the old fallen leaves. In orchards where the brown aphid is troublesome (the insect which causes the small, knotty clusters

## Spray Program for Northwest Apple Orchards

Application	Insect and Plant Disease	Material and Time of Application
1. Dormant Spray.	Leaf roller ..... Brown aphid, ..... San Jose scale, ..... Oyster shell scale.	For the leaf roller, miscible oil, 6 to 100. Use only in orchards where leaf roller control is desired or where San Jose scale is serious. Apply as late as possible in the spring, under warm, settled weather conditions. (See discussion for Spray 1.)
2. Delayed Dormant Spray.	Apple scab ..... Apple mildew ..... Brown aphid .....	For scab, lime-sulphur 32°, 1 to 25.* For mildew, add iron sulphide mixture, 10 to 100. For brown aphid, add tobacco (nicotine sulphate) 1 to 1200. Apply at time the first leaves are unfolding about the bud clusters on the fruit spurs. (See discussion for Spray 2.)
3. Pink Spray.	Apple scab ..... Mildew ..... Bud moth .....	For scab, lime-sulphur 32°, 1 to 30. For mildew, add iron sulphide mixture, 10 to 100. For bud moth, add arsenate of lead, 4 to 100 (powder 2 to 100). Do not apply until the fruit buds stand separated in the clusters (Figure 2). (See discussion for Spray 3.)
4. Calyx Spray.	Apple scab ..... Mildew ..... Codling moth .....	For scab, lime-sulphur 32°, 1 to 35. For mildew, add iron sulphide, 10 to 100. For codling moth, add arsenate of lead, 4 to 100. Apply as soon as petals fall. (See discussion for Spray 4.)
5. Ten-Day Spray.	Apple scab ..... Mildew .....	For scab, lime-sulphur 32°, 1 to 40. For mildew, add iron sulphide mixture, 10 to 100. Apply 10 to 15 days following calyx application. (See discussion for Spray 5.)
6. Thirty-Day Spray.	Apple scab ..... Codling moth (if present) } Green aphid ..... } Woolly aphid .....	For scab, lime-sulphur 32°, 1 to 50; or self-boiled lime-sulphur, 6-6-50.† For codling moth, add arsenate of lead, 4 to 100. For green and woolly aphid, add tobacco, 1 to 1200. Apply 30 days following the calyx application. (See discussion for Spray 6.)
7. July Spray.	(Advisable in certain sections for) Codling moth ..... Green aphid ..... } Woolly aphid .....	For codling moth, add arsenate of lead, 4 to 100. For green and woolly aphid, add tobacco, 1 to 1200. In applying this spray consult with your nearest expert. (See discussion for Spray 7.)
8. Third Codling Moth Spray.	Codling moth ..... Anthracnose ..... } Late scab ..... } Woolly aphid .....	For codling moth, add arsenate of lead, 4 to 100. For anthracnose and late scab, add bordeaux mixture, 3-4-50.‡ For woolly aphid, add tobacco, 1 to 1200. Date of application can only be told by seasonal development of codling moth through breeding cage studies. Get in touch with nearest entomological investigator. (See discussion for Spray 8.)
9. Fall Spray.	Anthracnose .....	For anthracnose, bordeaux mixture, 6-6-50. Apply as soon as fruit is harvested.

\* If lime-sulphur does not test 32°, see accompanying table for the proper dilution.  
† Write Oregon Agricultural College for particulars in the preparation of self-boiled lime-sulphur.  
‡ Three pounds bluestone, four pounds lime, fifty gallons water.

of apples), tobacco (nicotine sulphate) 1-1200 should be added. Compared with past years, we have made a reduction in the strength of lime-sulphur to be used, and further experimental evidence will probably permit the making of greater dilutions for this application. The spray should be applied when the average fruit spurs show the condition as given in Figure 1. In orchards where lime and sulphur has been regularly used in the control of apple scab for several years, mildew is incidentally kept in check by this fungicide. The trouble is usually more pronounced in young unsprayed orchards or in sections where lime-sulphur has not been extensively employed. In orchards where the disease is prevalent it can be more specially brought under control by adding iron sulphide mixture 10-100 to the lime-sulphur. The fungus which causes powdery mildew begins activities as soon as the foliage appears in the spring, and demands the same attention in controlling it as does apple scab.

3. Pink Spray. The pink spray is employed chiefly for the control of apple scab. In sections where the bud moth is present arsenate of lead used in the standard dilutions should be added to the lime-sulphur. Owing to the fact that the entire developing apple cannot be completely covered with spray, and thereby given complete protection, until the young fruits have separated in the clusters, this spray should be delayed until the condition found in Figure 2 presents itself. In large orchards, however, it will not be possible to wait until all of the spurs are in this condition. The orchardist should arrange his spraying so that the greatest proportion of the crop is sprayed while in this condition. If mildew is severe add the iron sulphide mixture.

4. Calyx Spray. All orchardists are familiar with the value of applying arsenate of lead at this period in the development of the young apple. Apply the spray a few days following the dropping of the petals, as shown in Figure 3. Owing to the fact that it is necessary to protect the fruit from further scab infection, lime-sulphur must be used. In orchards where mildew control is a problem, continue the use of the iron sulphide mixture.

5. Ten-Day Spray. The so-called ten-day or two-weeks spray is primarily used for furthering scab protection. It is through the use of this application and the following one that "shot fungus" or the appearance of numerous scab spots on the fruit, usually early in July, is prevented. It is a very important spray during most seasons and must not be omitted.

6. Thirty-Day Spray. This application is made just previous to the hatching of the first brood of codling moth and is therefore a very important application. During certain seasons it is necessary to use a spray in order to prevent further scab development. The use of lime-sulphur is dangerous at this time, due to the possibility of burning, and before using it consult with the nearest investigator. We have been experimenting for two seasons with self-boiled lime-sulphur in this application

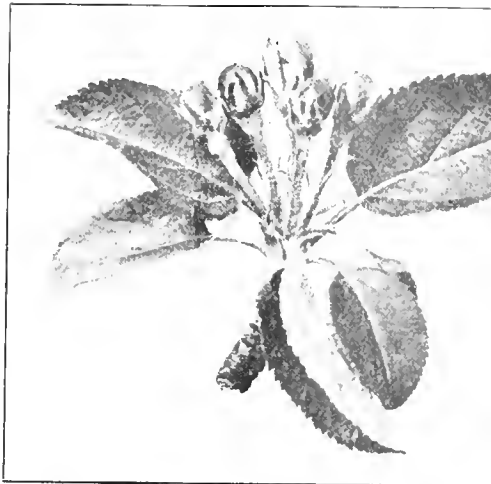


FIGURE 2—Pink Spray.

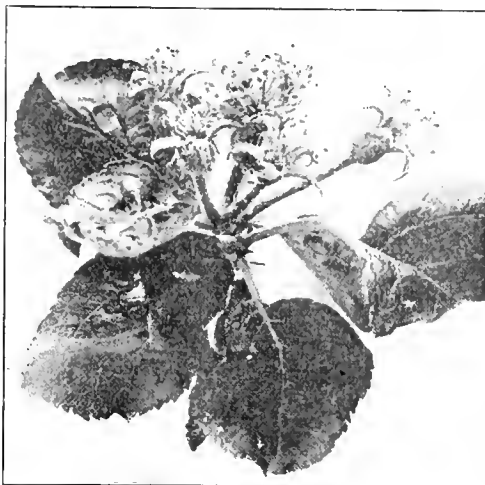


FIGURE 3—Calyx Spray.

and the preceding, and the results that have been obtained are very encouraging. Scab control has resulted with practically no fruit burn. The greatest difficulty so far encountered is that of preparation. Both the lime and the sulphur must be of good quality or the resulting product will contain many fine particles which clog up the nozzle. The work which is to be continued along this line during the coming season will clear up many of the difficulties so far encountered in the use of self-boiled lime-sulphur. For the preparation of this material write the Oregon Agricultural College, Corvallis.

7. July Spray. This application is

needed in some sections of the state for the control of codling moth. Keep in touch with your fruit inspector or investigator. At Hood River and most of the interior apple districts the hatching of the second brood of worms does not take place until August. During some seasons the green and woolly aphids become injurious during this month. Watch them closely and if they become injurious spray.

8. August Spray. In many sections of the Northwest the lead spray for the control of the second brood of codling moths must be applied during this month. The exact date can only be determined by carefully conducted breeding observations, carried on by one familiar with the insect's activities. If your section is badly infested with worms, get an expert to carry on some breeding studies. To be effective during the time the eggs are hatching the spray must be applied at a time not to exceed a few days before the hatching of the first eggs, or the spray will lose its effectiveness before the later eggs are hatched. A lead spray at this time of the year is entirely effective for a period not to exceed 24 to 25 days. If an application, therefore, is applied a couple of weeks before the eggs begin to hatch its extended effectiveness is greatly reduced. During some seasons eggs continue to hatch for a month or more, with a result that it is very essential to put the spray on at just about the right time. Bordeaux 3-4-50 can be added to the arsenate of lead. This, however, is only advised in orchards where anthracnose is causing considerable damage. Bordeaux has a tendency to mottle red apples, due to the fact that the sunlight is prevented from reaching the surface of the fruit and the apples do not color uniformly.

9. Fall Spray. For the control of anthracnose the fall application of bordeaux mixture should immediately follow the harvesting of the fruit. If this disease is once put under complete control in a given district, spraying every other year thereafter has been found sufficient in the Hood River sections to keep the trouble in check. This would probably be true of the activities of the disease in other sections. Spores become active following the early fall rains, and to get complete control the application should be made before these occur.

DILUTION TABLE FOR LIME-SULPHUR AT DIFFERENT DEGREES BEAUME\*  
 (\*This table is prepared considering lime-sulphur at 32° Beaume as standard. Concentrates testing higher or lower are arranged so that they will contain the same amount of sulphur in the diluted spray.)

Degrees Beaume	Delayed Dormant Spray	Pink Spray	Calyx Spray	Ten-Day Spray	Thirty-Day Spray
36.....	1 to 28.3	1 to 34.1	1 to 40.0	1 to 45.6	1 to 57.4
35.....	1 to 27.5	1 to 33.1	1 to 38.8	1 to 44.2	1 to 55.6
34.....	1 to 26.7	1 to 32.1	1 to 37.5	1 to 42.8	1 to 53.7
33.....	1 to 25.8	1 to 31.0	1 to 36.2	1 to 41.3	1 to 51.9
32.....	1 to 25.0	1 to 30.0	1 to 35.0	1 to 40.0	1 to 50.0
31.....	1 to 24.2	1 to 28.9	1 to 33.7	1 to 38.6	1 to 48.2
30.....	1 to 23.3	1 to 27.8	1 to 32.3	1 to 37.1	1 to 46.4
29.....	1 to 22.5	1 to 26.7	1 to 31.0	1 to 35.6	1 to 44.5
28.....	1 to 21.6	1 to 25.7	1 to 29.7	1 to 34.2	1 to 42.7
27.....	1 to 20.8	1 to 24.5	1 to 28.3	1 to 32.8	1 to 41.0
26.....	1 to 20.0	1 to 23.5	1 to 27.0	1 to 31.3	1 to 39.6
25.....	1 to 19.1	1 to 22.1	1 to 25.7	1 to 29.9	1 to 37.2
24.....	1 to 18.3	1 to 21.3	1 to 24.3	1 to 28.7	1 to 35.1
23.....	1 to 17.4	1 to 20.2	1 to 23.0	1 to 27.2	1 to 33.5
22.....	1 to 16.5	1 to 19.0	1 to 21.6	1 to 25.8	1 to 31.7
21.....	1 to 15.8	1 to 18.1	1 to 20.3	1 to 24.5	1 to 30.0
20.....	1 to 15.0	1 to 17.0	1 to 19.0	1 to 23.0	1 to 28.2

\* This table was kindly prepared by Mr. R. H. Robinson, Assistant Chemist, Oregon Experiment Station.



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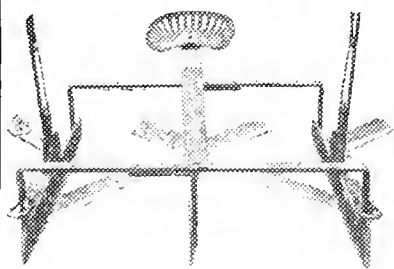
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## Air Storage Houses

By W. H. Wilson, Nampa Orchard Company, Kuna, Idaho

THE necessity for suitable storage for fruit has occupied the minds of growers in the last year to a great extent. It was known early in the season that there would likely be a shortage of cars, and from the experience of a great many shippers in past years the practice of shipping fruit to the central markets as fast as packed was a bad one, first, on account of the expense incurred in handling and storage at that end, and secondly, such a practice has always caused a glutted market, thus depressing the prices of packed fruit.

More local storage plants over the Northwest will enable growers to get more in touch with communities where in ordinary years fruit, and especially apples, is very scarce and high, which places are not supplied by the large central markets. Local storage plants will also tend to regulate the supply of fruit to the large markets more in relation to the demand, thereby holding prices normal. Ice storage or refrigeration plants are impracticable for the average grower, from the standpoint of cost and maintenance.

Within the last few years air storage has been given a fair trial and from every standpoint has proven a practical solution of the storage problem. The right amount of ventilation or the perfect circulation of air is perhaps the most essential feature of air storage. Apples held in a storage where there is a free circulation of fresh, cool air will hold up longer than when stored in an artificial cold, and during the frequent changes of weather the temperature of the storage can be maintained at the right degree if the ventilation system is adequately provided for; therefore a system that draws fresh air down under the floor and then up through the tiers of fruit and out at the top of the storage must be the right kind of circulation.

In the discussion of air storage in detail I will refer to the plants constructed by the Wilson Orchard Company on Eagle Heights in Nampa and also at Kuna this year, as I am more familiar with the way they were planned and built. In the construction of these plants a government bulletin was closely followed. The excavation was made as for an ordinary basement, except that dirt was carried out at each end of the excavation, and the slopes thus made were later used for entrance to driveway. Our storages as built last fall are 40 x 60 feet, with an average depth of 3 feet below ground level. Within this excavation was constructed the framework of heavy timbers to support the heavy weight of the dirt roof. The side studding is constructed of 2x8, 8 feet to the plate from floor of basement, spaced 2 feet apart. The bottom rafters are 2x10 inches, 16 feet, spaced 16 inches apart; the top rafters are 2x10 inches, 10 feet, spaced 16 inches. Four lines of bridging help support the roof. The main supports are four rows of posts 10 feet apart through the length of the building; the center two rows are 6x6, 12 feet high, with 4x12 girder on top; the row of posts on either side of center row are 4x6, 10 feet, with a 4x12 girder on top. Every post is braced to the roof each way and in all the frame is sufficiently strong to support the great weight of the dirt roof. The frame is then covered with a medium weight of field fence wire from the ground up over the roof and ends to the plate on the ends. Above the top line of the door where no dirt could be banked the building was boxed and this filled in with straw chaff tightly packed. The ventilators were next placed. There are twelve cold air vents, six on a side. These were built 12 feet long, 16x20 inches at the top and 12x20 inches at the bottom, and were then set in holes dug down to the bottom of the basement on the outside of the frame of the building. With the building covered, these stick up above the roof about three feet. Each vent has a hinged cover on top and by this method the cold air is drawn through this 12-foot chimney, so to speak, down to below the floor level. There are four ventilators on the top of the storage equally spaced, which complete the air circulation. These stick up above the roof when covered about two feet. They are two feet

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Manufacturers of "Corona Dry" Powdered Arsenate of Lead.

## OUR POLICY

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ASSURED PROTECTION is what a grower wants when he buys Arsenate of Lead. He must think in terms of protection, not in cents per pound, when he buys his season's requirements. The fruit growers of the Northwest cannot be lured into believing that a cheap and low grade Arsenate of Lead--even though well sprayed--will give certain and adequate insect control.

EXCESSIVE FINENESS NECESSARY. - If the Arsenate of Lead being used is not of excessive fineness THEN IT IS IMPOSSIBLE TO PROPERLY APPLY IT. No matter how careful a man may be with the spraying rod, if he hasn't material that will give proper distribution, he cannot get good results; and regardless of how cleverly he may handle the rod, he won't get complete and uniform distribution unless he has "Corona Dry" Quality.

A CARELESS SPRAY OPERATOR may get a good application if he has the best materials, but a careless operator can never get a good application with poor material. Control means greatest care in all ways and with "Corona Dry" Arsenate of Lead to start with, a good application--one that will control the worms--can be made.

PURITY AND FINENESS. - The results of careful application depend entirely upon the fineness and purity of the material, because excessive fineness means greater covering power, more complete and uniform distribution, and consequently better insect control.

DON'T RUN CHANCES WITH YOUR CROP. - You may use a poor quality and cheap Arsenate of Lead and get through the season with only a small percentage of worms, but this chance depends on there being no worms. If an infestation occurs "YOU HAVEN'T GOT A CHANCE"--except with "Corona Dry" quality.

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short time by the regulation of the ventilators; the temperature ranges from 32 to 40 degrees. On examination of several boxes of Winesap and Rome Beauty apples a few days ago I found them in excellent shape.

**Savory Stews**

Try them. They can be a whole meal and a nutritious one. These recipes serve five people. Here is an English stew that is especially good:

**Hot Pot of Mutton and Barley.**—1 1/2 pound mutton, 1/2 cup pearly barley, 1 tablespoon salt, 4 potatoes, 3 onions, celerly tops or other seasoning herbs. Cut the mutton in small pieces and brown with the onion in fat cut from meat. This will help make the meat tender and improves the flavor. Pour this into a covered sauce pan. Add two quarts water and the barley. Simmer for 1 1/2 hours. Then add the potatoes cut in quarters, seasoning herbs, and seasoning, and cook one-half hour longer.

**Beef Stew.**—1 pound beef, 4 potatoes cut in quarters, 1/4 peck peas or 1 can, 1 cup carrots cut up small, 1 teaspoon salt. Cut the meat in small pieces and brown in the fat from the meat. Simmer in two quarts of water for one hour. Add the peas and carrots and cook for one-half hour, then add the potatoes. If canned peas are used, add them ten minutes before serving. Serve when potatoes are done.

**Meat Pies.**—Another good way to use a little meat. Have you ever used rice, cornmeal mush or hominy for a crust? This is less work than a pastry crust and saves wheat: 4 cups cooked cornmeal, rice or hominy; 1 onion, 2 cups tomato, 1/8 teaspoon pepper, 1 tablespoon fat, 1 pound raw meat or leftover meat cut up small, 1/2 teaspoon salt. Melt the fat, add the sliced onion and, if raw meat is used, add it and stir until the red color disappears. Add the tomato and seasoning. If cooked meat is used, add it with the tomato and seasoning, after the onion is browned, and heat through. Grease a baking dish, put in a layer of the cereal, add the meat and gravy, and cover with the cereal dotted with fat. Bake for half an hour.

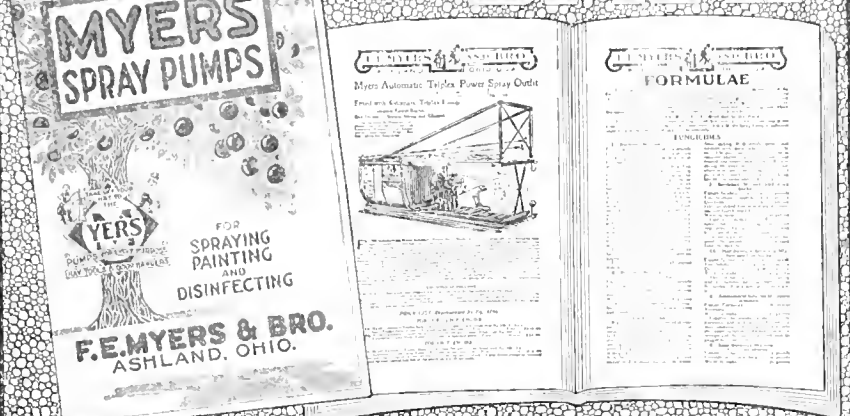
Get rid of the rats and gophers and all unnecessary pests that destroy the crops.

Do not fail to spray for fungus, commonly called scab. In some sections two sprays are enough, but in wet climates of the Northwest it is usually necessary to put on the semi-dormant, the pink, one in the calyx, one in two weeks after, according to weather conditions.

Many do not understand why the Allies do not eat some flours and meals which we are asked to eat. One reason is that many of them are apt to become wormy in shipment abroad.

The food situation among our Allies is grave, yet there will be plenty in America to spare, if we conserve more and increase production.

# HOW AND WHEN TO SPRAY



Those neglected fruit trees—you will find them everywhere—perhaps you have them in your own yard or out in the orchard, that for some reason or other you have failed to take care of in years gone by and now class them as non-producers, worthless except for shade.

You are surely going to give them attention this spring, as well as every other tree, vine, shrub, bush or plant about the place, on which you depend for your fruits, berries and vegetables. Start early with this work, before gardening and planting time. Trim up your trees and plants and put new life into them, so they will amount to something and do their bit when the time comes.

Whether you raise fruits or vegetables, you will need a spray pump of some kind, so we recommend the MYERS LINE of Bucket, Barrel and Power Spray Pumps to your attention—the Easy Operating Cog Gear Bucket and Barrel Pumps for hand use, and the Myers Automatic Power Pumps and Complete Outfits that do not require a relief valve for extensive power operations.

Go where you will, you will find these Spray Pumps doing things in the spraying world—spraying trees and plants, whitewashing and painting, disinfecting and innumerable other jobs—because they are recognized for their easy operation, speed, capacity and economical use of mixtures, and for these reasons are the choice of fruitmen and gardeners everywhere—veteran or novice, you will appreciate the efficient spraying service of Myers Spray Pumps.

Ask your dealer or write us immediately about them—time is limited until you must get busy, and when you start we want you to have a real fighting machine in a Myers Spray Pump.

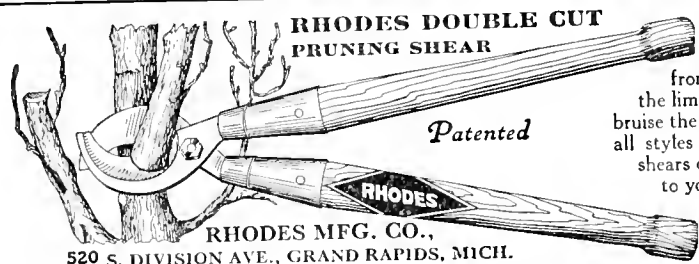
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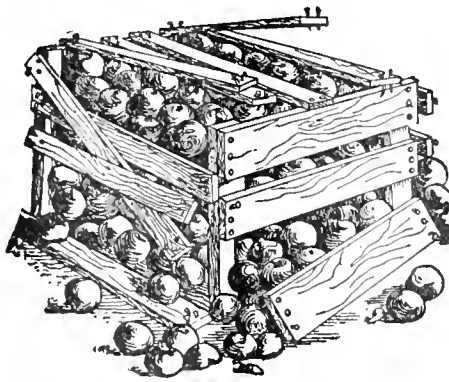
square and equipped with two shutters spaced two feet apart in the ventilator, which are opened or closed by a single rope from below.

The sides and roof being covered with wire netting, they were then covered with a heavy layer of straw, evenly distributed, and then covered with four or six inches of dirt. The dirt was hoisted by the use of a hay derrick and a specially made box with a trip bottom, which facilitated the work.

The floor of the storage was constructed with 2x4's laid in rows on the dirt floor flat, with 8-inch pieces of 2x4 set upright for posts and another row of 2x4's laid flat on top. There is about 20 inches between these rows, which allows us to tier the packed boxes so as

to economise in space. This flood construction raises the apples a foot from the dirt floor and allows free circulation of air under and up through the tiers. With plenty of room in such a storage, the tiers would be six high and fourteen deep for convenient handling. There is room in the above described storage for seventy-two tiers of eighty-four boxes. However, this year we tiered eight and nine high and utilized all the space in the ten-foot driveway through the building. Two sets of doors are provided at each end of the storage and three thermometers, one near each end of the building and one in the middle.

We are able to raise or lower the temperature several degrees in a very



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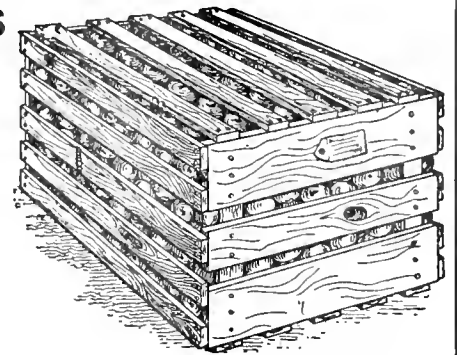
Our Cement Coated Nails are always of uniform length, gauge, head and count. Especially adapted to the manufacture of fruit boxes and crates. In brief, they are the Best on the Market.

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## Hood River Apple Prices Highest Since 1911

[Hood River News, March 13, 1918]

**D**ESPITE the unfavorable conditions created by the war, prices received for apples this year by the association have reached the highest mark since 1911, according to the report of General Manager Stone at the members' meeting Saturday. The average price for the three standard grades this year is \$1.40 a box, compared with \$1.13 last year. The low mark was reached in 1915, when the average was 76 cents a box.

The percentages of Extra Fancy,

	1913	1914	1915	1916	1917
Apples	575,500	545,800	373,200	979,741	616,787
Pears	12,800	12,156	24,797	38,151	18,135
Peaches	1,100	175	407	88	None
Cherries	10,026	7,862	7,826	9,017	8,401
Strawberries	61,500	84,390	87,495	85,200	48,876
Blackberries	750	496	403	102	105
Raspberries	14	147	119	20	61
Plums and prunes	50	617	249	75	71
Crab apples	None	186	274	205	137
Loganberries	None	10	10	9	1
Gooseberries	None	8	9	4	3
Currants	None	15	17	None	None
Quinces	None	None	29	15	2

Total packages ..... 661,740

While there is larger variation in the amount of fruit handled in the different years by the association, the percentage handled to that grown in the Valley has not changed materially, as the years that show a small amount of tonnage were the years in which the crop was small.

	1913	1914	1915	1916	1917
Extra Fancy	37	37	30	38	52
Fancy	43	43	37	37	32
"C" Grade	20	20	33	25	16
4 tier	58	57	64	12	40
4 1/2 tier	28	31	23	37	36
5 tier	11	12	13	21	21

The following is a list of prices received to date on the principal varieties of apples. These figures will vary somewhat when the returns are all in. Prices quoted are the average per box price which have been received to date

### Experienced Orchardist

with record for success, open for employment as superintendent March 15. Can handle workmen advantageously. Thoroughly reliable. In position to go anywhere.

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Fancy and "C" grades are as follows: Extra Fancy, 52 per cent; Fancy, 32 per cent; "C" grade, 16 per cent. The percentage in tiers were as follows: 4 tier, 40 per cent; 4 1/2 tier, 36 per cent; 5 tier, 24 per cent.

#### Comparative Statement of Yield for Years 1913 to 1917, Both Inclusive.

A comparative statement of the number of packages of fruit handled by the association for the past five years is as follows:

	1913	1914	1915	1916	1917
Extra Fancy	545,800	373,200	979,741	616,787	616,787
Fancy	12,156	24,797	38,151	18,135	18,135
"C" Grade	175	407	88	None	None
4 tier	7,862	7,826	9,017	8,401	8,401
4 1/2 tier	84,390	87,495	85,200	48,876	48,876
5 tier	496	403	102	105	105
4 tier	147	119	20	61	61
4 1/2 tier	617	249	75	71	71
5 tier	186	274	205	137	137
Average	10	10	9	1	1
	8	9	4	3	3
	15	17	None	None	None
	29	15	15	2	2

In order that we may become familiar with the crop conditions and thereby put ourselves in a position to correct the errors of past years, we give below a table showing the percentages of Extra Fancy, Fancy and "C" grade for five years last past, and also the percentage of tiers handled by the association:

	1913	1914	1915	1916	1917
Extra Fancy	37	30	38	52	52
Fancy	43	43	37	37	32
"C" Grade	20	20	33	25	16
4 tier	58	57	64	12	40
4 1/2 tier	28	31	23	37	36
5 tier	11	12	13	21	21

on the different varieties, grades and sizes specified. The per cent column shows the portion of the varieties, grades and sizes collected for to date:

Spitzenburg		Price	Per Cent
Extra Fancy	4 tier	\$1.76	83
	4 1/2 tier	1.56	78
	5 tier	1.31	21
Fancy	4 tier	1.56	80
	4 1/2 tier	1.35	61
	5 tier	1.16	36
"C" Grade	4 tier	1.31	90
	4 1/2 tier	1.11	90
	5 tier	.91	70
Average		\$1.45	70

Total crop of Spitzenburgs handled, 222,695 boxes. Charges: Commission, 10 cents; storage, 8 cents; advertising fund, 2 cents; and purchasing fund, 1 cent.

#### Newtowns

Extra Fancy	Price	Per Cent
4 tier	\$1.57	59
4 1/2 tier	1.37	36
5 tier	1.17	1
Fancy		
4 tier	1.37	62
4 1/2 tier	1.22	30
5 tier	1.02	1
"C" Grade		
4 tier	1.17	63
4 1/2 tier	1.02	41
5 tier	.87	1
Average	\$1.39	35

### Wanted, Apple Orchard Assistant Superintendent

Having Eastern practical experience. Must have ability to handle men.

Turkey Knob Orchard  
Mt. Jackson, Shenandoah Co., Va.

## Throws a Cloud of Spray

The Hardie Orchard Gun saves your time and muscle—no long, heavy rods to hold.

Turns a big job into a little one. One man with a Hardie Gun will do more work and do it better than two men with the old-fashioned rods.

### Hardie Orchard Gun \$12

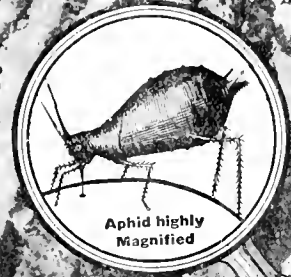
Low price made possible by big production—send for the Hardie Catalog today. Hardie Sprayers and spraying devices standard for 18 years.

**THE HARDIE MFG. CO.**  
Hudson, Mich.  
Also Portland, Ore.

# Kill Aphis

**Before Aphis Kills Your Profits**

This tiny, sap-sucking insect, scarcely larger than a pin-head, is destroying apple profits all over the country. Feeding with its sharp, mosquito-like bill, it causes dwarfed, deformed, unmarketable fruit. Curls foliage. Weakens trees. Spray with



## Black Leaf 40 40% NICOTINE

and control Aphis, Red Bug, Leaf Hopper and other soft-bodied, sucking insects. Aphis is making its appearance in many sections for the first time. Regarded by many growers as the most destructive apple insect. One aphid produces thousands in a few weeks. Spray with Black Leaf 40 and save your profits. Can be used with lime-sulphur, arsenate of lead, bordeaux and other sprays as recommended, or may be used separately, if desired. Mixes perfectly with water. Costs only about 1c per gallon diluted for the trees. Recommended by agricultural colleges and experiment stations. Send for **Free Spray Chart and Leaflets** showing when and how to spray and how to protect fruit trees, vines and vegetables from these profit-killing insect pests.

**The Kentucky Tobacco Product Co.**  
Incorporated  
Louisville, Kentucky

Total crop of Newtowns handled, 275,384 boxes. Charges: Commission, 10 cents; storage, 8 cents; advertising fund, 2 cents; purchasing fund, 1 cent.

### Arkansas Blacks

Extra Fancy	Price	Per Cent
4 tier	\$2.00	21
4½ tier	1.80	24
5 tier	1.45	32
Fancy		
4 tier	1.80	66
4½ tier	1.60	67
5 tier	1.20	11
"C" Grade		
4 tier	1.35	90
4½ tier	1.15	90
5 tier	.95	10
Average	\$1.64	37

Total crop of Arkansas Blacks handled, 15,078 boxes. Charges: Commission, 10 cents; storage, 8 cents; advertising fund, 2 cents; purchasing fund, 1 cent.

### Ortleys

Extra Fancy	Price	Per Cent
4 tier	\$1.74	72
4½ tier	1.54	67
5 tier	1.29	1

## HOMES AND FARMS



**IN THE "SUNNY SOUTH"**  
Nature has blessed this favored section with mild, healthful climate, productive soil and all that makes life worth living. You can buy good farm land in Virginia, W. Va. and North Carolina at \$15 per acre and up. Fruit, truck, poultry and general farming will prove successful here. Write for information, illustrated literature, etc. F. H. LaBaume, Ag. & Ind. Agt., N. & W. Ry. 228 Ry Bldg. Roanoke, Va.

Fancy	Price	Per Cent
4 tier	\$1.54	72
4½ tier	1.34	84
5 tier	1.14	3
"C" Grade		
4 tier	1.29	83
4½ tier	1.09	90
5 tier	.89	20
Average	\$1.58	69

Total crop of Ortleys handled, 32,464 boxes. Charges: Commission, 10 cents; storage, 7.8 cents; advertising fund, 2 cents; purchasing fund, 1 cent.

### Red Cheeks

Extra Fancy	Price	Per Cent
4 tier	\$1.75	81
4½ tier	1.55	60
Fancy		
4 tier	1.55	27
4½ tier	1.35	24
"C" Grade		
4 tier	1.25	38
4½ tier	1.05	32
5 tier	.85	1
Average	\$1.54	33

Total crop of Red Cheeks handled, 5,956 boxes. Charges: Commission, 10 cents; storage, 8 cents; advertising fund, 2 cents; purchasing fund, 1 cent.

### Jonathans

Extra Fancy	Price
1 tier	\$1.34
4½ tier	1.23
5 tier	1.10
Fancy	
4 tier	1.20
4½ tier	1.08
5 tier	.95

"C" Grade	Price
4 tier	\$1.05
4½ tier	.94
5 tier	.84

Average price ..... \$1.08

Total crop of Jonathans handled, 25,107 boxes. Charges: Commission, 10 cents; storage, 5.5 cents; advertising fund, 2 cents; purchasing fund, 1 cent.

### Delicious

Extra Fancy	Price
4 tier	\$1.98
4½ tier	1.73
5 tier	1.33
Fancy	
4 tier	1.73
4½ tier	1.48
5 tier	1.13
"C" Grade	
4 tier	1.38
4½ tier	1.13
5 tier	.88

Average price ..... \$1.66

Total crop of Delicious handled, 2,620 boxes. Charges: Commission, 10 cents; storage, 7 cents; advertising fund, 2 cents; purchasing fund, 1 cent.

### Winter Bananas

Extra Fancy	Price
4 tier	\$1.93
4½ tier	1.73
5 tier	1.33
Fancy	
4 tier	1.68
4½ tier	1.48
5 tier	1.13
"C" Grade	
4 tier	1.23
4½ tier	1.08
5 tier	.93

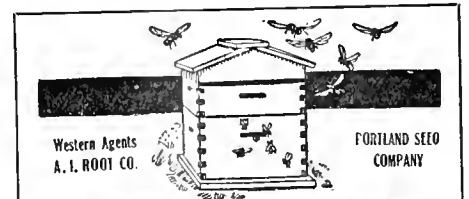
Average price ..... \$1.60

Total crop of Winter Bananas handled, 7,381 boxes. Charges: Commission, 10 cents; storage, 5.4 cents; advertising fund, 2 cents; purchasing fund, 1 cent.

### Oregon Reds

Extra Fancy	Price
4 tier	\$1.57
4½ tier	1.39
5 tier	1.09

Average price ..... \$1.47



## KEEP BEES!

**HONEY IS THE BEST SUBSTITUTE FOR SUGAR**  
and is more Wholesome and Delicious

If you own an orchard or keep bees, you should have a copy of our Catalog. It lists everything for the successful handling of bees and the production of honey.

We are pioneers in the bee supply business in the Northwest, are thoroughly familiar with local requirements and carry a large and complete stock.

Ask for Catalog No. 204  
You can keep bees any place where they can forage within a mile.





Total crop of Oregon Reds handled, 3,562 boxes. Charges: Commission, 10 cents; storage, 8 cents; advertising fund, 2 cents; purchasing fund, 1 cent.

**Miscellaneous Varieties**

The average price received on the miscellaneous varieties not listed above, for the three standard grades, consisting of 21,333 boxes, is \$1.15 per box. Paid 68 per cent.

To recapitulate, the following are the prices received by the association for the following varieties and grades, respectively:

	Extra Fancy	Fancy	"C" Grade
Spitzenburgs .....	\$1.62	\$1.43	\$1.15
Newtowns .....	1.49	1.32	1.10
Arkansas Blacks .....	1.73	1.69	1.26
Ortleys .....	1.69	1.49	1.23
Red Cheeks .....	1.68	1.47	1.17
Jonathans .....	1.19	1.05	.92
Delicious .....	1.86	1.59	1.20
Winter Bananas .....	1.88	1.64	1.18
Oregon Reds .....	1.47	.....	.....

Returns to March 1, 1918, have been received on 55 per cent of the crop, viz.: \$517,034.91 in settlement of 367,827 boxes of apples, or an average on all varieties, grades and sizes on which the association has received payment, of \$1.40 per box, against a like average a year ago of \$1.17 per box, with 55 per cent of the crop paid for this year against 47½ per cent paid for at the same time last year.

The percentage of grades on which we have received pay up to the present time is as follows: Extra Fancy, 51 per cent; Fancy, 59 per cent; "C" grade, 73 per cent.

The percentage of tiers on which we have received pay up to the present time is as follows: 4 tier, 74 per cent; 4½ tier, 60 per cent; 5 tier, 23 per cent.

In considering the returns this year it is well for us to investigate the returns we have received for previous years. We therefore give below a statement of the amount received by the association from its organization down to the present time, which is as follows:

# ALPHA POWER SPRAYERS

**EFFICIENT      SIMPLE      DURABLE**



**T**HE ALPHA possesses every feature necessary for quick efficient spraying. No complicated parts to give trouble. The Alpha is easy to handle, compact and strong. Five sizes, including Triplex and Duplex Pumps.

**It's Time to Spray—Do the Job Well**

If you have no sprayer or your old machine is not capable of good effective work **YOU NEED A NEW ALPHA SPRAYER.** The quality of your product is at stake.

**Don't Buy An Outfit Until You Investigate the Alpha**

**Constant Pressure** The Alpha Automatic Pressure control holds the pressure steadily at any desired point. No part of this regulator is exposed to the corrosive action of the spray solution. Engine runs idle when not spraying. All parts of pump readily accessible and replacements easily made.

**A Reliable Engine** The Alpha is perfectly balanced and delivers a smooth flow of economical power to the pump. Requires practically no attention and is insurance against expensive delays when spraying. Magneto equipped. No batteries needed. Starts easily without cranking.

SEND FOR COMPLETE DESCRIPTION

**OUR STOCK IS COMPLETE — IMMEDIATE SHIPMENT**  
Shipments made from Seattle, North Yakima, Portland or Wenatchee.

## De Laval Dairy Supply Co.

61 Beale Street, SAN FRANCISCO, CAL.

**Past Averages Are Given**

For the 1913 crop the average price of the three standard grades was \$1.23, for 1914 76 cents, for 1915 \$1.27, for 1916 \$1.13, and for 1917 for the fruit

on which we have received pay up to the 1st of March (being 55 per cent of the crop) \$1.40 per box. These are the highest returns received in the Valley for the crop since 1911. This could only be accomplished by the best of teamwork and the fact that we have in the different districts in which we have representatives men who are especially adapted and fitted to secure the best results in those markets.

**Amount of Business Is Shown**

The amount of business done by the association for the season of 1917, commencing with June 1, 1917, and May 31, 1918 (from March 1 to May 31, 1918, being estimated), is as follows:

Stores .....	\$250,000.00
Apples .....	875,000.00
Strawberries .....	118,960.12
Pears .....	31,103.02
Cherries .....	11,045.85
Raspberries .....	111.42
Loganberries .....	1.75
Gooseberries .....	1.35
Prunes and plums .....	30.49
Blackberries .....	181.06
Crabapples .....	182.27
Quinces .....	1.76
Ice .....	8,400.00

Total.....\$1,298,022.09

The amount of business done by the association for the four years last past was as follows, viz.: 1911, \$671,559.82; 1915, \$947,754.73; 1916, \$1,609,295.50; 1917 (part estimated), \$1,298,022.09.

## MORE WORK FROM YOUR HORSES

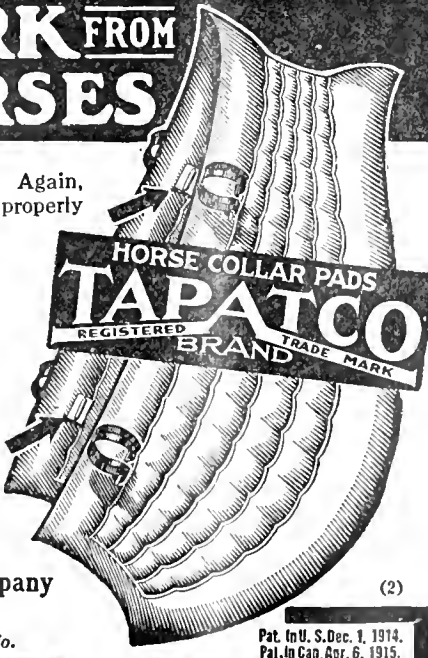
The use of collar pads is humane. Again, your horses will do more work if properly protected by the right kind of pad. TAPATCO is the right kind.

**A NEW AND BETTER HOOK ATTACHMENT**

Consisting of wire staple, reinforced with felt washer (note where arrows point). This gives the hooks a better hold and prevents pulling off. The weakest point is made strong and life of pad greatly lengthened.

**Found Only on Pads Made by Us.**  
Look For The Felt Washer.

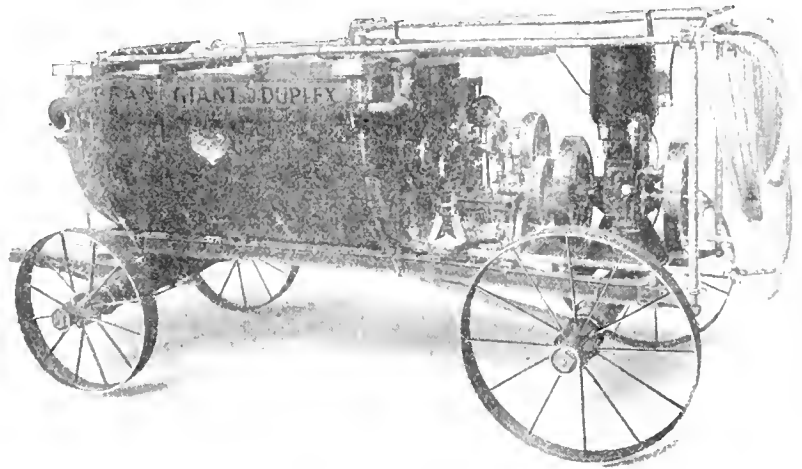
**SOLD BY DEALERS EVERYWHERE**  
**The American Pad & Textile Company**  
GREENFIELD, OHIO  
Canadian Branch: Chatham, Ontario.



Pat. In U. S. Dec. 1, 1914.  
Pat. In Can. Apr. 6, 1915.



# For Continuous Dependable Efficient Work



—get a Bean. It is the 42-centimeter gun in the fruit grower's fight against orchard pests—and it is pounding down the obstacles that stand in the way of bigger crops, better fruit and more profits. That's why the growers of the Northwest unite in their praise of

## Bean Power Sprayers

The spraying season is on. There's no time for delay. We carry a complete stock of repair parts at seven centrally located Northwest points and can make immediate delivery. You will make no mistake in choosing a Bean. It will do your work, do it right, and still be doing it long after cheaply built rigs would have been consigned to the scrap heap. There are scores of reasons why "The Bean is the Best"—let your dealer tell you or read them in our complete sprayer catalog. Send the coupon today.

### BEAN SPRAY PUMP CO.

213 West Julian St.

SAN JOSE, CAL.

#### Bean Spray Pump Co.

213 West Julian St., San Jose, Cal.

Please mail me your complete catalog of hand and power sprayers.

No. of trees ..... kind of trees .....

Name .....

Address .....

I am interested in your Bean Spray Gun.  
I am not interested in your Bean Spray Gun.  
Please send descriptive literature.

**Wrapping Paper.**—On account of the increased cost of all kinds of paper, the expense of wrapping apples will be considerably more than in the past. With the increased cost of production and with the uncertainty about increased selling prices, it seems wise to suggest that the different districts endeavor to economize in paper wherever possible, and therefore the following suggestion seems in order, which is being adopted

in some districts, that growers pack their Fancy in plain paper, instead of printed paper, using only printed paper for the Extra Fancy grades. In all probability the Fancy grade will bring as much money in plain paper as it will in printed paper, because the person who buys a box of apples at a moderate price does not desire to pay for any unnecessary fancy trimmings.

**Standard Box.**—The dimensions of a standard box are contained in a short article appearing in this edition. Every grower should insist upon having standard sized boxes, for the reason that the fruit industry is extending more and more towards standardization in all respects.

## A Message for Fruit and Vegetable Growers

There are many millions of dollars worth of Fruit and Vegetables left to rotten on the ground and many more millions of dollars are paid in freight rates, tin cans and boxes that can and must be saved. We will invest some of our own capital, if you wish, as we are sure that it is to our mutual benefit, if you write us today for particulars. All information on this subject will be given cheerfully and free of charge. If you are in business for making the best profits write now.

### The A. A. A. Evaporator Manufacturing Co., Inc.

2371-73 Market Street, San Francisco, California

We desire to get in touch with Fruit and Vegetable Growers in all parts of the country in order to establish Fruit and Vegetable Drying Plants for single firms that want to build new and up-to-date drying plants for themselves and with two or more Growers, that would favor the construction of a drying plant on a co-operative basis.

## FOR SALE!

Immediate Possession

West Virginia Apple Orchard  
No Irrigation  
Cheap Transportation  
to Markets

188 acres; \$100 per acre. Red sandy loam soil. Fine air drainage. 4,000 trees, 500 15-year-old, 1,000 8-year-old, 2,000 4-year-old. 500 peach. Wine Sap, Grimes Golden, York Imperial. Two good dwelling houses, barn and out buildings, full orchard equipment and horses. Changing occupation. Selling at sacrifice. For further details write.

C. W. TABLER

Martinsburg, West Virginia



**IMPROVE = PROTECT**  
**YOUR FRUIT CROP**  
**Arsenate of Lead**

For twelve years the GRASSELLI BRAND has been used throughout the fruit growing sections of the Northwest where it has given unvarying satisfaction to the user because of its all-round good qualities:

- IT kills the worms.
- IT sticks well to the foliage.
- IT is high in suspension qualities and will always be found dependable and uniform.

**THE FRUIT GROWERS' STANDARD**

**Grasselli Arsenate of Lead Paste**  
**Grasselli Arsenate of Lead Powder**

**The Grasselli Chemical Co.**

Established 1839  
**CLEVELAND, OHIO**

BRANCHES:

NEW YORK  
 PHILADELPHIA  
 BOSTON

ST. PAUL  
 CHICAGO  
 CINCINNATI

DETROIT  
 MILWAUKEE  
 ST. LOUIS

PITTSBURGH  
 NEW ORLEANS  
 BIRMINGHAM

**Pacific Coast Land and Industrial Exposition**

Jean Loughborough, Director of Publicity.

ONE of the most far-reaching of enterprises ever held west of Chicago has been planned to take place in Oakland, California, opening August 15 and continuing until October 15. It is the Pacific Coast Land and Industrial Exposition, and is planned to include representation both in land and manufacturing industries from Washington, Oregon, Nevada and California. The exposition will be held at the Civic Auditorium in Oakland, which faces beautiful Lake Merritt, and will occupy as well the space surrounding the Auditorium and park of thirty acres. Pavilions will be erected for state and county exhibits, manufactures, automobiles, tractors, livestock and poultry, a stadium where out-of-door events such as "round-ups" will be staged, and an amusement zone. Historic pageants, fireworks and other spectacular events will be given on the lake. Indoors there will be amateur sports in the big arena of the Auditorium, where ten thousand people may be seated at one time. Assembly halls, the theater, the ball rooms, rest rooms, public telephone stations of the Auditorium will be turned over to the visitors.

The exposition will be Mission in architectural style and the buildings will be kept in light gray, while fountains, moss and flowers will beautify the board walks. More than fifteen hundred head of livestock will be housed at one time, and generous space is also being arranged for poultry, displays of fruit and dairy products, miniature farms, rice and strawberry fields.

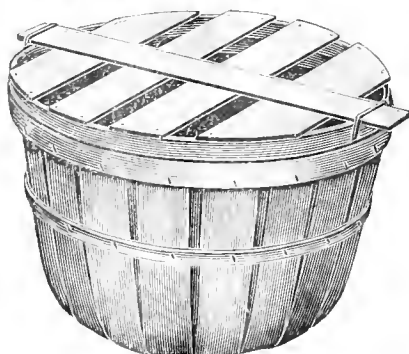
The exposition is planned and fostered by a group of one hundred and forty men of California, identified with the industries and finance of the West, as well as a number of civic workers, and is planned for exploitation of the West. It is not a personal profit-making venture, but a patriotic and philanthropic one, for every assistance is pledged the Federal Government in spreading the food conservation propaganda, as well as public information. There will be special lectures along these lines and demonstrations by public school students throughout the session on special war-time dishes. The headquarters of the exposition are at the Civic Auditorium, Oakland.

UNITED STATES FOOD ADMINISTRATION.  
 Federal Food Administrator for Washington  
 Charles Hebbard.

TO FRUIT GROWERS, SHIPPERS, AND ASSOCIATIONS:  
 After carefully reviewing the work of the joint conference of fruit growers, shippers and box manufacturers from Idaho, Montana, Oregon and Washington, held in Spokane November 24, 1917, I wish to call attention to some very vital points and urge that you co-operate in every way to meet the situation.

The one big problem of the day is labor, and it must be dealt with under present conditions and the conditions confronting the industrial world. The lumber industry has been materially affected by the lack of labor in the woods and, as a result, fewer logs were secured by the mills than in previous years; inefficient labor in mills and factories has had its effect in slowing up production. This, coupled with the fact that the demand for lumber from all sources is gradually increasing, with shipments heavy for this time of year, and that govern-

**Gross Receipts Minus Gross Cost Equals Net Profit**



Ship your Fruit and Vegetables  
 in the Bushel Shipping Basket

**The  
 Universal  
 Package**

and obtain The Best Net Profit.

WRITE FOR PRICES.

**Package Sales Corporation**  
 106 E. Jefferson St., South Bend, Ind.





**LILLY'S BEST BEE SUPPLIES**


**Keep Bees this Summer**  
For pleasure and profit. Besides being interesting there is money in bees. Our line is complete. We are agents for LEWIS BEE WARE. Write for catalog and list of Bee Books.

**The Chas. H. Lilly Co. Seattle.**

**Till Your Orchard**  
as thoroughly as you cultivate your cornfield. Intensive tillage conserves the moisture and sets plant food free. For more and better fruit, use an

**"Acme" Orchard Harrow**  
Works right under the branches. The sharp-ground coulters work the soil easily, cutting cutweeds and leaving a loose dust mulch at the top. Extension and regular styles—1 horse to 4 horse sizes—3 ft. to 17½ ft. wide. Our free book, "The Acme Way to Crops That Pay," points the road to bigger orchard profits. Send today.

**Duane H. Nash Inc.**  
343 A E. Morrison St.  
Portland, Oregon




**National STEAM PRESSURE CANNING OUTFITS**

**A Patriotic Duty**  
Serve by Saving. Can fruits, vegetables and meats. Let nothing go to waste. Every mouthful is needed. The wonderful, simple "NATIONAL" Steam Pressure Canner makes this work quick and easy. Prevents spoilage. Cans anything in glass or tin. Make big profits. Home outfit \$18. Commercial outfits up to \$2,000. Write for FREE catalog.

Northwestern Steel & Iron Works  
820 Spring St. Eau Claire, Wis.

**Yakima County Horticultural Union**

FRED EBERLE, General Manager

**Growers' Agents  
Yakima Valley Fruit**

General Offices, Yakima

WAREHOUSES:  
Yakima, Naches, Selah, Wapato, Exchange and Tieton

COLD STORAGE IN CONNECTION

ment contracts are being accepted by some of the box-producing mills, prompts me to urge all growers and shippers to co-operate with one another, ascertain their requirements, or at least 80% to 90% of same, and place their orders with the box factories, making arrangements for storage and delivery as soon as cars are available. In this connection I might mention that the Car Service Commission of Washington, D. C., promises no relief from the present situation for next spring and summer. By accepting shipments from now on you are not only protecting yourself from a box shortage, but assuring yourself that your supply will be on hand when wanted.

Standard specifications for the coming year were adopted at the conference after careful consideration, sample containers for all fruits and vegetables being on exhibition, which in no way conflict with state or national laws or vary from containers heretofore used by growers and shippers so far as inside measurements are concerned. The changes deal entirely with the thickness and width of the various pieces used in the construction of a box. These changes appear to work to the best advantage of all concerned in the effort to meet the demand of the coming season. The specifications adopted for the standard apple box are as follows:

Standard Apple Box—Two ends, one or two pieces, 11½x10½x1¼; two-piece ends securely fastened with three corrugated steel fasteners. Two sides, one piece each, 19½x10½x¾. Two tops, one piece each 19½x5¼x¾. Two bottoms, one piece each 19½x5¼x¾. Four cleats 11½x1¼x¾.

To meet the unusual situation forecasted for 1918, the following exceptions to the standard specifications were permitted in emergencies:

Exception No. 1—Two ends, one, two or three pieces, 11½x10½x1¼; two or three-piece ends securely fastened with three corrugated steel fasteners at each joint. Two sides, one piece each, 19½x10½x¾. Two tops, one piece each 19½x5¼x¾. Three bottoms, one piece each 19½x3½x¾. Four cleats 11½x1¼x¾.

Exception No. 2—Same dimensions as Exception No. 1 with ¾-inch sides, which can be 50% two pieces when dressed and matched.

Other containers were approved as displayed. The box manufacturers will endeavor to meet all requirements along the lines of the adopted standards and can do so if you will place your orders immediately, so that they can take advantage of the slack season in other departments to divert regular employes to making these boxes.

The purpose in calling the conference of November 24th was to avoid the uncertainties of last season as to deliveries and to prepare for the condition of labor shortage, which will undoubtedly be most serious in 1918. Will you not co-operate by placing orders for boxes and accepting deliveries as early as possible?

UNION PACIFIC SYSTEM.  
Oregon-Washington Railroad & Navigation Company.  
General Passenger Department.  
PORTLAND, OREGON, January 29, 1918.

EDITOR BETTER FRUIT:  
"War Gardens" is a little pamphlet issued by this company for the purpose of stimulating food production this coming season. I am pleased to enclose a copy.

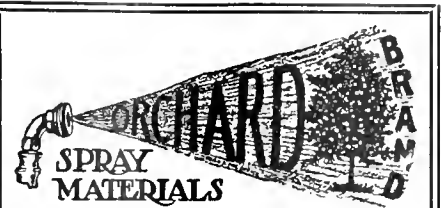
This is in continuation of our efforts along the same line in past years. Under the auspices of the extension departments of the Oregon Agricultural College and State College of Washington last season our campaign throughout Oregon and Washington resulted in the formation of "garden clubs" in nearly all of the places visited, and, according to reports, in a largely increased acreage in gardens and field crops. We aim to continue the work this year in the hope of still greater increase, and this pamphlet is the "first gun."

It is free for distribution. Such mention as you may see fit to make of it to that end may, we trust, be regarded by you as co-operation in behalf of a good cause, and will be much appreciated by all concerned.

Wm. McMURRAY,  
General Passenger Agent.

Subscribe to the Y. M. C. A. and keep on subscribing. They are adding cheer and comfort to the lives of our soldier boys in Europe.

The United States will have 1,000,000 men in France, maybe more. Keep the lines open and the food moving.



**Orchard Brand Standard Arsenate of Lead** (paste) is guaranteed not to contain less than 15% Arsenic Oxide, not to exceed 50% water, and not to exceed 0.5% soluble arsenic. It is a soft, creamy paste, so manufactured, by chemical and mechanical processes, as to give the best possible results under orchard conditions.

**Orchard Brand Powdered Arsenate of Lead** is double the strength of the paste, and when used in water only one-half the quantity of the preparation is required. It is a finely divided powder that mixes readily with water and remains in good suspension when diluted in the spray tank. To control Codling Moth and similar insects, use 2 pounds to 100 gallons of water.

A full line of other materials for control of aphids, etc., ready for shipment

**Responsibility** of the maker of insecticides is so important that you should be most careful of the brand you buy. Reliable sprays will save the crop, while unworthy ones may ruin it.

To get your sprays when needed buy of the dealer handling **Universal and Orchard Brands.**

Write for full information and directions.

**General Chemical Co.**  
Dep't F-5  
777 Royal Insurance Bldg.  
SAN FRANCISCO



# GROWERS!

"Use Your Brains to Wrap Your Fruit"

**STOP! THINK!**

"CARO FIBRE"

## Fruit Wrappers

LOOKS BEST  
PACKS BEST  
PICKS UP BEST

"CARO" DON'T TEAR  
STRONG DRY STRONG WET

## THE BUYER KNOWS "Caro" Prolongs the Life of Fruit

Don't Be Fooled by PRICE. Don't Be Penny Wise

Give Your Fruit a Chance  
**INSIST** on Getting "Caro Fibre"

Your Shipper Can Supply You,  
or Write to

**Union Waxed & Parchment Paper Co.**

F. B. DALLAM, Agent  
Santa Maria Building, 112 Market Street  
San Francisco, Cal.

## Fine Oregon Orchard for Sale

Trees 9 Years Old

13 acres, tile drained and irrigated, water costs \$2.50 per acre, of which about 3 acres are in pears, one acre peach fillers, balance some Newtowns and Jonathans, but mostly Spitzenbergs. Trees in fine condition, showing an abundance of fruit spurs. A few loganberries, blackberries and raspberries.

4-room house with porch; fine barn and sheds; 4 chicken houses, about 20 brooder houses; good well; electric lights and telephone system; on paved street about one mile from station.

The tract is sprayed, pruned and plowed. Title clear.

Price \$500 per acre on easy terms. No trades. Can give immediate possession. The city has good schools, a fruit drying plant for culls, also a Fruit Growers' Association, with large warehouse and a Spray Manufacturing plant.

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One Deming Power Sprayer, "Victory," three h. p. Novo Engine, Duplex pump, 200-gallon tank, two 50-foot leads of hose, pressure gauge and tank filler. Used very little; in good condition. Cost \$380.00. First check for \$175.00 gets complete outfit, f. o. b. this station.

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Stevensville, Montana

### A Good Mixer

Rice has little individual taste and takes on the flavor of the dish with which it is combined. Whether freshly cooked or left over, it can be mixed with the other ingredients in bread making in proportions varying from a 50-50 ratio in cornbread and a two-to-one ratio in wheat bread down to the few left-over grains that should be dropped in somewhere. Don't be afraid to use cooked rice in any kind of bread you are making. One part rice flour to three parts wheat flour makes a loaf of fine texture similar in appearance to the all-wheat loaf. Housekeepers, however, need not wait for rice flour to be manufactured. All they have to do is to combine one-third of steamed rice, well mashed, with two-thirds of wheat flour, made up according to the usual formula for white bread.

**Cornmeal and Rice Waffles.**—Mix together a half cup of cornmeal, a half cup of flour, a cup of boiled rice, a teaspoon of salt, a teaspoon of baking powder, tablespoon melted fat, two beaten eggs and a pint of milk. Beat well and bake in well greased hot waffle irons.

**Rice Gems.**—One egg, one cup milk, one cup cold boiled rice, one cup flour or three-fourths cup of cornmeal, one teaspoon salt, one teaspoon baking powder, one tablespoon of melted fat. Bake in greased hot gem pans.

**Rice Batter Cakes.**—Add to one cup of cooked rice a beaten egg, one-half cup of milk, one teaspoon fat, enough flour to make it hold together and one-half teaspoon baking powder. Cook on griddle and serve with syrup.

### A Cheerful Thought

Be cheerful. Mental depression checks digestion. Poor digestion wastes food. Wasted food helps the enemy. Cheerfulness is conservation.

Don't kick over the meatless and wheatless days. They are helping supply our Allies with food, which means winning the war.

It is better to go without a little and save now than pay indemnity to Germany.

### Abuse of Water on Fruit, Etc.

Continued from page 5.

blight. In reality it was in all cases easily traced to drouth.

We first produced this disease experimentally in 1913 at Wenatchee by subjecting Winesaps to a sudden and severe drouth following a period of normal growth. The following year the disease was occasionally met with, but, as many will recall, the year 1915 was especially unfortunate for growers in the Wenatchee country who were served by a certain irrigation canal. It had been allowed to get into such a state of disrepair that frequent interruptions of water supply were encountered which varied from a day or two to more than two weeks in extent. Naturally orchards on shallow soil or very open soil suffered severe drouth and



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This condition is due largely to the State and County investigations that have been conducted there by Mr. W. H. Volck.

Mr. Volck is now Director of Research of the California Spray Chemical Co., and his recommendations are of the highest authority.

Success in orcharding depends upon the orchard management, and one of the serious factors of orchard management is spraying. Expert opinion can be readily obtained by writing Mr. Volck.

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**ORTHO DRY** Arsenate of Lead has been used in all the fruit growing districts of the Pacific Coast, and has an army of friends who maintain that it is vastly superior to any other lead arsenate.

Successful control of pests depends largely upon the sprays used. You get the best results when you use **ORTHO DRY** Arsenate of Lead.

**California Spray Chemical Co.**

Seattle—Watsonville—New York

many fine crops of Winesaps and Staymans were ruined. The series of drouths which were encountered that year produced no less than four different sets of drouth spots on the same apples. In many orchards trees were killed before the end of the season and many more died during the following summer. The fine feeding roots had been destroyed by the drouth and the trees were unable to recover.

Apples affected with drouth spot seldom fall from the tree and with the resumption of irrigation will continue to grow. The drouth spot itself is simply a collection of cells from which the water has been extracted to such a degree that they are killed. When irrigation is resumed the other cells start to grow again and the apple expands around the dead portion, producing a misshapen fruit covered with depressed spots. The dead tissue is quite shallow, but may be of considerable lateral extent. Apples affected with such acute drouth as described do not usually attain the size of normal fruit and do not properly mature. In storage they appear to keep as well as other apples, but the flavor is flat and something like that of a green apple.

As a result of drouth during the latter part of July and early August there results a condition of apples which we term "punk" for lack of a better name. But this term is quite descriptive. The apples appear mottled in color and when pressed are found to be somewhat rubbery and elastic. The interior is streaked and spotted with brown punky flesh which is rather dry and mealy. This condition has been met with only in isolated sections of orchards in the Northwest, but in the East whole orchards are reported to be involved. York Imperial seems especially susceptible, but it is also found on Ben Davis, Gano and Spitzenberg as well as other varieties.

There are numerous other drouth troubles, so called because drouth enters largely into their cause, but it must be understood that these diseases comprise disorders due in part to other causes, since, as was pointed out earlier, drouth may interfere with the proper nutrition of the plant. A drouth trouble does not necessarily mean that a physical lack of moisture alone is concerned. Different effects follow drouth at different times of the year and on different varieties.

Another drouth trouble which might be mentioned is cork, which is a disease often mistaken for bitter pit, or Baldwin spot, and which has been very prevalent in some sections of the Northwest. In this disease the flesh of the apple is filled with brownish corky spots usually spherical in shape and often confined to the region of the core. They are often found in connection with the main vascular about the core. Sometimes there is no external evidence of the disease, but the surface of the apple over a spot may be depressed and at times there is a sticky yellowish exudate on this area similar to that found in the case of drouth spot. When cut the apple appears to have a cheese-

# Orchard Disking Pays!

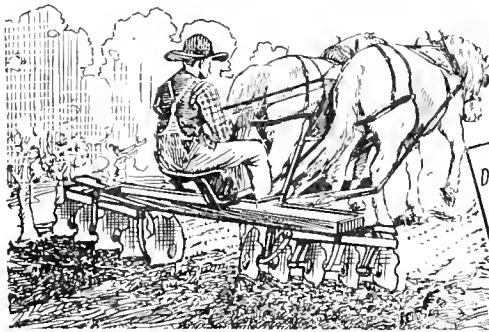
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If your dealer does not carry our Ladder and Pruner in stock, write us direct for prices. Information on our Orchard Supplies gladly given on request.

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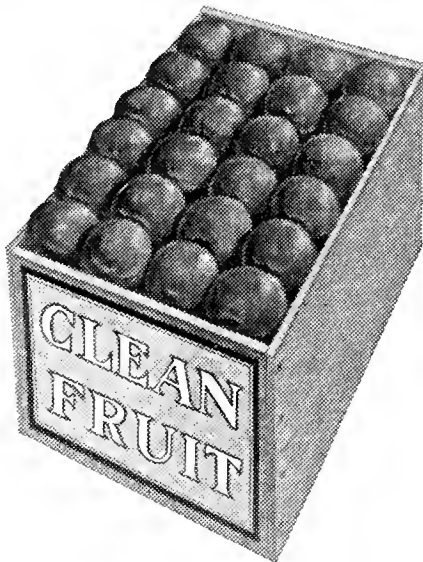
like consistency. The disease is very prevalent on certain open types of soil. Sandy or gravelly soils which are deficient in humus and which have very free underdrainage are usually found in connection with this disease. Our investigations lead to the conclusion that this trouble is a drouth reaction resulting from a water shortage early in the season. Where irrigation is adequately given from the time of blossom-

ing on the disease is eliminated or greatly reduced. Cork was formerly quite prevalent in certain sections which have only recently established irrigation systems. Reports from such sections indicate that since irrigation has been practiced the losses from the disease are much less.

The remedy for this class of diseases is, of course, prevention of drouth. After the disastrous season referred to

in the Wenatchee country the growers assumed control of the canal themselves and have since operated it most successfully. But with the most reliable irrigation service it may sometimes happen that a portion of the orchard will become very dry. There may be spots which are difficult to cover, or the soil may be very open. In either case the remedy is largely in the hands of the grower. He can rearrange his flumes to cover the high spots and he can put more humus into his soil to help hold the moisture. If there is a water shortage, the supply should be spread out as far as possible. Beginning with one furrow to a row as many rows as possible should be covered. After the entire orchard is gone over with this furrow the process should be repeated with another, and so on until the entire space is covered. At such times it is better to irrigate with one furrow and do it thoroughly than to wet the surface only of several furrows.

Passing now to the other extreme we find several diseases caused by an overabundance of water. Possibly the one which first occurs to us is the one caused by alkali. It so happens that the soil in our arid and semi-arid fruit districts is filled with a number of soluble salts popularly spoken of as "alkali," and that some of these salts when present in excessive amount are harmful to vegetation. It would seem that knowledge of this fact, which is so generally recognized, would lead to more precautions than are ordinarily met with to guard against the injury. Only this last summer I visited a prominent and widely advertised irrigation project where hundreds of young trees had been killed by alkali. They had been planted in a pocket on low ground and no drainage was supplied. Seepage from higher ground had carried down among the trees quantities of injurious salts and there was only one result possible in the absence of a drainage outlet. It was an expensive object lesson, for not only was there the loss of the trees in question and of several years' effort in growing them, but a rather unsavory reputation for the project was established. Growers should always see that there is no possibility for the accumulation of seepage or drainage water on their orchards. In the irrigation scheme of orcharding there is as



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In the fall it is too late to repair errors.

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Ordinary plug is false economy. It costs less per week to chew Real Gravely, because a small chew of it lasts a long while.

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*The Patent Pouch keeps it Fresh and Clean and Good  
—It is not Real Gravely without this Protection Seal*

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much importance to getting undesirable water off the land as in getting necessary water onto it.

You have heard considerable about bitter pit, or, as it is more generally known in the Northwest, Baldwin spot. Every grower has undoubtedly experienced some loss as a result of this disease. It is prevalent wherever apples are grown, but certain varieties are especially susceptible. In the past the Baldwin was badly affected, from which fact the name Baldwin spot was given to the disease. Here in the Northwest several of the best varieties are commonly affected, Grimes, Jonathan, Delicious, Winter Banana and Yellow Newtown among others. It most often appears after the fruit is picked and packed. When the grower thinks he has packed an especially fine lot of large apples he is liable to discover that bitter pit has appeared and it is necessary to repack and sort out some of the finest specimens. If the grower does not discover the disease before the fruit is shipped there is a disaffected buyer.

The Department of Agriculture began an investigation of this disease in the Wenatchee Valley in 1913, the work being in charge of Dr. Charles Brooks and the writer. We were convinced by earlier investigations that bitter pit is not due to fungi or bacteria. The theory of arsenical injury was untenable in light of the fact that the disease occurs on both sprayed and unsprayed apples. The question of the influence of soil moisture seemed to be an extremely important one and it has been very carefully investigated. At the beginning of the experiment it was necessary to differentiate between several spot diseases which superficially resemble bitter pit, as pointed out in a paper read before this association in 1915. A complete report of this experi-

mental work is soon to be issued so that it will not be necessary to anticipate this publication except in a general way.

Working on Grimes Golden in 1915 we obtained results as follows two weeks after picking and storing in an ordinary cellar: (1) From heavy irrigation all season, 43 per cent. (2) From medium irrigation all season, 17 per cent. (3) From light irrigation all season, 14 per cent. (4) From medium irrigation until August 24, then heavy, 49 per cent. The fruit was continued in

cellar storage and by November 9 the per cent of diseased apples had increased from 9 to 27 per cent above the amount shown on September 29, but the relative amount of bitter pit from the different treatments was not changed. After November 9 there was very little increase of the disease.

In 1916 we endeavored to obtain further data on the effects of soil moisture late in the season, and on abrupt changes in the amount of soil moisture. Results secured on October 18, or about one month after picking and storing



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the diseased apples in the cellar, were shown to be as follows: (1) From heavy irrigation all season, 20 per cent. (2) From medium irrigation all season, 10 per cent. (3) From light irrigation all season, 12 per cent. (4) From medium irrigation until August 1, then heavy, 29 per cent. (5) From medium irrigation in June, followed by heavy irrigation in July and light in August and September, 5 per cent. (6) From heavy irrigation in June, followed by light irrigation in July, but heavy thereafter, 35 per cent. The apples were held in storage until the following March without affecting the relative contrasts above reported, and which are seen to be in general agreement with the results obtained the year before, and which further emphasized the importance of heavy late irrigation in the production of the disease.

Data were also obtained in both years on the amount of bitter pit appearing in the various sizes of apples secured from the different plots, but the details of this work need not be given here. In general we may say that we found large apples more susceptible to bitter pit than the small ones, but size could not be taken as a measure of susceptibility since we found the small apples on the heavily-irrigated plots often developed more disease than the large apples on the lightly-irrigated ones.

The results of the various experiments have been uniformly consistent in showing that heavy irrigation favors the development of bitter pit. Heavy irrigation throughout the season has given less of the disease than medium irrigation followed by heavy, and light irrigation throughout the season has resulted in more bitter pit than heavy irrigation followed by light. The amount of irrigation in August and September has apparently largely determined the amount of disease. Sudden changes in the amount of soil water do not appear to have had any effect on the amount of disease. Large apples have been more susceptible to bitter pit than small ones, but the increase in the disease from heavy irrigation has been almost as great on the small and medium-sized fruit as on the large. Apparently apples are susceptible to bitter pit not merely because they are large, but rather because of conditions that may sometimes accompany an increased growth. The results as a whole point to the harmful effects of heavy

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late irrigation regardless of the size of the fruit.

Large apples command the highest prices and growers are naturally anxious to produce a maximum of the large sizes and hence the practice of pouring on the water late in the season to "swell" the fruit. This is a positive abuse of water. If the variety is susceptible to bitter pit the apples are rendered more susceptible. All varieties when grown to excessive size are notoriously poor keepers. As a rule the larger the apple the shorter is its storage life.

The result of another abuse of water on trees is found in winter injury. There are two types of winter injury, both more or less dependent on soil moisture. The first type is found in cases where irrigation is continued late in the fall, continuing a state of vigorous wood growth until freezing weather is encountered. In this case the new wood is not allowed to mature and harden enough to withstand the low temperatures and the tender growth is killed. Another type of winter injury is found in cases where the trees are allowed to dry out too early in the fall,—when irrigation is discontinued too soon. Last year this type of injury was quite common in certain parts of the Okanogan country. It appeared most frequently on trees growing on open gravelly knolls and where irrigation was suspended as early as September 1. Nearby trees on heavier soil and those which had received later irrigation showed no signs of injury.

Possibly much of the foregoing discussion is an old story to most of you, but it cannot be emphasized too often that in the use of irrigation less rule of thumb and more intelligent application of established principles will bring best results. If irrigation were more often considered for its effect on the health of the trees and not merely as a necessary substitute for natural rainfall we would have fewer mysterious tree ailments. I venture to say that not one grower in a hundred uses a soil auger to determine the adequacy of his irrigation, and that not many more have any other reliable means of knowing what the soil-moisture conditions in their orchards may be. It is a very important matter and one that should not be left to guess work.

In preparing this article I was asked to take up the subject of "collar rot,"

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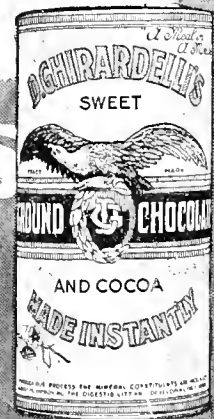
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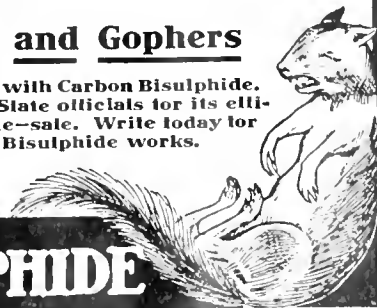
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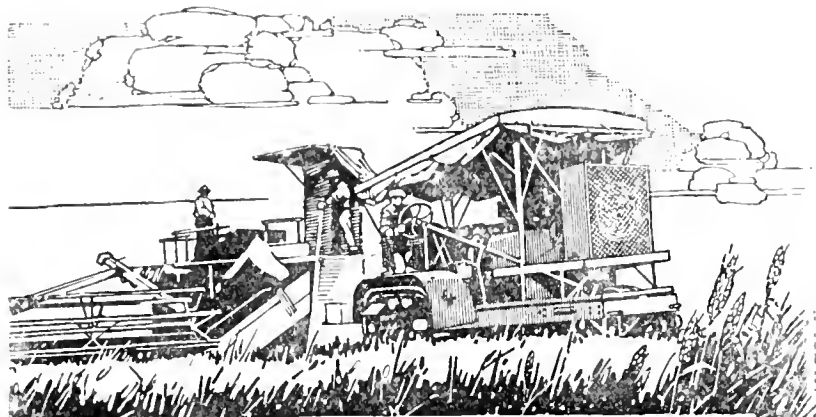
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which is generally regarded as associated with an abuse of irrigation water. I am not sure that I can agree that it is due to an abuse of water, primarily, but it is of so much importance to the orchard industry, not only of the Northwest, but of the whole country as well, that we can well devote some discussion to it. We have heard many theories as to the cause of the disease. We have heard that it is due to alkali troubles; that it is due to irrigating too close to the trees; that it is due to winter injury; and that it is due to a dozen other causes, but really there has been very little knowledge about the disease in the Northwest. No doubt I shall startle many of you when I say that a large proportion of the cases of "collar rot" are in fact "collar blight" and due to fire blight directly. The other factors cited above as causes may contribute to the prevalence of the disease and in some cases may afford the blight bacteria an easy entrance for the further progress of their work, but it is certain that much of the trouble can be traced to fire blight. Why the blight should appear in this localized part of the tree and not in the tops is not known. Varieties known to be susceptible to blight, such as Spitzenberg, Grimes and Jonathan, are also most subject to collar rot. Aside from the regular form of fire blight, if one may be permitted to assign it a "regular" form, the collar rot disease is undoubtedly the most serious menace to the orchard industry of the Northwest. It should be dealt with most vigorously, and systematic attempt made to hold it in check. Where it is found in time it may be controlled by cutting out the infected portions and disinfecting the wounds in the manner you are familiar with in the case of blight in the tops of the trees. Covering the wounds with melted grafting wax after disinfecting them will facilitate healing, but in small cuts this is not necessary. In case a tree is girdled more than half way around it is a large question whether it is worth while to bother with it, as the chances are that it will not recover. The practice of planting small trees

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around the trunk of a girdled large tree, and bridge grafting is not worth the trouble. Bridge grafting will save many trees if they have enough roots left to graft to, but a better practice is to systematically examine all of the trees in the orchard to detect the disease before it has progressed so far as to require such treatment. I recall one orchard with a number of collar-rotted trees which the grower was endeavoring to save by bridge grafting. Most of them had progressed too far to expect any results. It occurred to me that where so many advanced stages of the disease were found there must be a number of incipient cases. On the five acres we found six trees showing visible signs of collar rot in the sparse, yellowed and sickly foliage, the small apples produced in such abundance, and the slight new wood growth. I suggested to the grower that he uncover the crown of every tree, carefully removing the soil so as not to injure the trunk or roots, and that in case any early stages of the disease were found that the infected parts be cut out and treated the same as for blight. This was done and fifteen such cases were found and successfully treated. In none of these cases could the presence of the disease be detected in the tops as no symptoms of collar rot were shown. It would appear that this should become a regular orchard practice if collar rot is known to exist in the orchard or on neighboring tracts. The disease has become so widespread that it is now difficult to find a single orchard where some evidence of the collar rot cannot be found. Careful examination to detect the early stages of the disease involves considerable labor, but if the value of the trees is considered it is a small effort comparable with the results secured.

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**Roast Rabbit.**—Wash the rabbit with soda water. Lay in salted water for an hour. Stuff the rabbit with onion, celery or chestnut dressing and sew up. Line a baking pan with the following: One onion and one carrot cut up, a few cloves, whole peppercorns and one bay

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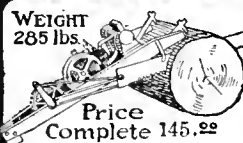
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## Statement of the Ownership, Management, Circulation, Etc.

Required by the Act of Congress of August 24, 1912,

### of "Better Fruit," Published Monthly at Hood River, Oregon for April, 1918

State of Oregon,  
County of Hood River, } ss.

Before me, a notary public in and for the state and county aforesaid, personally appeared E. H. Shepard, who having been duly sworn according to law, deposes and says that he is the editor and business manager of "Better Fruit," and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, (and if a daily paper the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor and business manager are:

Publisher, Better Fruit Publishing Company, Hood River, Oregon.

Editor, E. H. Shepard, Hood River, Oregon.

Managing editor, E. H. Shepard, Hood River, Oregon.

Business manager, E. H. Shepard, Hood River, Oregon.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders, owning or holding one per cent or more of the total amount of stock.)

Better Fruit Publishing Company, Inc., Hood River, Oregon.

E. H. Shepard, stockholder, Hood River, Oregon.

3. That the known bondholders, mortgagees, and other security holders owning or holding one per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.) None.

4. That the two paragraphs next above giving the names of the owners, stockholders and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company, but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication, sold or distributed through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is: (This information is required from daily publications only.)

(Signed)

E. H. SHEPARD,  
Editor and Business Manager.

Sworn to and subscribed before me this 21st day of March, 1918.

(Seal)

ALTON W. ONTHANK,  
Notary Public for the State of Oregon.

(My commission expires May 29, 1919.)

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In the last quarter of a century Sherman, Clay & Co. have occupied a position on the Pacific Coast second to none, building carefully from day to day a reputation for selling only goods of merit, of true musical worth and asking only fair and consistent prices.

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If you are in the market for a Piano or a Player Piano, it is to your interest to call upon us or write us for information—to see what we have to offer.

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*We are dealers in Steinway and other Pianos,  
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leaf. Rub rabbit with salt and pepper and lay it upon this dressing, putting fat of oleo here and there over the rabbit. Sift a little flour over the top and pour a cup of stock or hot water into the pan. Cover tight and roast, basting frequently. When ready to serve, put on a hot platter and garnish with slices of lemon and cranberry jelly or currant jelly.

**Spiced Rabbit.**—Wash rabbit in soda water. Disjoint hind legs; cut off the saddle; remove the forequarters, making in all nine pieces. Lay in salt water about an hour. Place rabbit in dish with vinegar poured over it and let it remain over night. Remove from pickle, salt each piece lightly and arrange in baking pan. Cut up an onion in it, adding one bay leaf, a dozen pepper corns, part of a celery root, a cup of stock and a little vinegar from the pickle. Cover with another pan, put in a quick oven and bake an hour. Remove upper pan, and brown, basting frequently. When brown, remove and arrange pieces on a hot dish. To the pan add a tablespoon of flour browned in fat drippings and a cup of stock. If not spiced enough, add pepper and a very little mace. If desired, add a can of mushrooms that have been drained and washed. Pour the gravy over the rabbit, dust with chopped parsley, and send to the table.

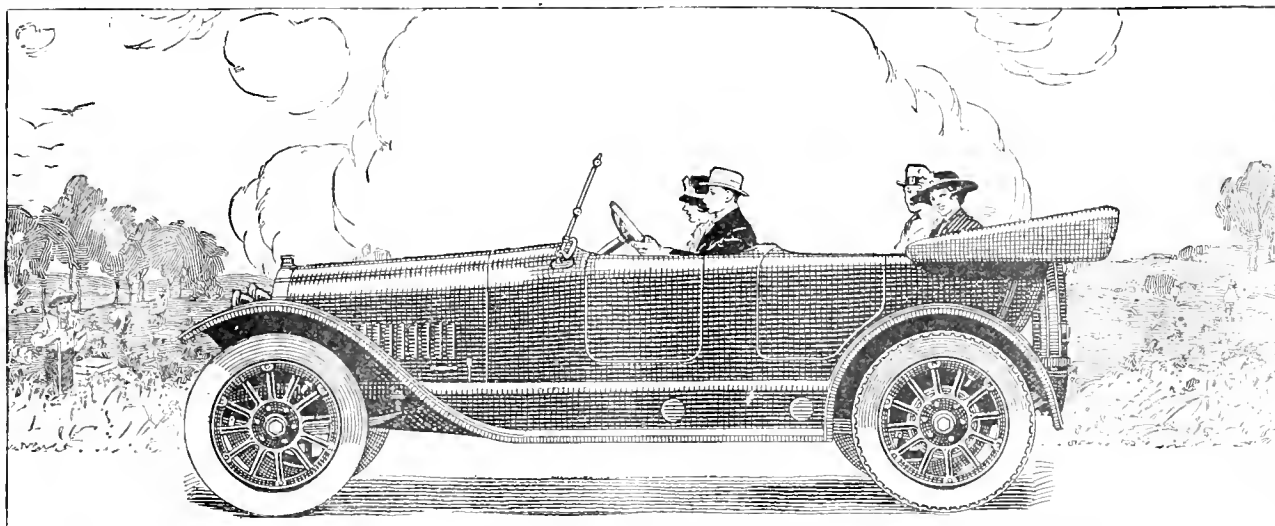
## Boiled Rice

One-half the battle in teaching people to eat rice lies in giving instructions for its proper preparation. In the Southern States and Chinese restaurants it comes to the table with each snow-white grain distinct and separate from the rest. Rice can be successfully cooked either by boiling in a large quantity of water and draining, or by boiling with just enough to swell the grains perfectly. Let "Black Man" describe the first process:

**Boiled Rice No. 1.**—"Black Man's" recipe to prepare rice is, "Wash him well, much wash in cold water, the rice flour make him stick. Water boil already very fast. Throw him in, rice can't burn, water shake him too much. Boil quarter of an hour or little more; rub one rice in thumb and finger, if all rub away him quite done. Put rice in colander, hot water run away; pour cup of cold water on him, put back rice in sauce pan; keep him covered near the fire, then rice all ready. Eat him up!"

**Boiled Rice No. 2.**—Always wash the rice until all cloudiness has disappeared from the water. Sprinkle gradually a cup of rice in a pint of vigorously boiling water, salt to taste, boil for fifteen minutes, then place on the back of the stove where it will finish swelling without burning. If a gas stove is used, turn the gas low and put an asbestos mat under the kettle. Cook in a covered vessel.

**Steamed Rice.**—To one pint of washed rice add one pint of water and one-half teaspoon of salt. Place in a covered steamer and cook with live steam for one hour. Stir and take up with a fork to prevent gummy and lumpy appearance. Never stir rice with a spoon.



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## The Greatest Car

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**Y**OU will find no car like the Mitchell Light Six which sells at \$1250 now.

It is big and roomy, with a 120-inch wheelbase. Its 40-horsepower motor exceeds every requirement.

It is a marvelous car in its strength and endurance. All safety parts are oversize. The parts which get a major strain are built of Chrome-Vanadium steel. To every part we apply the most radical tests. Every part and process gets the most exact inspection.

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They want a lasting finish. So the finish coats on Mitchells are fixed by electric heat.

They want a car to be proud of—handsome and impressive. A hundred details in this Mitchell adds some luxury or beauty.

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The price is due to factory efficiency. We build the complete car—chassis and body—in a mammoth, model plant.

Waste has been eliminated. Production cost has been minimized by countless expert ways. Years have been spent to equip this plant to build this type economically.

Write for our catalog, then see this car—our latest—at your nearest Mitchell Showroom. It comes in five body styles. Write today, for we cannot guarantee this price against advance.

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120-Inch Wheelbase      40-Horsepower Motor  
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**MITCHELL MOTORS COMPANY, Inc., Racine, Wis.**



*The World*

*Our Orchard*

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# PRIVATE SALE vs. AUCTION

Experience has demonstrated clearly the manifold advantages of sale by private treaty, which method is now acknowledged on all sides to show more satisfactory results than the auction.

Assuming that you are anxious to dispose of your fruit in the best possible manner and to the best possible advantage we, as **PRIVATE SALESMEN**, have no hesitancy in laying our claim before you.

Whether you prefer to sell your fruit on an outright f.o.b. basis or prefer to have it handled for your own account on a consignment basis, both of which methods are entirely agreeable to us, the fact remains that the firm of

**Steinhardt & Kelly**  
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is in position to give you the best possible service. Our reputation of "Never Having Turned Down A Car" although practically 90% of our business is done on an outright purchase basis, is a record of which we feel deservedly proud.

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*Our Market*

*The World*

Lo - no 12.

# BETTER FRUIT

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VOLUME XII

MAY, 1918

NUMBER 11

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# food

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- 1 - buy it with thought
  - 2 - cook it with care
  - 3 - use less wheat & meat
  - 4 - buy local foods
  - 5 - serve just enough
  - 6 - use what is left
- 

# don't waste it

U. S. FOOD ADMINISTRATION

BETTER FRUIT PUBLISHING COMPANY, PUBLISHERS, PORTLAND, OREGON

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Subscription \$1.00 per Year in the United States; Canada and Foreign, Including Postage, \$1.50.

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First—Tires that will travel the greatest number of miles per dollar of cost.

Second—Tires that will give you the greatest use of your car.

United States Tires are long mileage tires. They reduce your tire expense by the mile and by the season.

United States Tires are sturdy tires. They are built for endurance. They will give you continuous, uninterrupted service, enabling you to get the most out of your car.

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Economy is a national duty,

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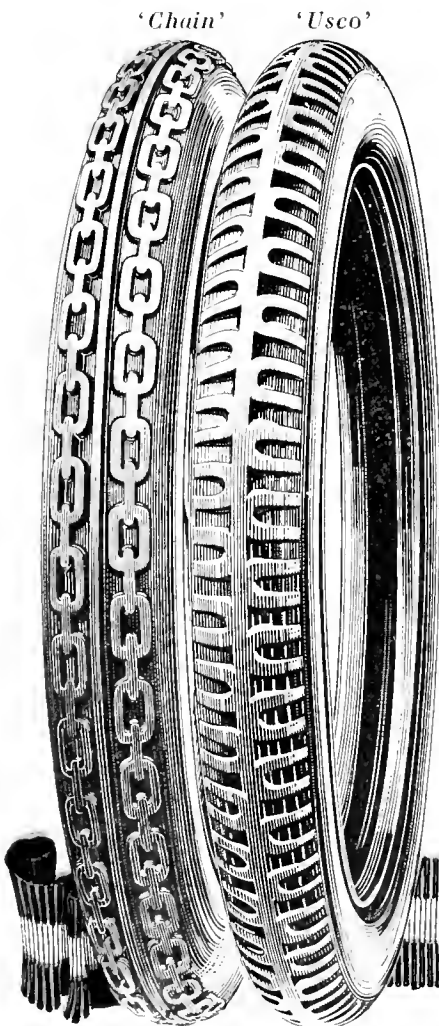
—the country is calling on every farmer to further increase his magnificent efforts of last year toward supplying food for the World.

Equip with United States Tires. There is a United States type and tread to suit every car, every road, every service.

The nearest United States Sales and Service Depot will be glad to help you in selecting right tires for your needs.

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*United States Tubes and Tire Accessories Have All the Sterling Worth and Wear that Make United States Tires Supreme.*



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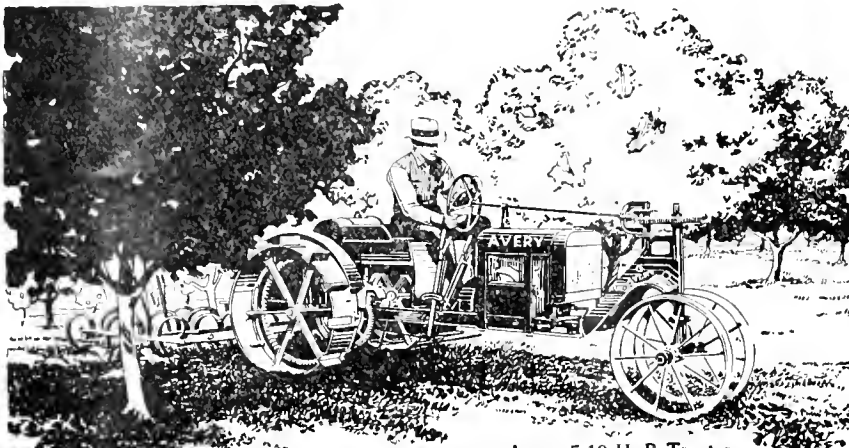
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Winner of first prize at the National Apple Show, 1916,  
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Only 22 miles from Spokane, Washington  
Gravity Irrigation. Healthful Climate  
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Tracts sold on easy monthly payments.  
Send for free booklet.

Arcadia Orchards Company  
DEER PARK, WASHINGTON



Avery 5-10 H. P. Tractor

## The Logical Tractor for Orchard Work

**T**HIS Avery 5-10 H. P. Tractor gives you the ideal power for orchard cultivating. Low enough for good clearance under the trees—powerful enough to pull the usual size cultivator—built throughout with sturdy Avery construction, which means long service at lowest cost.

In addition, this tractor can do lots of your other farm work. It is just the size for doing all the work on small farms or all the light belt and traction work on large farms. It's the smallest and lowest priced tractor made. Operates on kerosene.

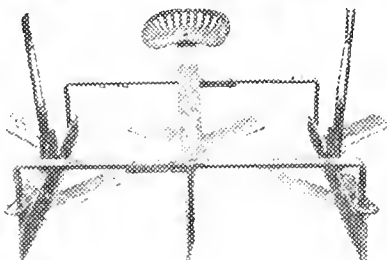
Avery Tractors are made in 6 sizes—from this small 5-10 h. p. up to a large 40-80 h. p. There is also an Avery Tractor Plow in light and heavy styles to fit every size tractor, and an Avery Grain Saver Thresher to fit every size run, and an Avery Motor Planter and Cultivator for planting and cultivating corn, potatoes, or any row crop.

**Write for the 1918 Avery Catalog** showing these machines in their actual colors and giving the facts on motor farming.

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Cuts seven feet or less, weighs 230 pounds and is all made of steel. The Golden Gate Weed Cutter is the greatest of its kind on the market. For workmanship, simplicity and durability it cannot be excelled, as it does its work to perfection. Those who are using it say that no money could buy it if they could not get another. It not only cuts all kinds of weeds, but cultivates the ground as well. One user said that it has saved him \$200.00, as he did not have to plow after using.

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Manufactured by **C. C. SIGURD**  
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This condition is due largely to the State and County investigations that have been conducted there by Mr. W. H. Volck.

Mr. Volck is now Director of Research of the California Spray Chemical Co., and his recommendations are of the highest authority.

Success in orcharding depends upon the orchard management, and one of the serious factors of orchard management is spraying. Expert opinion can be readily obtained by writing Mr. Volck.

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**ORTHO DRY Arsenate of Lead** is a light, finely divided powder, equally suitable for either wet or dry application. The convenience and ease of handling should recommend it to any progressive fruit grower; only half the weight to haul; no rubbing or or mixing; just put it in the tank and start the agitator.

**ORTHO DRY Arsenate of Lead** has been used in all the fruit growing districts of the Pacific Coast, and has an army of friends who maintain that it is vastly superior to any other lead arsenate.

Successful control of pests depends largely upon the sprays used. You get the best results when you use **ORTHO DRY Arsenate of Lead**.

**California Spray Chemical Co.**

Seattle—Watsonville—New York



# BETTER FRUIT

AN ILLUSTRATED MAGAZINE PUBLISHED MONTHLY IN THE INTEREST OF MODERN, PROGRESSIVE FRUIT GROWING AND MARKETING

## Essentials of Air-Cooled Storage Houses

W. C. Quick, Yakima, Washington

**T**HE term "air-cooled storage" is used to designate that method of storage which utilizes the natural atmospheric temperature for cooling. It differs essentially from cold storage in that no mechanical means of refrigeration is supplied to cool the fruit or to maintain it at storage temperature. It does not and cannot take the place of cold storage, but it does supply a satisfactory method for the keeping of certain varieties of apples which go onto the winter market.

Having in mind the recent car shortage which the country has experienced, I think it is not necessary for me to point out the pressing need for storage facilities in the apple producing regions. I do want to call your attention in passing, however, to the use that can be made of the air-cooled storage in solving our labor difficulties at harvest time. The shortage of labor has been serious during the past two years and promises to become more serious with the continuance of the war. Air-cooled storage will help to solve the problem in this way:

Fruit can be stored loose in boxes, thereby deferring the labor of packing from the rush of harvest time when laborers are scarce to the dull months of winter when laborers are comparatively plentiful. Where the storage house is situated on the ranch, the labor of packing is often performed by the rancher and his family or hired man at a time when they would otherwise be unemployed. The plan, therefore, has the double advantage of releasing packers for other work during the busy harvest season and of furnishing employment for the rancher and fruit laborers during the dull season.

The Department of Agriculture began an investigation of air-cooled storage houses in the Northwest in 1915. Believing that apples keep best at a temperature of 32 degrees, we hoped to learn what type of storage house could be cooled most rapidly in the fall, what provisions are necessary for the maintenance of storage temperatures, and what provisions are necessary to prevent shriveling of the apples in consequence of dry atmospheric conditions. In order to learn about the necessity for ventilation, we placed recording thermometers in a number of storage houses. These instruments were placed in a representative part of the storage room, neither in the coldest nor in the warmest part. The instruments were left from the time the fruit was put into storage until it was taken out in the spring, and they kept for us a continuous record of the air temperature within the house. Some of the thermo-

graphs had humidity recorders attached to them. We have used electrical thermometers for recording fruit temperatures within large blocks of fruit. They were necessary to determine whether there was a uniformity of temperature throughout the storage room.

But we wanted to compare the fruit stored in one house with the fruit stored in some other houses which were built after a different plan. This we did by placing comparable lots of fruit in different houses and making withdrawals from storage at three times during the winter for the purpose of comparison.

With profound sorrow we announce  
the death of

**Edward H. Shepard**

on Monday, the twenty-ninth of April  
Nineteen hundred and eighteen

Better Fruit Publishing Company  
Portland, Oregon

From the investigations we have concluded that the three features of paramount importance in the construction of air-cooled storage houses are ample provision for ventilation, for insulation, and for humidity control. In order to emphasize the necessity for such provisions let me call your attention to the condition which existed in some poorly constructed basements on December 10 of the past year. At that time we inspected the fruit and took temperature records in a number of storage houses. In poorly constructed basements we found the temperature ranging from 47° to 52° in the greater part of the fruit. Needless to say, the apples were riper, softer, greasier and in some cases more shriveled than they should have been. It is evident that such condition was avoidable, because on the same date, in the same valley, the apples in well ventilated houses were firm and bright.

The one feature that we have found most important, and at the same time least understood, is ventilation. In the Yakima Valley in 1915 I think there was one house with adequate ventilators. The greatest misconception was held in regard to the capacity required in the ventilation system, probably because the builders had not considered the amount of air necessary to cool a house full of fruit. At best the fruit in air-cooled storage cools very slowly. The statement has been made that apples in this type of storage ripen more during the first three or four weeks than they do in all the rest of the

storage period, lasting ordinarily until March 1. Probably such is the case; at least it is true of poorly ventilated storage houses. The New Hampshire Experiment Station reports indicate that the ripening processes of apples go on about three times as fast at temperatures of 45° to 50° as they do at 32°. In general, the quicker the cooling and the lower the temperature at which the fruit is held, provided it is not below freezing, the more effectively are these life processes retarded, and the longer the fruit can be held at maximum dessert quality.

Another object of quick cooling is to prevent the germination of fungus spores and to retard the growth of fungus organisms which cause the decay of fruit. Quick cooling also retards the development of scalds and spots which occur in storage and which greatly depreciate the value of the fruit. We must, therefore, conclude that rapid cooling is desirable. To cool a large mass of fruit requires the circulation of immense volumes of air. The amount of course varies with the temperature of the incoming air and with the temperature and amount of fruit. The air must pass through the building in such a way as to come in contact with all the fruit. In order to secure a free and abundant flow, a free and unobstructed passage must be provided. A free and uniform distribution of air throughout the storage room demands that the house be supplied with numerous large windows in all four walls for the admission of air, a false (slat) floor under which the air can spread, and one or more outlet flues leading up from the ceiling and out through the roof. Large doors in the walls of an above-ground storage are beneficial on windy nights. The same principles are applied in the ventilation of a storage house by the gravity method as are employed in securing a draft through a furnace. Warm apples take the place of the fire, windows take the place of dampers, and a flue takes the place of the smoke stack. The cold air outside the building is heavier than the warm air inside, and pressing in through the intake windows it crowds the warm air out through the flues. The difference in the weight of the incoming and outgoing air is not great and the circulation is slow. It is therefore necessary that the windows be large and direct. The necessity for capacious ventilators cannot be over-emphasized.

In the fall of the year, when it is desirable to cool the fruit rapidly and the atmospheric temperatures are not below 29°, often much higher, an ideal

Continued on page 23

# By-Products Investigations—Need of Evaporators

By Professor C. C. Vincent, University of Idaho, Moscow, Idaho

ACCORDING to reliable data, compiled by the State Horticultural Inspection Department, the fruit acreage in Idaho is approximately as follows: Apples, 110,000 acres; prunes, 12,000 acres; peaches, 5,000 acres; mixed fruits, 10,000 acres. In 1915 there were shipped out of the state 1,125 cars of apples, 1,115 cars of fresh prunes, 175 cars of peaches and 20 cars of pears.

With this large acreage coming into bearing, it shows the necessity of evaporating plants, or a large central plant in each locality to take care of the fruits and vegetables that cannot be marketed or utilized as they ripen. That the people of Idaho have not been utilizing their food supply is shown in Mr. Sampson's report to the Byproducts Congress, when he stated that Idaho in 1913 shipped out 175 tons of dried apples, 50 tons of prunes and 75 tons of other dried fruits, while the same year the imports amounted to 185 tons of dried apples, 75 tons of dried prunes, 150 tons of dried peaches and 100 tons of other dried fruits. Similar conditions have also existed throughout the other states in the Pacific Northwest, as shown in his report.

Since the entrance of the United States into the world war the probability of a food shortage the world over, labor shortage, and car shortage, many farmers of the state have seen the necessity of utilizing as many of their products through the evaporator as possible. During this past year there have been erected four large evaporating plants, two at Meridian, Idaho; one at Weiser, Idaho, and one at Payette, Idaho. Mr. Guy Graham, state horticultural fruit inspector, estimates that there will be approximately 350 car-loads of apples evaporated in these plants this fall. There are at the present time the following byproducts plants operating in Idaho:

## Byproducts Plants.

Inland Empire Canning Co., vinegar, canned products, Cœur d'Alene.  
 Freepons & Son, cider, Kellogg.  
 Leo Bros. Vinegar Co., vinegar, Moscow.  
 Juliaetta Cannery, canned products, Juliaetta.  
 Oregon Packing Co., canned products, Lewiston.  
 Idaho Vinegar & Pickle Co., vinegar and pickles, Payette.  
 Denney & Co., dried apples, Payette.  
 Idaho Products Co., dried apples and prunes, Payette.  
 Weiser Food Products Co., dried apples, Weiser.  
 Idaho Canning Co., canned products, Payette.  
 Winn Bros., dried apples, Fruitland.  
 New Plymouth Evaporator, prunes, New Plymouth.  
 South Idaho Fruit Co., dried apples and prunes, Meridian.  
 Idaho Products Co., dried apples and prunes, Meridian.  
 Middleton Fruit Products Co., cider, Middleton.  
 John Steele, dried prunes and apples, Parma.  
 Overland Beverage Co., sweet cider, Nampa.  
 Twin Falls Vinegar & Cider Co., vinegar, Twin Falls.

A glance at the map of Idaho will show that these plants are not sufficient to prevent the enormous waste that is bound to occur as our fruit trees come into bearing and our farms become more productive.

It is therefore up to every large fruit grower, co-operative orchard company or small farmer in every community to prevent the waste that annually occurs through windfall, cull and unmarketable fruits and vegetables. This can be done by the construction of small evaporators or canning plants. By so doing we all become important factors in this, our national crisis.

That these small plants will add materially to the net profits of the farm, and that they are a success in the East, is pointed out by Mr. Secley of New York. He says that the small unit size dried makes the finest stock, and that there are hundreds of them in Wayne County, New York, while in the vicinity of Solus one can see a dozen in about any direction he may look, and in these plants the best grades of evaporated stock are made.

Believing that there was a future for the small evaporator in the State of Idaho, as well as opportunities for sun drying, and realizing that possibly through this medium commercial lines of work would be further developed, the horticultural department of the University of Idaho has been gathering data on the following problems:

- (1) The sun drying of fruits and vegetables.
- (2) Relative merits of different types of evaporators, such as cook stove, hot air and steam.
- (3) Time required to evaporate different products, temperature required, number of pounds of fresh fruits and vegetables to make one pound of dry, and moisture content of dried products.

## Sun-Drying.

In view of the fact that California growers have been so successful with sun-dried fruits, it was thought that in portions of Idaho fruits and vegetables could also be sun-dried successfully. A few remarks, therefore, concerning the methods followed in sun-drying fruits in California may be of value. While a large number of growers dry their own fruit, the majority sell their products to second parties whose exclusive business is drying. The main reason why fruit can be so successfully sun-dried in California is due to the fact that in many districts of the state there is no dew and very seldom any rain during the summer, so that it is safe to leave the fruit out continuously until dried. In case of rain, the trays are piled one upon the other.

Most of the large drying grounds, consisting of several acres in extent, are worked on a co-operative basis, which insures the best available prices to the members for their fresh fruits. It is no uncommon sight to see twenty to twenty-five acres covered with one kind of fruit spread on trays. Probably the largest drying ground in the world is located in the Santa Clara Valley. The arrangement of the drying grounds in practically all districts of California are similar. The equipment necessary to operate a plant of this kind consists of

the main building, where all business is transacted, such as receiving and weighing the fruit, preparing for drying, etc. Conveniently located to this building and facing the dry grounds are the sulphur houses. These houses, which are air-tight, are made of wood, tongue and grooved, and the joints are filled with white zinc. Houses of this kind are necessary, because most of the fruits are treated to the fumes of burning sulphur before exposing to the sun.

Tracks consisting of light rails run into the sulphur houses, so that the trucks containing the trays of fruit can be pushed in and out. To facilitate the handling and reduce the cost to a minimum, tracks run the full length of the drying grounds. Wooden trays three feet by six feet are used. When the business is conducted on a commercial scale, much of the equipment as described above is needed. On the other hand, if a grower wishes to go into the business on a small scale, very little equipment, aside from trays, is needed.

In Idaho there are a great many fruits and vegetables that can be utilized by sun-drying. It is very evident, as demonstrated by the experiments conducted at the University of Idaho, that such fruits and vegetables as apricots, cherries, peaches, raspberries, loganberries, dewberries, peas, beets, turnips, beans, carrots and corn can be dried successfully. In the table following are shown a number of different kinds of fruits and vegetables that have been sun-dried, and the length of time required to dry.

Products	Weight Fresh	Weight Dry	Time to Dry
Peas .....	100	25	37 hours
Beets .....	100	11	4 hours
Turnips .....	100	8	7 hours
Beans .....	100	12	19 hours
Carrots .....	100	15	11 hours
Corn .....	100	28	30 days
Currants .....	100	28	4 hours
Raspberries .....	100	20	7 days
Pie cherries.....	100	20	8 days
Sweet cherries.....	100	25	9 days
Apricots .....	100	20	46 hours

The length of time it takes to sun-dry fruits and vegetables depends largely upon climatic conditions, size of the pieces and the locality. If the weather is unsettled it will take much longer to dry the products. The fruits and vegetables indicated in the foregoing table were dried under the most favorable conditions.

## Cook Stove Evaporator.

For the family that wishes to dry only enough fruits and vegetables for their winter's supply the small cook stove evaporator is recommended. Sun-drying in the humid sections of the state, where there is more or less rain during the summer, should not be attempted. As it is our duty at the present time to conserve the present food supply, every family in the Northwest should own one of these small cook-stove evaporators. The products dried in the sun, on the stove or in the larger evaporators require no sugar, no special containers, and will keep indefinitely.

Continued on page 19

# The Strawberry Root Weevil (*Otiorhynchus Ovatus*)

By A. L. Melander, Entomologist, Washington Agricultural Experiment Station. Read at Thirteenth Annual Meeting Washington State Horticultural Association, North Yakima, Washington

IT was in May, 1904, that the experiment station first received intimation that the dreaded strawberry root weevil, *Otiorhynchus ovatus*, had reached Washington. A bundle of dead plants was sent in from the extensive berry fields on the shores of Lake Washington near Seattle, and in the midst of the package were two or three weevils. A couple of years later Fruit Inspector Pendleton of Seattle informed us that the insect had destroyed several hundred acres of berry plants from this infestation. Since that time we have received specimens from several places near Spokane, from Walla Walla to the Milton-Freewater district, from Kennewick, North Yakima, Everett, Anacortes, Puyallup and Olympia. There are also two closely related sister species, *O. sulcatus* and *O. rugifrons*, which occur in Washington, sometimes living with the small root weevil and sometimes working in new territory. We have seen these larger weevils from Pullman, White Salmon, Everett, Anacortes, Port Townsend, Puyallup, Kelso and Washougal. The strawberry root weevils have thus already invaded the principal berry regions of the state.

The small root weevil of the strawberry is a European emigrant which first reached the Atlantic shore about fifty years ago. The writer collected it in Illinois and Indiana twenty years ago, which was at that time about its most western distribution. In the meantime the insect has spread by jumps, probably through the sending of infested nursery stock, until now it occurs in the northern states all the way across the continent. The experiment stations of Maine, Connecticut, Michigan, Minnesota, Montana, Oregon and British Columbia have experimented with the insect and published accounts of its behavior, but none has had any very practical suggestions to offer toward a solution of its control. Weevils of all sorts are notoriously resistant and hardy insects. They do not readily succumb to poisons or contact sprays, and the fact that this weevil lives underground for practically the whole year makes the problem especially difficult.

The Kennewick-Richland district has 400 acres in strawberries whose crop is worth \$100,000 a year. The advent of the insidious root weevil was a just cause for alarm, for although the insect has only just obtained a foothold in a few fields, its past reputation was known and its present work already resulted in the utter ruin of the infested spots. One field that had produced 265 crates to the acre was being plowed up; another that had sold 300 crates had its output drop to 20 crates to the acre; still other fields were entirely gone and were lying idle. Such is the work of the weevil that a field which this year showed only the slightest signs of infestation might have the plants dead and worse than worthless the next year. Through the generosity of the Commis-

sioners of Benton County \$500 was made available this spring to the experiment station for an investigation of the pest. In undertaking the study, of course, we held out no hope of discovering a solution.

Our first experience was with a farmer whose berry field had been destroyed by the weevil. "No, you can't experiment here," said he. "There is too much bedeviling of the farmers by you state-paid men. Leave us alone and we will work out our own problems." When asked what solution he had found for the weevil he explained that he was going to plow out his field and grow alfalfa. Now, plowing out a ruined field is the best possible means of sending the weevils out over the country. The insects cannot be killed by the plowing and when there are no longer berry plants they will move on to new fields where they can find their desired food. It would be comparable to a system of fighting smallpox by turning all the patients out of the pest-house and letting them go where they will. It is a safe bet to say that this respected citizen of Kennewick, with all his notions for state economy, scattered weevils enough to cost his neighbors future losses that will be measured by many, many thousands of dollars.

To make a long story short, we may outline enough of the life history of the root weevil to make intelligible why we undertook certain experiments. At Kennewick the insect hibernates in the white grub or larval condition, among the roots of the plants on which it had been feeding, from two to four inches down in the soil. A very few of the grubs live in the crowns of the plants, which then become riddled by their burrowing. In the spring, preceding the blossoming period, the larvæ change to the soft pupa state in cells or chambers in the soil. With the maturing of the crop of berries the adult weevils transform from the pupæ. By the time the crop is picked the weevils are depositing eggs for the next generation of larvæ. The work of these summer and fall larvæ kills the roots, so that in the spring infested plants appear sick or dead and can be readily dislodged and pulled up, but the weevils remain behind. The adults have the habit of playing possum and feign death for many minutes when disturbed, drawing in their legs and feelers so as to be quite difficult to discern among the plants and in the soil. Root weevils are wingless and so spread only slowly through a field. The customary system of mowing and harrowing the plants in midsummer undoubtedly serves to scatter the weevils broadcast, as it is done at the height of the normal migration season. As the insects are known to be able to subsist on many dozens of common plants they cannot be starved out of a field by plowing out the plants. We have found them living in the ground in a clean cultivated apple

orchard several blocks removed from the nearest berry field. As the insects at the time of the experimentation last May were all beneath the soil the problem of their control was limited to subterranean treatments. It will be of interest to not what was tried, even though without success, for the hardness of the weevil can then be better appreciated.

First—Crushing the insects in the ground. Since the weevils in all their stages are scarcely ever more than four inches down it has been thought that disking, hoeing, harrowing, plowing, rolling or tamping the soil should kill them. Accordingly, to make a test we secured a ten-pound sledge hammer and dropped it ten inches, twenty inches and thirty inches; in each case having little effect on the insects beneath the ground. So the writer buried his hand under three inches of Kennewick soil and permitted the sledge to be dropped as before. He was surprised to find that the cushioning effect of the soil made the impact of the weight scarcely felt. A quantity of weevils was then put in the ground and the sledge swung overhead with all possible force time and again on them. The ground was pulverized, the berry plants were torn to shreds, but actually half of the weevils were unharmed and were still alive in the cages far weeks afterwards. It was concluded that mashing the strawberry root weevil in the soil was impracticable.

Second—Drowning the weevils. It is often possible to flood a strawberry field, so to make a test of its value against the root weevil, some of the beetles were held under water for several hours. When they were permitted to dry they revived unharmed from the bath. As a matter of fact, we have found weevils abundant in the wet soil about the intakes for irrigation water, where they are periodically submerged for days at a time. It was concluded that the strawberry root weevil could not be killed in a practical way by drowning.

Third—Killing in the soil by contact insecticides. It ought to be perfectly possible to pour over the worst infested spots some materials which would soak in and kill the weevils; but it isn't. We soaked the ground with strong soapsuds, oil emulsions and solutions of borax and of copperas, but with no apparent discomfort to the weevils or their larvæ, although in most cases the plants were completely killed. Such treatment was accordingly judged impractical.

Fourth—Killing by poisonous fumes and gases. We placed in holes different measured quantities of standard insect killers, such as carbolineum, cenol, kreso, careo and crude petroleum oil; we used gasoline, kerosene, turpentine, chloroform and carbon disulphid; we generated the poison gases chlorine, sulphur dioxide, acetylene and cyano-

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gen: but in no case did the effects extend for more than a few inches from where the materials were used. The problem certainly looked hopeless. It involved a mixture of the chemistry of poisons, the soil physics of penetration, diffusion and absorption of fumigants, the botany of what will harm strawberry plants and what is safe to use, the entomology of a weevil that won't stay killed, and the practical considerations of cost, labor and applicability.

Of the soil fumigants the cyanide gas and the carbon disulphid had alone surely killed enough insects to give promise. The cyanide was discarded because it destroyed the plants and because it is one of the most dangerous of poisons to man. With the carbon disulphid then the problem was to prevent its diffusing out of the soil, and this was readily accomplished by covering the plants with oilcloth. Preliminary tests were more than gratifying: the weevils, the larvae and the pupae were killed even with small doses if the fumes were only confined. The fumes, being heavy, permeated the soil and reached not only the weevils several

inches down, but the wireworms, tipulids and all other insects as well.

The *modus operandi* of the treatment is absurdly simple. First search out the spots in the rows where the weevil has practically killed the plants. Next observe by closely looking about the base of the adjacent plants whether the weevil is present and how far it extends beyond the sickly plants. Then cover the infested part of the row with, say, a 30-foot strip of canvas or cloth sheeting previously made gas tight by a painting with linseed oil. If care is used to prevent tearing, cheap oilcloth may be substituted for the oiled canvas. Every five feet under the cloth place a saucer containing two-thirds of an ounce of carbon disulphid, which should cost less than one cent, and leave in place for at least six hours. This completes the treatment; but care must be taken to keep the edges of the canvas tight against the ground, which can easily be done by shoveling some earth along the edges of the cloth to weight it snugly down. The cloth should not touch the saucer, since the liquid should evaporate quickly. If the plants do not support the cloth suffi-

ciently a strip of wood propped up to just clear the plants can serve to support the covering and permit diffusion of the fumes. Carbon disulphid is an explosively inflammable liquid requiring as careful handling as gasoline and its fumes should not be unduly inhaled. While the treated plants may wilt, especially through the sweating under the cloth during the heat of the day, the injury is not permanent.

While the method of using this treatment is simple and its cost is not at all prohibitive as compared with the value of the crop at stake, it must not be misunderstood that we have worked out a process that automatically controls the pest. It requires patient, careful labor to insure eradication, and as the time for best utilizing the treatment is probably limited to the few days immediately after the crop is gathered, before migration and egg-laying begin, enough equipment is needed to provide for the infested field. The treatment is mainly intended to kill the weevil where it has already destroyed the plants and to check its further spread through the fields. If the weevils are not checked the damage to be done by the next generation can well be fifty-fold greater. Its use can be extended to the acreages where there is a light scattering of the weevil here and there, and where fields are as valuable as those at Kennewick it would assuredly be advisable to endeavor to reclaim them. It is either the cost of a treatment or quitting the berry business.

There are still questions enough about the weevil that are unanswered: How will the covered fumes act in other kinds of soils? Has the weevil laid eggs by the time the crop is off, and if so, what effect will carbon disulphid have upon them? Is not late fall or early spring a better time to make the application? Is the life history of the insect in other localities in Washington sufficiently like at Kennewick to depend on timing the treatment elsewhere by the maturing of the berries? To these questions we haven't the answer, for in this little study we had but three weeks' opportunity to "bedevil the farmer."

#### Bulletin on Spraying Stone Fruits

Brown rot of stone fruits, California Peach Blight, causing fruit spot of peaches, and many other destructive pests and diseases may all be greatly reduced by proper methods which are set forth in the new bulletin "Spraying Stone Fruits," just off the press at Oregon Agricultural College. Of all the fruits, none are more important in the present war emergency than the stone fruits. Dried prunes and canned peaches and cherries form an important part of the food stores of the nation and the army abroad. This bulletin gives the latest information on methods of controlling insect pests and fungous diseases affecting these important fruits and will aid growers in the patriotic duty of helping Uncle Sam to increase food production by reducing crop losses due to these troubles. It may be had free for the asking. Send for your copy today to Oregon Agricultural College, Corvallis.



**Home Vegetable Garden**

The first of a new series of bulletins dealing with the home vegetable garden has just been published and is ready for distribution to all who appreciate the value of the garden as a means of economy in wartime. The series is being prepared by A. G. Bouquet, of the Oregon Agricultural College vegetable garden section of the horticultural division. Factors that were wholly or partly responsible for failures with war gardens in past years receive particular consideration in the first bulletin, together with suggestions for remedying the troubles. Emphasis is also laid on the present seed shortage and the possibility of the use of some of the 1917 seed stocks, especially if a simple test be made at this time. A practical planting plan for the home garden is given, together with a suggestive list of the horticultural varieties of each vegetable. Methods of soil preparation and fertilization are described, and a list of all bulletins of benefit to vegetable gardeners, published by the U. S. Department of Agriculture, Washington, D. C., and the Oregon Agricultural College, Corvallis, is given. The new college bulletin should be in the hands of all those who are endeavoring to make their gardens count for the utmost.

**Provide Seed for Replanting**

Seed stocks of all kinds are reported scarce. The farmer who has a good supply of seed for coming crops is, indeed, fortunate. Farmers who have no seed are obtaining supplies earlier this year. The University of Missouri College of Agriculture suggests that, in view of the necessity for replanting in some seasons, farmers obtain or reserve sufficient seed for replanting. In many states last year, corn and wheat on low lands were destroyed by overflows. The water went down early enough that the land could be planted to early-maturing corn, but few farmers had such seed on hand. They were delayed from several days to two weeks in obtaining seed. If possible it would be a profitable precaution to reserve enough seed for such emergencies. This applies particularly to the tender filled crops, including corn, sorghum, beans, cowpeas and soy beans.

The most practical substitutes for white flour are whole wheat flour, shorts, cottonseed meal and corn meal, since they all make palatable bread and may be obtained everywhere. At present prices, the regular use of any of these means a decided saving in the cost of bread.

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vated crop, and they should be taken up largely by the general farmer, said W. I. Spencer, of Gresham, in his address before the Vegetable Growers' and Home Gardeners' Conference. In selecting the crop to be grown take into consideration its requirements as to climate, soil, and whether it is a money crop in the section grown. Cabbage is an instance of one often grown and under suitable conditions will return a good cash income and in addition furnish from one-half to one ton of cow feed to every ton of heads cut, a factor to be carefully

considered by the farmer who keeps dairy cows. Fall plowing is the best insurance for a good crop of vegetables in the Willamette Valley. Grow or secure the best seed to be had in growing onions and do not expect to secure unusual success unless you do. That, together with the fertility of the soil, are the prerequisites for successful onion production, thinks J.C. Leedy of Beaverton. If the soil is deficient in plant foods the best all around fertilizer is well-rotted manure spread on the ground the year before.



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## Some Phases of Alfalfa as a Crop in the Orchard

By P. S. Darlington, Horticultural Inspector at Large, Wanatchee, Washington

UP until recent years the fruit business in this state has been on a very unstable basis. We clean cultivated our orchards, kept little or no live stock, and perhaps not even a garden. We were so enthusiastic over the fruit business that we forgot that there might come a year when there would not be a profit in the fruit business with which we could buy our provisions at the store. We have since seen some such years. We have seen years when the credit of a good many of our fruit growers at the grocery store was not gilt edge, and in fact some of them got hungry and walked out. In 1911 we shipped into Wenatchee 150,000 pounds of butter, 20 earloads of canned milk, 200 gallons of fresh milk a day, 42,000 dozen eggs, 20 earloads of packing house products and about 1800 tons of hay. Our farmers, if they could be called that, were going to town and buying their milk, butter, eggs, meal, etc. Wenatchee probably carried this condition to greater extreme than most other sections in the

state, but perhaps necessity has caused the orchardists of Wenatchee to advance farther toward correcting this condition than has been the case with the orchardists of most other districts.

Clean cultivation was not only starving our orchardists but was also starving our orchards. If there is anyone here that does not know what a starving orchard looks like, just take a drive out through any of the older orchard sections next summer and you will see here and there an orchard with small, sparse and yellowish looking foliage, red or yellowish bark and probably a light crop of small apples. These are indications of partial starvation. This condition may be brought about by any one of a number of different causes, but whatever the cause the effect is partial starvation. In some cases it may be due to lack of water, but since all plant food must be taken up in the form of solution lack of water is starvation. In a light, sandy soil it may be due to too much water, in which case the soluble elements of plant food are leached

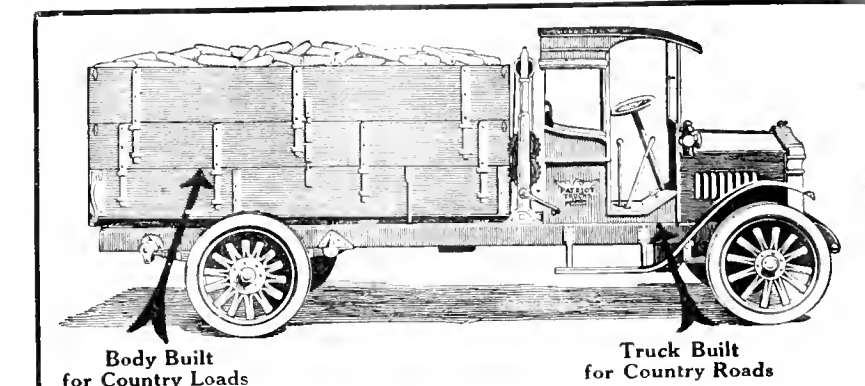
away. It may be due to an impoverished soil, but there are comparatively few of our soils but what contain enough of the elements of plant food to properly nourish the trees if the elements of plant food that are in the soil are made available to the tree. This appearance of starvation is most frequently due to the fact that the elements of plant food which are in the soil in abundance are, on account of the lack of the proper physical condition of the soil not made available to the tree. An ideal apple soil is a rich heavy loam. But this type of soil as well as other types, if clean cultivated for a period of years becomes void of humus and organic matter. The soil particles then readily run together. In this condition the soil breaks up cloddy. It puddles easily when wet. It does not take water readily. In fact a strata just beneath the surface cultivation develops, which becomes almost impervious to water and almost as hard as hardpan. A soil in this condition, though it may be ever so rich in the elements of

plant food, will not release or make available to the tree plant food in sufficient quantities to properly nourish the tree.

This condition of the soil has been brought about by the continuous burning up and almost continuous exhaustion of the organic matter in the soil. This is the result of continued clean cultivation without addition of organic matter to the soil. The point that I want to bring out most forcibly here is that our soil troubles are mostly physical rather than chemical, and that the addition of chemical or commercial fertilizers can do little toward the permanent upbuilding of our soil conditions. Further, without an adequate supply of humus or organic matter we do not get full benefit of whatever chemical fertilizer we may use. To build up and maintain a constant supply of available plant food with the least possible waste we must have humus or organic matter in the soil. Humus is decomposed organic matter. Humus acts as a sponge to not only hold moisture but to hold available elements of plant food. In the decomposition of organic matter various weak acids are formed, known as humic acids. These weak acids have a dissolving effect upon the soil particles and change the otherwise unavailable elements of fertility into available form. Humus holds the soil particles apart and prevents the soil from becoming hard and compact.

In my opinion any system of orcharding in our semi-arid irrigated districts which does not provide for a goodly supply of organic matter in the soil is not a permanent or sound system of orcharding. I shall not enter here into any extended discussion of the different methods of supplying that humus any more than to say that under conditions existing generally in our fruit sections far the cheapest and most economical method of supplying that humus, together with additional fertility, is by means of cover crops. Neither is it my purpose here to enter into a discussion of the merits and demerits of the different cover crops any more than to say that no other crop has yet been introduced that has as much to recommend it as an orchard cover and manure crop as alfalfa.

Alfalfa produces an immense mass of vegetative matter not only above but also below ground. I believe that it is unexcelled in this respect by any other crop we can grow in our orchards, and as is explained above it is vegetative or organic matter in the soil that we need. Alfalfa is a soil renovator. It is a more successful soil renovator than plow or harrow, or even dynamite. No plow sole forms in an alfalfa field nor in an orchard sowed to alfalfa. Alfalfa roots penetrate the soil to the depth of 20, 30 or 40 feet and have been known to go down to a depth of 127 feet. The decaying roots and side laterals of the alfalfa keep the soil open and porous for the penetration of air and water. Alfalfa is a legume and therefore a nitrogen gatherer. It not only gathers nitrogen from the air but it penetrates the soil far below the reach of ordi-



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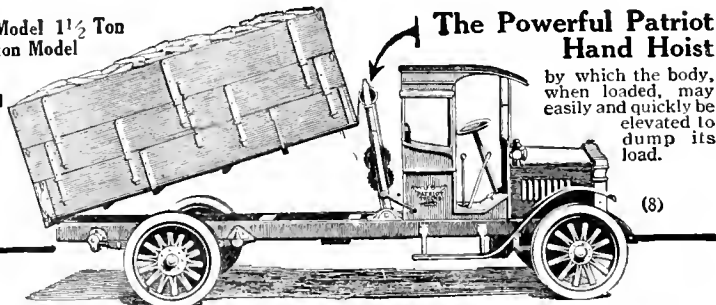
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nary plants, brings up other elements of plant food and makes them available at the surface. It has been estimated at the New Jersey Experiment Station that the amounts of plant food gathered by a test acre of alfalfa in two years were equivalent in nitrogen to 3500 pounds of nitrate of soda in phosphoric acid to 600 pounds of bone black superphosphate, and in potash to 1200 pounds

of muriate of potash. This amount of fertilizers before the war would cost about \$124, the nitrogen alone being worth about \$105; and this was taken almost entirely from the air. The water requirement is usually the first question that interests most growers in the discussion of this subject. The water requirements depend almost en-

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# BETTER FRUIT

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O. M. Morris, Horticulturist.....	Pullman
W. S. Thornber, Horticulturist.....	Pullman
COLORADO	
C. P. Gillette, Director and Entomologist.....	Fort Collins
E. B. House, Chief of Department of Civil and Irrigation Engineering, State Agricultural College.....	Fort Collins
ARIZONA	
E. P. Taylor, Horticulturist.....	Tucson
WISCONSIN	
Dr. E. D. Ball, Director and Entomologist.....	Madison
MONTANA	
O. B. Whipple, Horticulturist.....	Bozeman
CALIFORNIA	
C. W. Woodworth, Entomologist.....	Berkeley
W. H. Volck, Entomologist.....	Watsonville
Leon D. Batchelor, Horticulturist.....	Riverside
INDIANA	
H. S. Jackson, Pathologist.....	Lafayette
BRITISH COLUMBIA	
R. M. Winslow, Provincial Horticulturist.....	Victoria
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### EDWARD HENRY SHEPARD.

Mr. Shepard is dead. There is sorrow in his home. Friends and business associates mourn. The announcement from St. Vincent's Hospital Monday morning, April 29, of his passing came as a shock. Cheerful even in his illness, his friends had believed he was soon to be with them again, and their grief is keen.

Mr. Shepard sacrificed his life in a conscientious devotion to his work. Fruit growers in the Pacific Northwest, in whose interests he labored for more than fifteen years, owe him a debt that never could have been paid. It was said of Mr. Shepard that no one man did more to make fruit growing a business enterprise and to direct the marketing to profitable channels.

Sixteen years ago Mr. Shepard purchased an orchard in Hood River Valley. Years before that he had devoted his studies to horticulture, and with the purchase of a farm he put his theories into practice. The fruit growers of Hood River soon recognized his ability, and he was made manager of the Hood River Apple Growers' Union. One of his first acts was to improve the grade and pack of apples, and he drew up the original rules for grading and packing which were adopted throughout the Northwest. For twelve years he was a director of this association, which later became known as the Apple Growers' Association of Hood River. He was manager for six years of the Hood River Fruit Growers' Union, which shipped strawberries and small fruits. The Hood River Fruit Growers' Union later was merged into the Apple Growers' Association.

In 1903 he established BETTER FRUIT, a magazine, as its name implies, devoted to the fruit growing industry. Readers of BETTER FRUIT will testify to his great work in helping orchardists and mar-

keting associations solve their vexing problems.

Mr. Shepard was an early advocate of co-operation in the production and marketing of fruit. For the past fifteen years managers of the fruit fairs or horticultural conventions in the Pacific Northwest, and even in the far Eastern states, never considered their program complete without having Mr. Shepard appear for an address. He gave freely of his time, energy and money to make these addresses, and there are many who owe their success today to the advice given by Mr. Shepard.

Mr. Shepard was born in Marysville, California, December 24, 1857. His father, Mr. E. A. Shepard, was a skilled horticulturist in New England many years ago, and on moving to California made a reputation as an authority on matters of fruit culture. It may be said that Mr. Shepard grew up in an atmosphere of horticulture. In 1880 he graduated from the University of California. He always took an active interest in collegiate affairs and was the prime mover in organizing the University Club of Hood River several years ago. At college he was a member of the Zeta Psi fraternity.

Mr. Shepard was a prominent member of the American Pomological Society and an honorary member of the State Horticultural Societies of Oregon, Washington and Idaho. He was also a member of the International Apple Shippers' Association, having been honored with a membership that was unique in the fact he was the only member of the association that was not a shipper.

Mr. Shepard is survived by his wife, who was formerly Miss Alice Failing of Portland, and five daughters.

The funeral services were conducted Tuesday afternoon from Mr. Shepard's late residence, by Bishop Robert L. Padlock of the Episcopal diocese of Eastern Oregon, who was a warm friend of Mr. Shepard.

### Death of S. L. Allen

It was with regret we learned of the death of Mr. S. L. Allen, the inventor of the Planet, Jr., tools, who passed away a few weeks ago at his home in Florida, aged seventy-seven years. Mr. Allen was a farmer back in the early seventies, when planting was done by hand and hoeing was accomplished with the primitive hand-hoe. He was not content with the laborious methods in use at that time, and this was the commencement of the manufacturing of the Planet, Jr., tools, which are famous the world over.

### To Curb Insect Losses

Farm crops in the United States are subject to millions of dollars' loss annually through the ravages of insects. Arsenical insecticides are the chief protection against the biting insects which devour the foliage of farm and garden crops. A shortage of arsenic has developed in this country. President Wilson has placed the arsenic industry of the United States under the direction of the Food Administration so that the

distribution of the poison may be equalized.

Since arsenic is the active poison in paris green, the potato farmer is quite dependent upon an adequate supply of arsenic compounds for combating the destructive potato bug. It is, therefore, planned to bring about co-operation by the state potato growers' associations and the makers of the insecticides. In this way it is hoped that stocks of insecticides for local use may be maintained. Furthermore, it is important that a sufficient supply of white arsenic be available to meet needs next year for grasshopper control. Grasshoppers were numerous in many sections last year. Dry weather, especially in winter, is favorable for grasshoppers. The grasshopper eggs remain over winter in hard ground. Moisture in the soil subjects the eggs to destructive freezing, but when winters are relatively dry comparatively larger numbers of the eggs survive. Indications are that an outbreak of grasshoppers is probable. It is therefore urgent that preparations be made in advance so that heavy losses to cereal, forage, garden, and other crops may be avoided. Arsenic is also necessary for the control of cut worms, army worms, and similar pests.

In view of the necessity for still greater production next spring and summer, the University of Missouri College of Agriculture has suggested that no means which will lessen damage from insect pests be overlooked. It is folly to devote time, labor, land, and money to a crop and then permit insects to destroy it.

### Boxes, Baskets, Containers, Etc.

The increasing cost of containers for fruit growers is becoming serious, and in addition there may be a serious shortage of boxes. It behooves fruit growers to order early, because the grower who postpones purchasing may not be able to get the desired amount. The shortage of boxes may be a boon to the firms manufacturing basket containers. It has been tried and found advisable in many sections to use baskets for some varieties and some grades of fruit, which are not only found to be cheaper but will serve the purpose as well, and by using baskets wherever it is possible it will do much toward lessening the possible shortage of boxes.

Vegetable Gardens.—No fruit grower should fail to plant a vegetable garden for his home use and one large enough not only to supply his family through the season, but sufficient to produce enough vegetables so enough can be canned to last throughout the entire winter. This will be a good step in the way of food conservation and at the same time be one of economy on the part of the fruit grower as well. Fruit growers in their spare time will find it wise to plant as large a sized garden as can be properly cared for, as there is no question but what there will be a ready sale, not only for vegetables fresh, but to canneries for canning purposes.

# "CORONA DRY"

Arsenate of Lead

Patented June 30, 1913

The "Standard" for Convenience, Economy, Efficiency


**One Pound of "Corona Dry"**  
**Does the Work of Three Pounds of Paste Arsenate**  
**and Does it Better**

**QUICKLY AND EASILY MIXED**—No working up; no straining needed; no sediment; no lumps; no waste—*never clogs nozzles.*

No evaporation—no leaks—no loss of strength. But an *absolutely standard spray mixture*, the uniform strength of which you can depend upon—and know that you have the *highest per cent of killing power.*

**"Corona" is safe—it will not burn foliage**

**SOLD IN NET WEIGHT PACKAGES**  
 200 lbs., 100 lbs., 50 lbs., 25 lbs., 5 lbs., 1 lb.

 **"Corona Dry" means—No guess work, but a Standardized Spray in which the Mixture is Always the Same Strength and Efficiency**

**"Corona Dry" is used by the big apple growers of Hood River, Medford, North Yakima, Wenatchee and Spokane Districts**

**Corona Chemical Company, Milwaukee, Wisconsin**



Trade Mark

**"Corona Dry" and**  
**"Corona Dusting Sulphur"**

FOR THE

**Vegetable Garden**

A safe, inexpensive, easily applied and efficient remedy for all chewing garden pests—and for use on fruit trees, berry bushes and plants—that will insure perfect fruit and clean vegetables.

*Garden Pests and Their Control,*  
*The Art of Dusting and the*  
*Corona Spray Calendar—mailed*  
*by our Sales Agents—on request.*

**CORONA CHEMICAL COMPANY**  
 Sole Makers "Corona Dry"

**NORTHWESTERN**  
 SALES AGENTS

**Portland Seed Co.** Portland  
 Oregon

**Spokane Seed Co.** Spokane  
 Washington

## Some Phases of Alfalfa, Etc.

Continued from page 11

tirely upon the methods of handling alfalfa in the orchard and will be discussed more fully below. I will simply say here that conservation of moisture is one of the benefits that may be derived from alfalfa in the orchard.

I have mentioned some of the reasons why alfalfa should be beneficial to the orchard. This may be just theory. But the proof of the pudding is in the eating. We have plenty of evidence to show that the alfalfa actually does not get results. I might mention the Barney & Williams orchard which has been in alfalfa for about twenty years. This is the oldest alfalfa orchard that I know of and has the largest bearing record of any orchard that I know of. I have the bearing record of this orchard for the six years from 1907 till 1912 inclusive. The average bearing per tree per year for those six years was nineteen boxes per tree per year. Mr. Williams told me since he has harvested his 1917 crop that these trees still keep up the same performance. I could mention many other instances of beneficial results. In fact the results have been so generally satisfactory that about 75 per cent of our orchards at Wenatchee are now in alfalfa.

So far I have spoken of alfalfa as a cover and manure crop and of its direct benefit to the orchard. The ideal method for handling alfalfa as a strictly cover and manure crop for the most rapid rebuilding of the soil and for the

conservation of moisture is to allow the whole crop to fall on the ground and rot. However, there is the other phase to be considered, the matter of providing our own living, as much as possible, on the orchard farms. This is a phase that cannot be overlooked at this time. It is a phase that is in line with the recommendations of the food administration and, further than that, is in line with a policy of permanent thrift. Every orchard farm should have its family cow, a hog or two, chickens and a garden.

Where there is no shortage of water there is no reason why a crop or two of alfalfa, or even three crops, cannot be taken from the orchard if it is fed on the ranch and the manure put back on the orchard. In this way the feeding value as well as the greater part of the fertilizing value can be obtained. If we have to go out and buy feed for our stock and other animals today we are in a bad way. Alfalfa hay is selling for \$30 a ton at Wenatchee, and it is the cheapest feed we can buy at that. As I have said the water requirements of alfalfa in the orchard depends largely upon the methods of handling. If your alfalfa is strictly a cover and manure crop and you allow it all to lay on the ground I am satisfied that it does not require any more water than clean cultivation, and I earnestly believe that it requires less, although I have no accurate to prove this. I am personally unfortunate enough to be interested in an orchard for which we have to raise water over 200 feet by means of pumps.

You can readily see that with us conservation of moisture is a feature. We had the past season in our part of the state the most severe long drouth that we have had in recent years, but our orchard suffered less from drouth this year than ever because we cut only a portion of the first crop of alfalfa and none after that. It seemed a shame to see that dense mat of alfalfa fall down and rot on the ground, but we could get only a limited amount of water and we did not dare cut the alfalfa and take it off. The alfalfa saved our apple crop. As I see it now, however, we could have installed an additional pump and doubled our water supply and paid for the pump and the extra power with the alfalfa we could have saved, figuring it at \$30 a ton. We are now negotiating for a pump to double our water supply next year.

We have learned something also this year about handling our water. Up until this year we have used four or five small furrows between the tree rows, but have always experienced considerable difficulty in getting our water through these small ditches. This year we made just two large ditches with a turning plow with very much better results. We have always had the best success sowing alfalfa about the middle of August on soil that has been clean cultivated all summer. At that time it is necessary to irrigate it and is sometimes necessary to irrigate it once after that. If the soil should get dry at the time the seed is germinating or soon after that you will not have much suc-

cess getting a stand. Alfalfa sown the middle of August should get about six or eight inches high before winter and is then ready to start off good and strong in the spring.

Let me give a word of caution. Do not expect beneficial results the first year after the alfalfa has been sown. In fact it requires quite a little care the first year to prevent detrimental results. Your stand is not likely to be heavy enough the first year to afford the soil sufficient protection and the ground is apt to bake. Further than this, the little seedlings are yet shallow rooted and are taking their moisture and food from the first two or three feet of soil right in competition with the feeding roots of the trees. The alfalfa will need more water and more care the first year than any year after that, and you are not likely to see any beneficial results until the second or third year. Do not think that it is necessary to plow the alfalfa under to get results on the orchard. Your results become accumulative year after year, and the longer your alfalfa remains in the orchard the better for the orchard.

In conclusion I will read the following verse, for which I claim no originality:

What makes the landscape look so fair;  
What blossoms bright perfume the air;  
What plant repays the farmer's toil,  
And will enrich the worn-out soil?  
Alfalfa.

What is the crop that always pays,  
And will mature in forty days,  
Resisting drouth, the frost, and heat;  
Whose roots reach down one hundred feet?  
Alfalfa.

What grows in loam, and clay, and sand;  
What lifts the mortgage off the land;  
What crop is cut three times a year,  
And no foul weeds in it appear?  
Alfalfa.

What makes the swine so healthy feel,  
And never raise a hungry squeal;  
The wholesome food that never fails  
To put three curls into their tails?  
Alfalfa.

What makes all other stock look nice,  
And bring the highest market price;  
What fills the milk pails, feeds the calf,  
And makes the old cow almost laugh?  
Alfalfa.

### Unusual Pies Unusually Good

War long ago uncovered the sacred American pie, now the bottom crust as known to our mothers has disappeared, and the latest offering of "Yankee ingenuity" is rice pie crust. Rice has a natural affinity for the things that usually constitute pie fillings, and this new camouflage from the first camoufleur—woman—is good for the duration of the war.

**Rice Pie Crust.**—Line a greased pie pan with cold boiled rice, bringing the rice well over the edge of the pan and shaping it with a spoon dipped in milk. Bake the crust in a moderate oven until it is slightly brown. Use the crust like any pastry for a one-crust pie.

**Sour Milk Pie.**—1 cup buttermilk or thick clabbered milk, 2 tablespoons cornstarch mixed with 4 tablespoons cold water,  $\frac{3}{4}$  cup maple syrup, 2 egg yolks beaten, 1 lemon, juice and grated rind, 1 tablespoon melted butter. Heat

the milk in a double boiler. When it is warm, add the cornstarch mixed with cold water. Cook the mixture until it is thick, and add the other ingredients. Cook the mixture until it is clear. Turn it into a baked crust made with rice, cover it with meringue, and bake it in a slow oven for 25 minutes.

**Meringue.**—Whites of 2 eggs,  $\frac{1}{4}$  teaspoon vanilla, 4 tablespoons maple syrup. Beat the egg whites until they are stiff, add the syrup gradually, and then the vanilla.

**Cottage Cheese Pie.**—1 cup cottage cheese,  $\frac{1}{2}$  cup maple syrup,  $\frac{1}{2}$  cup milk, yolk of 2 eggs (beaten), 2 tablespoons melted butter, salt,  $\frac{1}{2}$  teaspoon vanilla. Mix the ingredients in the order given. Bake the pie in one crust made of rice. Cool it slightly, cover it with meringue, and brown it in a slow oven.

**Lemon Cheese Pie.**—1 cup cottage cheese,  $\frac{2}{3}$  cup honey or  $\frac{3}{4}$  cup corn syrup, yolk of 1 egg (beaten),  $\frac{3}{4}$  cup milk, 2 tablespoons butter, 2 tablespoons cornstarch, juice and grated rind of 1 lemon. Heat the milk, add the sweetening and the cornstarch, and cook the mixture until it is thick, stirring it constantly. Then add the egg, and cook the mixture until the egg thickens. Add the cheese, the butter, the juice and the rind of the lemon. Pour the mixture into a well-baked crust made with rice. Cover it with meringue, and brown it in a slow oven.

### Report of Cold Storage Apple Holdings April 1, 1918.

Reports from 555 storages show that their rooms contain 982,131 barrels and 2,372,223 boxes of apples. The 518 storages that reported for April 1 of this year and last show a present stock of 950,880 barrels and 2,330,615 boxes, as compared with 1,043,606 barrels and 1,501,496 boxes last year, a decrease of 8.9 per cent in the barreled apples and an increase of 54.9 per cent in the boxed apples, which is the equivalent of the total increase of 182,647 barrels or 11.8 per cent. For the purposes of this comparison it is considered that three boxes are equivalent to one barrel. The 512 storages that reported for both Decem-

ber 1, 1917, and April 1, 1918, showed a decrease of 17.2 per cent in the barreled apples and 27.2 per cent in the boxed apples, or a total decrease of 20.4 per cent during the month of March, while the 503 storages reporting their holdings for both December 1, 1916, and April 1, 1917, showed a decrease of 19.4 per cent in the barreled apple holdings and 28.1 per cent in the boxed apple holdings, or a total decrease of 22.2 per cent during March, 1917. As a few storages have not responded to our inquiries this report does not include all holdings.

Conspicuous among the many improvements that have been made from time to time for the welfare of their employes is the strictly modern cafeteria that has been recently opened by the F. Mayer Boot & Shoe Company of Milwaukee, makers of the well known brand of Honorbilt Shoes.

"Our primary reason for opening this restaurant," said F. J. Mayer, vice president of the concern, "is to give our employes a chance for greater comradeship. We are convinced that it has done that much. The increased number of patrons speaks for its success. Many who have heretofore prepared their own dinner at night are glad to be relieved of the burden and make this hot lunch at noon their principal meal."

Comradeship is not the only benefit to be derived, for the dinners served to the employes for 20 cents are certainly a revelation, especially during these times of high prices. The following menu is typical of the dinners furnished: A large bowl of vegetable soup, beef loaf, potatoes, beets, bread and butter, apple pie and coffee.


Cleanliness and efficiency are the striking characteristics of the lunch room. From the immaculate polished topped oak tables, with their pretty green and white china and shining silverware set for four, to the shining pots and kettles hanging around the stove, everything is spick and span and of the latest and most approved type.

—Adv.

# A Continuous Chain of Boiling Points

—gives easy starting, quick  
and smooth acceleration,  
power and mileage, in Red  
Crown gasoline.

STANDARD OIL COMPANY  
(California)



## The Gasoline of Quality



# The Ideal Fruit Grader

**SIMPLICITY, ECONOMY AND EFFICIENCY**  
**ABSOLUTELY NO BRUISING**

Just passed another very successful season. We have the highest of praise for our Grader from all of those who have used them, and from the present indications we will have all sold that we are able to manufacture this season on account of labor being very hard to get that we can use, so we wish to impress on all the growers that we urge them to place their orders very soon so we will have time to make delivery.

There is no machinery—Nothing to get out of order or be fixed connected with the Ideal Fruit Grader. It is practically all wood.

The operation is simple, consisting of a belt for a conveyor, operated by electricity or gasoline engine, and short elastic belts, which move each apple in the proper bin from the belt conveyor.

The Ideal Fruit Grader divides the crop into Extra Fancy, Fancy and C-grade, all at one time. The Extra Fancy being divided into seven bins on one side, the Fancy into seven bins on the other side and the C-grade going into six bins at the end of the grader.

Built for four sorters, the grader is 26 feet long and 9 feet wide. Built for eight sorters, 32 feet long

Further detailed information, illustrated circulars and prices will be furnished upon request.

**IDEAL FRUIT AND NURSERY CO.**  
**HOOD RIVER, OREGON**

## Power Farming Demonstration

**A** POWER farming demonstration for the Pacific Northwest will be held at Pullman, Washington, this spring May 29-30-31. This demonstration is in charge of the State College of Washington co-operating with the United States Department of Agriculture, the tractor and implement dealers of the Northwest and the Pullman Chamber of Commerce.

### The Demonstration Is Needed

At the present time the greatest possible food production is demanded. The available labor is scarce. Horses cannot furnish enough farm power. The extensive use of labor and horse-saving machinery is urgent. The farmers of the Northwest are progressive and anxious to farm all their acres to the best advantage, but they cannot justly be expected to purchase and use new equipment before seeing it in actual operation, so that they may decide whether or not the implements will operate successfully on their own farms. As a matter of education and information the demonstration will prove of great value to the agricultural interests of the Pacific Northwest.

### What the Demonstration Will Do

It will bring together a large aggregation of tractors, plows, tillage implements, harvesting machinery, modern trucks, and modern labor-saving machinery in general. This demonstration will be more complete than

the machinery section of a state fair, and will be of much greater value to the farmers, as it will show the machines in actual field work. Here everyone can see and compare the work of a large number of tractors in one field, an opportunity that can be had only at such a demonstration. Since both level and hilly fields will be farmed it will be possible to draw better conclusions as to what type of tractor will be successful on individual farms.

The public will be shown the use of tractors in connection with belt-driven machinery such as silage cutters, threshers and similar farm equipment. The latest harvesting and grain-handling machinery will be shown and demonstrated. In short, machinery that will save man and horse-power will be on demonstration so that all who attend will see with little expenditure of time the possibilities of doing their work more efficiently with modern equipment, and also to quickly compare the different machines for doing any particular class of work.

### How the Demonstration Will Be Conducted

Over 200 acres of land in one body near Pullman is available for the tractor demonstration. This ground will be plowed by the demonstrators. During the forenoon the companies are at liberty to make individual demonstrations in fields assigned to them. At

this time demonstrations of belt-operated machines and implements other than tractors will be made. In the afternoon the regular public demonstration will be held, during which all the tractors will plow on assigned plots in one large field. After plowing part of the afternoon the plowed ground will be gone over with tillage implements such as harrows. No demonstrations of other machines will be permitted while the tractors are operating in the afternoon.

Something of interest will be going on all the time, so that it will be to everyone's advantage to attend the demonstration the entire time.

### General Information

The demonstration grounds are about two and one-half miles from Pullman on a paved road. Automobile and truck service will be maintained between the city and the grounds. A large number of people can be accommodated as regards rooms and meals in town. As the weather is usually excellent at this time of year many will bring tents and camp in the grove adjacent to the demonstration field. A lunch counter will be on the grounds, so that it will not be necessary to make trips to the city for meals.

Pullman is readily accessible to all the Northwestern States, being located on the O.-W. R. & N. and the Northern Pacific Railroads. Pleasant and easy automobile trips can be made to the demonstration from Washington, Oregon, Idaho, Montana and Alberta. A



**THE GOVERNMENT EXPECTS YOU**  
To increase your honey supply. You cannot do it unless you provide yourself with the necessary

**HIVES      FRAMES      SECTIONS &  
FOUNDATION      SUPERS      MISCEL. EQUIPMENT**

Ask us to quote on your wants  
Ask for our complete 1918 catalog  
Ask for our latest price supplement  
Ask us anything you want and if possible we will cheerfully answer you

**Lilly's** Seattle & Portland  
Western distributors of LEWIS BEEWARE

**Beware Where You Buy Your Bee Ware**

parking place for automobiles will be in charge of a watchman.

Everyone in the Northwest who is interested in agriculture and is following the rapid development of modern farm power machinery with its wonderful time and labor-saving possibilities should not miss the great opportunity of seeing this machinery at work side by side in one large field. For other information communicate with the Department of Agricultural Engineering, State College of Washington, Pullman, Washington.

#### Get That Canning Impulse

Make your hoe this summer keep your can opener busy next winter.

Get ready for canning season now. Regrets are the only things ever canned in the jars you forgot to order.

Can nothing that can be kept without canning. Dry such vegetables as corn, string beans, navy beans, mature lima beans, okra, etc.

You can brag about your garden all winter if you have your canned evidence on the dinner table.

Concentrate products, especially soup mixtures, so that each container will hold as much canned food and as little water as possible.

Really there is nothing to canning fruit and vegetables except care, cleanliness, fresh products, jars and heat.

#### Sugar Supplies for Home Cannors.

The submarine has forced fighting Europe to a very strict sugar ration and compelled America to look the situation squarely in the face. There is only so much sugar, there are certain definite needs, and the problem before us is finding a practical plan of distribution. The Food Administration has adopted a certificate system to meet the household needs during the coming fruit season, and to guard against temporary shortages that may occur if more vessels are

diverted from the Cuban trade. The consumer is asked to estimate his needs and fill out a certificate which will be furnished him by his grocer. The dealer is required to forward this certificate to the Federal Food Administrator within one week after it is turned in to him. This plan puts the question up to the individual, and the Food Administration asks the assistance of every householder in bringing about a practical distribution. The success of the plan depends on the good sense and good will of the American citizen. Cooperation, prompt action and a democratic sense of fair play will prevent a sugar shortage in America during the fruit season.

#### New Flours in Old Recipes.

Many housekeepers have experimented with the substitute cereals and know just how to use them in muffins and other breads. Weight for weight, these flours and brans absorb the same amount of moisture and require the same measure of baking powder to raise them as wheat flour. You can use the new flours in old recipes if you substitute equal weights for the wheat flour called for. A cup of wheat flour sifted and measured lightly weighs 4 ounces. The equivalent of 4 ounces of substitutes expressed in cups is as follows: One cup (4 ounces) wheat flour equals 1½ cups barley flour, 1 cup corn flour, 1 cup fine corn meal, ¾ cup coarse corn meal, ¾ cup buckwheat, ¾ cup rice flour, ¾ cup hominy grits, ¾ cup rolled oats (ground). The above equivalents represent an average on these flours, but different mills turn out different grades of flour and weight is the safest guide. If you have no scales, sift flour and measure lightly in a measuring cup.

"Make your acres tote double," says the Progressive Farmer.

J. E. Larson, well known in every county of Oregon as a seed and crop expert, has been engaged by the Portland Seed Company to give practical help to farmers and gardeners in seed selection and in solving problems of planting, cultivation and harvesting. Larson resigned as county agriculturist of Polk County to enter the broader field. For four years he was in charge of the crop extension work of Oregon Agricultural College. Before coming to Oregon he was seed expert for Oklahoma and South Dakota Agricultural Colleges, and was field editor for one of the Orange Judd farm papers in the Dakotas. Mr. Larson was born and raised on an Iowa farm, and knows the practical as well as the scientific side of the farmer's problems. His engagement by the big seed company should prove of inestimable service to Pacific Northwest farmers. Besides visiting the rural districts he will reply to inquiries by mail.—Adv.

War Savings Certificates, modeled on the English plan, were introduced in India in the summer of 1917. The price of issue was 7 rupees 12 annas (7¾ rupees) for a certificate worth 10 rupees at the end of five years. On December 31, 1917, this issue has brought nearly \$100,000,000, and in the central provinces, where the number of subscribers to previous Indian Government loans had never exceeded 100 people, more than 600,000 people have bought War Savings Certificates.

Good business as well as patriotism urges support of the Government in its financial needs. There is no class of Americans more than the farmers of the nation whose own welfare is so indissolubly bound up with that of the United States Government. Buy Thrift Stamps.

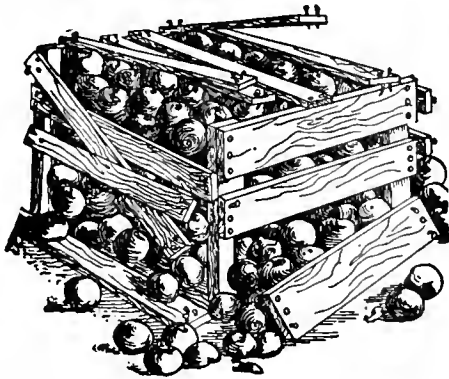
"The one sure way to supply the supreme need for food," reads a proclamation by Governor Bickett of North Carolina, "is to man the bread line with the woman power, the boy power and the girl power of the state."

"Farmers are sometimes the last to heat up; but they stay hot; and in a long fight they are always found sturdily carrying the battle across No-Man's Land to the foe, in the last grim struggle."—Herbert Quick.

For two years not a single new pleasure motor car has been made in England. Luxury business has ceased. The English are leading strenuous lives, but are prospering.

We'll substitute corn for wheat and victory for defeat.

NOW is the time to send to  
**Milton Nursery Company**  
MILTON, OREGON  
FOR THEIR 1918 CATALOG.  
FULL LINE OF NURSERY STOCK.  
"Genuineness and Quality"



BEFORE using Cement Coated Nails

## Western Cement Coated Nails for Western Growers

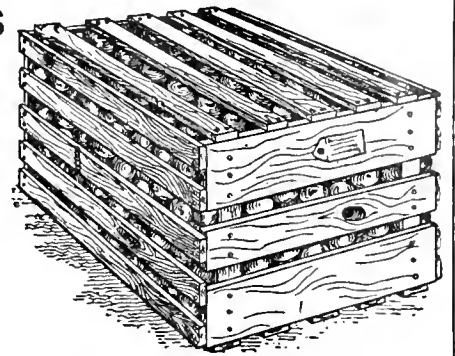
Our Cement Coated Nails are always of uniform length, gauge, head and count. Especially adapted to the manufacture of fruit boxes and crates. In brief, they are the Best on the Market.

Write for Growers' testimonials.

### Colorado Fuel & Iron Co.

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Cement Coated Nails

## Save the Home Garden Surplus

THE crop of vegetables from home gardens promises to be unusually large in practically all sections of the country this year, says the United States Department of Agriculture in a statement just issued. Home gardeners, therefore, it is pointed out, should begin now to plan so that the products raised by them will be used to the best possible advantage, without waste. The statement says:

"There is likely to be an unusually large production of vegetables from small home gardens in most communities this year. Home gardeners, therefore, should lay their plans carefully so that they will be in a position at the appropriate time to make efficient use of their garden produce, both by immediate consumption and by preservation by canning, drying, or in other ways, so that no good food will be wasted. A very material saving can be effected in the food bill in many instances by having the meals consist more largely of the fresh home-grown vegetables and less extensively of the non-perishable foods bought from grocery stores. By following this plan, also, garden owners will relieve somewhat the demand for the non-perishable foods."

"Even with liberal use in the family diet in a fresh state, however, there will be considerable surpluses of vegetables from many home gardens. These should be saved in some way. Canning is the method most usually employed, but it is possible that cans and jars cannot be obtained in sufficient quantities this year to pack the surplus perishables. In such cases many products easily can be preserved by drying. By this method surplus water is driven off by placing sliced products on trays in the sun, over a stove or before an electric fan. The dried foods can be kept perfectly in paper bags or boxes sufficiently tight to exclude insects. Soaking in water will bring the products back practically to their original texture and they may then be cooked like fresh vegetables."

"In putting up vegetables and fruits for future use the home gardener may find the following suggestions useful: If you can obtain cans and jars only in limited numbers, can tomatoes and other vegetables which cannot be dried easily, and such fruits as you prefer

in a juicy form. Wherever possible concentrate succulent foods, such as tomatoes. Preserve or jam the fruits and berries which you prefer in that form, and put them in glasses sealed with paraffin or in wide-necked bottles. Put fruit juices in ordinary bottles. Dry practically any common vegetable except asparagus, egg-plant, radishes, lettuce and the like, and most fruits except strawberries and native grapes. The more important of the vegetables that are usually dried are sweet-corn, snap and string beans, shelled beans, shelled peas, and the root crops. Tomatoes, though consisting in large part of water, are dried successfully by many immigrants from Southern Europe. If a considerable number of cans or jars are at your disposal so that vegetables may be canned be sure to include the more nutritious such as green beans and peas."

### "Corn Flour-Plus" Biscuit

You can give up the use of wheat flour and still enjoy hot biscuit for breakfast. Corn flour is the answer. This is a new product to most housekeepers, but it promises to be well known before wheat harvest, as the production of corn flour has increased 500 per cent in the last eighteen months. Corn makes a beautiful white flour, delicate enough for a perfect sponge cake or, what is more to the purpose, a fine biscuit flour that browns like French pastry. Corn flour combines well with any of the substitute cereals in making hot cakes, muffins and biscuit.

**Corn Flour and Wheat Biscuit.**—2 cups corn flour,  $\frac{3}{4}$  cup wheat flour, 6 teaspoons baking powder, 1 teaspoon salt, 3 tablespoons fat, 1 cup milk.

**Corn Flour and Buckwheat Biscuit.**— $1\frac{1}{2}$  cups corn flour,  $1\frac{1}{4}$  cups buckwheat, 6 teaspoons baking powder, 1 teaspoon salt, 3 tablespoons fat, 1 cup milk.

**Corn Flour and Rolled Oats Biscuit.**— $1\frac{1}{2}$  cups corn flour, 1 cup ground oats, 6 teaspoons baking powder, 1 teaspoon salt, 3 tablespoons fat, 1 cup milk.

Sift dry materials together. Work in fat well. Combine liquid and dry material, handling lightly. Roll or pat

one-half inch thick and cut as biscuit. Bake in hot oven. The ground oats in the last recipe are prepared by putting rolled oats through the food chopper. All measures are level. In measuring the baking powder, level the spoons with a knife. Drop biscuit require less baking powder than rolled biscuit.

### Wheatless Loaf Bread

Counties, towns, hotels and schools have gone wheatless until next harvest. Households are giving up wheatless days for wheatless weeks and months, while kitchens have been turned into experiment stations to see just what can be done with other cereals. Muffins you know and cakes you know, but have you made any wheatless loaf



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of continuous service to the Northwest is the record of this pioneer bank.

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PORTLAND, OREGON



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FOR EVERY PURPOSE

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Pump the water for your home and farm with a  
**MYERS PUMP**

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Equip your buildings with MYERS "Easy to Push and Pull" Sliding Doorways, and you will save time, labor and money.

They cost no more than others and are guaranteed to give the very best of service.

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**F.E. MYERS & BRO.** NO. 120 ORANGE ST. ASHLAND, OHIO.  
ASHLAND PUMP AND HAY TOOL WORKS.

## Fine Oregon Orchard for Sale

Trees 9 Years Old

13 acres, tile drained and irrigated, water costs \$2.50 per acre, of which about 3 acres are in pears, one acre peach fillers, balance some Newtowns and Jonathans, but mostly Spitzenbergs. Trees in fine condition, showing an abundance of fruit spurs. A few loganberries, blackberries and raspberries.

4-room house with porch; fine barn and sheds; 4 chicken houses, about 20 booder houses; good well; electric lights and telephone system; on paved street about one mile from station.

The tract is sprayed, pruned and plowed. Title clear.

Price \$500 per acre on easy terms. No trades. Can give immediate possession.

The city has good schools, a fruit drying plant for culls, also a Fruit Growers' Association, with large warehouse and a Spray Manufacturing plant.

**MARK N. TISDALE, Sutherlin, Oregon**

bread—bread you can slice and make into toast and sandwiches, provided you can lock it away from the family until it gets cold? Here are a group of successful wheatless breads made with baking powder. If you wish to experiment, try these combinations in yeast breads. Ground oats combine successfully with any of the substitute cereals in making hot cakes, muffins or bread. To prepare ground oats, run rolled oats through the food chopper:

**Corn Flour and Oat Bread.**— $\frac{1}{2}$  cup liquid, 4 tablespoons fat, 4 tablespoons syrup, 2 eggs, 6 teaspoons baking powder, 1 teaspoon salt,  $1\frac{1}{2}$  cups corn flour, 1 cup ground rolled oats.

**Rice and Barley Bread.**—1 cup liquid, 4 tablespoons fat, 4 tablespoons syrup, 2 eggs, 6 teaspoons baking powder, 1

teaspoon salt, 1 cup rice flour, 2 cups barley flour.

**Corn Flour and Buckwheat Bread.**—1 cup liquid, 1 tablespoons fat, 4 tablespoons syrup, 2 eggs, 6 teaspoons baking powder, 1 teaspoon salt,  $1\frac{1}{2}$  cups corn flour, 1 cup buckwheat.

**Barley and Oat Bread.**—1 cup liquid, 1 tablespoons fat, 4 tablespoons syrup, 2 eggs, 6 teaspoons baking powder, 1 teaspoon salt, 2 cups barley flour, 1 cup ground rolled oats.

Mix the melted fat, liquid, syrup and eggs. Combine the liquid and well mixed dry ingredients. Bake as a loaf in a moderately hot oven for one hour or until thoroughly baked. Nuts, raisins or dates may be added if desired.

## Legume Culture Found Helpful

Many Oregon farmers let the little legume bacteria help them speed up their war production program. These cultures have been used with great success in this state for several years. About 70 per cent of the farmers using the soil inoculation cultures report profit from their use. These cultures are used on leguminous plants—peas, beans, alfalfa, vetch, red clover and alsike. They are not needed if the same crop well inoculated has been grown on the land within two or three years. If the soil is very acid or very dry, the effectiveness of the cultures is greatly decreased. It has generally been found worth while to try them on such ground.

Supplies of the cultures are sent out from the O. A. C. Bacteriology Department this year as in former years. Sufficient material for two acres or less costs 40 cents. Enough for fifteen acres costs 60 cents. Special cultures are required for each kind of crop. Cultures are sent on receipt of payment, or by C. O. D., parcels post. On C. O. D. orders an additional ten cents should be remitted. The demand for cultures being far in advance of the ability to fill orders, the department requests from seven to ten days' advance notice. Soil inoculation cultures to "ginger up" the growth of legumes can be obtained at Oregon Agricultural College. A supply for two acres or less costs 40 cents, for fifteen acres or less 60 cents. State kind of crop and enclose payment for order.

## Uncle Sam's Official Newspaper

Owing to the enormous increase of government war work, the governmental departments at Washington are being flooded with letters of inquiry on every conceivable subject concerning the war, and it has been found a physical impossibility for the clerks, though they number an army in themselves now, to give many of these letters proper attention and reply. There is published at Washington daily, under authority of and by direction of the President, a government newspaper, "The Official U. S. Bulletin." This newspaper prints every day all of the more important rulings, decisions, regulations, proclamations, orders, etc., as they are promulgated by the several departments and the many special com-

Western Agents  
A. I. ROOT CO.

PORTLAND SEED COMPANY

# KEEP BEES!

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**IF** you own an orchard or keep bees, you should have a copy of our Catalog. It lists everything for the successful handling of bees and the production of honey.

We are pioneers in the bee supply business in the Northwest, are thoroughly familiar with local requirements and carry a large and complete stock.

Ask for Catalog No. 204  
You can keep bees any place where they can forage within a mile.

**PORTLAND SEED CO.** PORTLAND, OREGON

mittees and agencies now in operation at the National Capital. This official journal is posted daily in every post-office in the United States, more than 56,000 in number, and may also be found on file at all libraries, boards of trade, and chambers of commerce, the offices of mayors, governors, and other federal officials. By consulting these files most questions will be found readily answered; there will be little necessity for letter writing; the unnecessary congestion of the mails will be appreciably relieved; the railroads will be called upon to move fewer correspondence sacks, and the mass of business that is piling up in the government departments will be eased considerably. Hundreds of clerks, now answering correspondence, will be enabled to give their time to essentially important rulings, decisions and war work, and a fundamentally patriotic service will have been performed by the public.

## Drying and Evaporating Fruits

In this issue appears a very valuable article by Professor C. C. Vincent, "By-Product Investigations." Last year many fruit growers found it very profitable to raise vegetables between the apple trees, which enabled them not only to sell fresh vegetables but to evaporate and can for winter use and also for sale. Evaporating and canning vegetables is more important now than ever before and this year it is to be hoped this industry will be carried on much more extensively. Europe will be drawing more heavily on America for all foodstuffs, and every housewife should store enough to supply the wants of her household, and more if possible, thus enabling the factories to sell their entire output for the consumption of our soldiers and our allies.

By-Products Investigations, Etc.

Continued from page 6.

The U. S. Cook Stove Evaporator was used in making the tests at the University of Idaho. It can be used on any kind of a cook stove. The dimensions are: Base 22x16 inches, height 26 inches. The base is made of galvanized sheet iron and the framework of wood. It has eight galvanized wire trays 12x17½ inches and contains twelve square feet of drying surface.

The trays are placed in the framework one above the other, thus forming a compartment through which the heat rises. When drying fruits or vegetables in this evaporator the trays should all be spread with a single layer, and as the drying progresses the upper trays should be moved to the lower part of the drier in order to insure uniform drying. The fresh products should never be piled up on the trays too thick, as this obstructs the free circulation of air through the evaporator and prolongs the time of drying. To secure a good finished product the temperature should never be allowed to go above 150° F. The results secured are shown in the following table:

Products	Weight Fresh Material	Weight when Dry	Time to Dry, Hours	Temperature, Deg. F.
Beans	100	11	10-15	130-140
Turnips	100	8	10	130-140
Carrots	100	13	10	130-140
Corn	100	33	9	130-140
Beets	100	18	6	130-140
Salsify	100	33	2	130-140
Potatoes	100	35	6	130-140
Pumpkins	100	6	4	130-140
Sweet cherries	100	24	22	130-150
Pie cherries	100	19	22	130-150
Apricots	100	20	27	130-150
Peaches	100	17	25-30	130-150
Plums	100	22	50-55	130-150
Prunes	100	33	60-70	130-150
Apples	100	20	6	130-150
Pears	100	25	8	130-150

Hot Air Evaporator.

There has also been an increasing demand for information on evaporators somewhat larger than the cook-stove evaporator; those that have been designed for family use, but have a capacity sufficient to dry for market. To supply this information the Zimmerman type of evaporator was selected for experimentation. This portable furnace or hot air evaporator is 21 inches deep, 26 inches wide and 5½ feet high.

This machine has fourteen galvanized wire trays 20x20 inches, making thirty-eight square feet of drying surface. The evaporator is made substantially of gal-

**FISH!! FISH!!**

100 lbs. salmon in brine, shipping weight  
 165 lbs \$11.00  
 Smoked salmon, 20 lbs. net ..... 3 25  
 Dried True codfish, 10 lbs. .... 1 50

Ask for our fresh and cured fish price list.

T. A. BEARD, 4322 Winslow Place, Seattle, Wash.

Nice Bright Western Pine  
**FRUIT BOXES**  
 AND CRATES

Good standard grades. Well made. Quick shipments. Carloads or less. Get our prices.

**Western Pine Box Sales Co.**  
 SPOKANE, WASH

Are there **CURLED LEAVES** on Your Apple Trees



Then get busy. That means Aphis—a real danger to your apple profits. Aphids cause dwarfed and deformed fruit; also spread fire-blight. Spray at once with

**Black Leaf 40**  
 40% Nicotine

**Kills Aphis**

Recommended by Agricultural Colleges and Experiment Stations. Don't make the mistake of thinking that Lime-Sulphur, Arsenate of Lead and Bordeaux kill Aphis. These sprays don't, but if you are using them at this time, as you probably are, simply add "Black Leaf 40" to the mixture, per directions. You will then not only get the full benefit of these sprays, but also kill Aphis and without the labor-expense of a separate spraying.

Aphis also attacks Plum, Cherry and other fruits, as well as truck crops, vegetables, plants and flowers. "Black Leaf 40" kills all varieties of Aphis, also Pear Psylla, Red Bug, Leaf Hopper, Thrips and other soft-bodied, sucking insects.

**Free Spray Chart**

Write today for Free Spray Chart, showing when and how to spray, and booklets on insect pests controlled by "Black Leaf 40."

The Kentucky Tobacco Product Co.  
 Incorporated LOUISVILLE, KY.

Pacific Coast Agents  
**United States Steel Products Co.**

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 Los Angeles  
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 Seattle



**J.C. Pearson Co., Inc.**  
 Sole Manufacturers

Old South Bldg.  
 Boston, Mass.

**PEARSON**

**ECONOMY** In buying is getting the best value for the money, not always in getting the lowest prices. PEARSON prices are right.

**ADHESIVENESS** or holding power is the reason for PEARSON nails. For twenty years they have been making boxes strong. Now, more than ever.

**RELIABILITY** behind the good is added value. You can rely on our record of fulfillment of every contract and fair adjustment of every claim.

**SATISFACTION** is assured by our long experience in making nails to suit our customers' needs. We know what you want; we guarantee satisfaction.

**ORIGINALITY** plus experience always excels imitation. Imitation's highest hope is, to sometime (not now) equal Pearson—meantime you play safe.

**PEARSON NAILS**



# Make more Money Pull big stumps by hand



Clear your stump land cheaply—no digging, no expense for teams and powder. One man with a K can rip out any stump that can be pulled with the best inch steel cable.

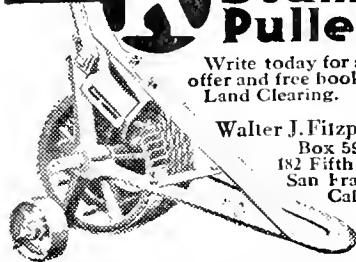
Works by leverage—same principle as a jack. 100 pound pull on the lever gives a 48-ton pull on the stump. Made of the finest steel—guaranteed against breakage. Endorsed by U. S. Government experts.

Showing easy lever operation

## HAND POWER Stump Puller

Write today for special offer and free booklet on Land Clearing.

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Genuine comfort if you ask for and get—

## Mayer's Martha Washington Comfort Shoes

Beware of Imitations—name and trade-mark stamped on the sole.

F. Mayer Boot & Shoe Company

Milwaukee, Wis.



37 DIFFERENT STYLES

vanized iron. The furnace front and back is made of heavy cast iron and the body of the furnace of heavy sheet iron. The evaporator is so constructed that the currents of heated air which arise from the furnace pass through and around the fresh products, not only from the bottom, but from the sides also.

To secure a well finished product it is necessary to have a good distribution of air throughout the evaporator. This evaporator is so constructed that there is an even distribution of hot air over each tray of fruit, which insures uniform drying of the products. The fruits and vegetables evaporated in this hot air evaporator were exceptionally fine in every respect. The results secured are shown in the table following:

Products	Weight Fresh Material	Weight when Dry	Time to Dry, Hours	Temperature, Deg. F.
Beans	100	13	6-12	130-140
Turnips	100	9	6	130-140
Carrots	100	13	8	130-140
Corn	100	33	20	130-140
Beets	100	18	7	130-140
Salsify	100	33	2	130-140
Potatoes	100	29	5	130-140
Pumpkins	100	6	4	130-140
Pie cherries	100	25	8-13	130-150
Apricots	100	20	13	130-150
Peaches	100	17	30-35	130-150
Plums	100	23	56	130-150
Prunes	100	35	47	130-150
Apples	100	17	7	130-150
Pears	100	23	13	130-150

### Steam Evaporator.

In communities where there are not sufficient products grown to justify the construction of a large commercial evaporator, the small steam cabinet evaporator could be used to advantage. This is particularly true in a locality where there is already a small cannery in operation, for the boiler could be used for both purposes. These steam cabinet evaporators are very popular at the present time in parts of New York and Canada. When properly constructed they give entire satisfaction.

The following table shows the different products evaporated, the weight after evaporation, the length of time to evaporate and the temperature maintained:

Products	Weight Fresh Material	Weight when Dry	Time to Dry, Hours	Temperature, Deg. F.
Peas	100	23	7	130-160
Beets	100	16	5	130-160
Beans	100	11	5-10	130-160
Turnips	100	9	6	130-160
Carrots	100	12	6	130-160
Corn	100	29	13	130-160
Salsify	100	31	2	130-160
Cauliflower	100	11	8	130-160
Potatoes	100	33	5	130-160
Pumpkins	100	6	1	130-160
Currants	100	27	7	130-160
Raspberries	100	13	10	130-160
Pie cherries	100	20	6-10	130-160
Sweet cherries	100	21	12	130-160
Apricots	100	15	15	130-160
Peaches	100	17	21	130-160
Plums	100	22	27	130-160
Prunes	100	30	38	130-160
Loganberries	100	15	13	130-160
Dewberries	100	20	11	130-160
Apples	100	16	6	130-160
Pears	100	23	13	130-160

The type installed at Moscow was secured from the Henninger & Ayes Company, Portland, Oregon. This cabinet is 84 inches long, 36 inches wide and 72 inches high. It has twenty-four galvanized wire trays 22x36 inches, with 132 square feet of drying surface. There are fourteen pipes under each two trays running across the evapora-

## Get the Weeds

Weeds and profits cannot grow in the same orchard. Weeds sap moisture and steal plant food. Destroy them with the fast-working, light-running

### "Acme" Foot-Lift Weeder

The sharp-ground knife edges cut all weeds—till deep or shallow as desired. Foot lift lever clears trash and makes transportation easy. Guards at end protect trees. Sizes, 1 horse to 3-horse.

Write today for our free book "The Acme Way to Crops That Pay."

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## True-to-Name Nursery ESTABLISHED 1902

Offers a general line of nursery stock, with a special offering of Anjou, Bosc and Bartlett Pears. These trees are grown with buds personally selected from bearing trees and are guaranteed "true-to-name."

Address all communications to  
**TRUE-TO-NAME NURSERY**  
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### Can the Surplus Foods

Every mouthful must be saved. Can more for home use. Save meats and wheat for the soldiers. Can for sale. Big demand and high prices.

"NATIONAL" Outfits are quick, easy, sure. No spoilage. Can anything—fruits, vegetables, meats—in tin or glass. Endorsed by experts. Home size \$18. Factory sizes up to \$2,000. Full information FREE. Write for catalog.

Northwestern Steel & Iron Works  
820 Spring St., Eau Claire, Wis.

**National**  
STEAM PRESSURE CANNING OUTFITS

# 700 ACRES

of the highest quality Willamette Valley soil, all in one chunk, is probably worth no more than passing notice. But if you knew that 200 acres was in bearing fruit, 200 more in grain, balance pasture, you might give it a second thought. And if I told you it was not in Southern Oregon, and that there was not an apple tree in the bunch, you might write for further information. This property can be bought and bought right. Ample buildings, equipment and shipping facilities. No curiosity seekers need answer. If you have \$100,000 or more we might get together. Your reply will reach the owner and be treated in confidence.

**Address X Y Z, care Better Fruit**

tor. The steam enters the cabinet through the top row of pipes and circulates back and forth through the evaporator, finally returning to the boiler through a return pipe at the bottom of the cabinet. A five-horsepower boiler furnishes ample steam for an evaporator of this type.

**Capacity of Evaporators.**

In the following table is shown the capacity of these different types of evaporators at one charge:

Products	Steam Lbs.	Hot Air Lbs.	Cook Stove Lbs.
Beans	200	50	20
Turnips	100	30	10
Carrots	96	30	8
Corn	200	56	21
Cauliflower	111	42	11
Beets	114	45	10
Salsify	80	25	8
Pumpkins	110	28	10
Potatoes	100	30	11
Pie cherries	300	80	25
Apricots	261	80	25
Peaches	150	124	36
Plums and prunes	600	150	60
Sweet cherries	350	98	40
Loganberries	210	70	25
Dewberries	220	60	22
Raspberries	250	75	24
Apples	288	84	24
Pears	288	84	24

By any one of the methods described above practically all fruits and vegetables, in excess of those needed in the homes and in the local market, can be conserved. It is only by resorting to such methods of conservation that we can help win the final victory in this great war. When discouraged, remember the words of the writer who said.

Somebody said it couldn't be done,  
But he with a chuckle replied  
That, may be it couldn't, but he would be one  
Who wouldn't say so until he tried.  
He started to sing as he tackled the thing  
That couldn't be done and he did it.  
There are thousands to tell you it cannot be done,  
There are thousands of prophesy failure,  
But just start in to sing as you tackle the thing  
That "cannot be done," and you'll do it.

**Crops and Advertising**

THERE are statistically two crops of apples in the United States. One is called the "agricultural crop," and the other is called the "commercial crop." The former represents all the apples on the trees, the latter the apples for transportation and market. The commercial crop, of course, is a fraction only of the agricultural crop, and varies widely. For instance, the latter may be two hundred million barrels, while the commercial crop, according to conditions, may be forty, sixty or eighty million barrels. But whichever crop we think of, it is a tremendous business. The agricultural crop mentioned would make a river flowing solid with apples sixty miles long, a hundred yards wide and ten feet deep. It would make ten piles as big as the Great Pyramid of Ghizeh. It would wrap a band around the earth at the equator a foot thick and seven feet wide. It staggers the imagination.

In making the above statement there is a definite object. Facts like these awaken the mind to a vivid sense of "size," and stir it to think in terms of "importance." When, then, national magazines tell in descriptive editorials what America's millions may and should do with apples, the editor of such a



**It only Takes a Minute to send him a pouch of Real GRAVELY Chewing Plug**

Just drop into any wide awake dealer around here, give him 10 cents for the pouch of Real Gravely, complete in the special envelope ready for mailing.

Address it according to the official directions he will give you. Put on a 3 cent stamp—and Uncle Sam's Mails will see that he gets it.

Real Gravely is the tobacco to send. Not ordinary plug loaded up with sweetening, but condensed quality. It's worth sending a long way, and when he receives it he's got something.

Give any man a chew of Real Gravely Plug, and he will tell you that's the kind to send. Send the best!

Ordinary plug is false economy. It costs less per week to chew Real Gravely, because a small chew of it lasts a long while.

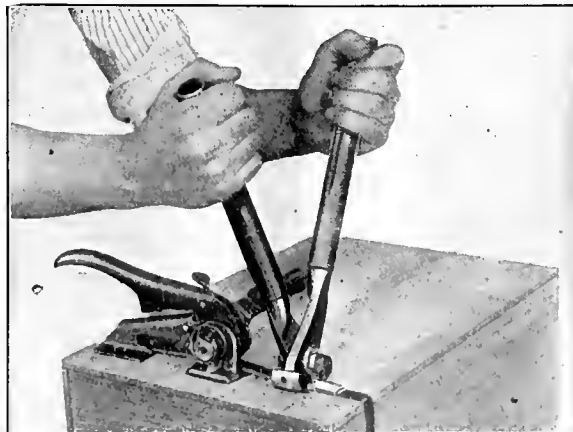
SEND YOUR FRIEND IN THE U. S. SERVICE A POUCH OF GRAVELY Even "over there" a 3c. stamp will put it into his hands.

**P. B. GRAVELY TOBACCO COMPANY, Danville, Va.**

*The Patent Pouch keeps it Fresh and Clean and Good  
—It is not Real Gravely without this Protection Seal  
Established 1831*



**Steel Box Strapping**



Used in connection with metal seals consists of encircling a package with a metal strap, drawing the strap very tight and interlocking the overlapping strap-ends within a metal sleeve (**SIGNODE**) in such a manner that the joint has a greater tensile strength than the strap itself. Nails, rivets and buckles, with their attendant objections, are entirely eliminated.

*Write for Catalog*

Acme Strapping packed in bbls. of about 500 lbs. or larger pkgs.  
Metal Seals packed in cartons containing 2,000-2,500 seals.

**ACME STEEL GOODS CO. MFRS.**

Factory: 2840 Archer Ave., Chicago

311 California St., San Francisco

Stock carried in Seattle and San Francisco



IMPROVE = PROTECT  
YOUR FRUIT CROP  
**Arsenate of Lead**

For twelve years the GRASSELLI BRAND has been used throughout the fruit growing sections of the Northwest where it has given unvarying satisfaction to the user because of its all-round good qualities:

- IT kills the worms.
- IT sticks well to the foliage.
- IT is high in suspension qualities and will always be found dependable and uniform.

THE FRUIT GROWERS' STANDARD

Grasselli Arsenate of Lead Paste  
Grasselli Arsenate of Lead Powder

**The Grasselli Chemical Co.**

Established 1839  
CLEVELAND, OHIO

BRANCHES:

NEW YORK  
PHILADELPHIA  
BOSTON

ST. PAUL  
CHICAGO  
CINCINNATI

DETROIT  
MILWAUKEE  
ST. LOUIS

PITTSBURGH  
NEW ORLEANS  
BIRMINGHAM

magazine realizes that it is worth while, that apples are apples, by token of a huge industry; he sees the tremendous pyramid that America's apple crop would make, and he says to himself: "I will say a thing or two about the use of these apples. It will be worth while." On the one side he sees the vast store of fruit, and the workers growing them, and on the other side there is the throng of consumers.

"Perhaps never before in their history have the national magazines taken such interest in the apple," the publicity manager of the Northwestern Fruit Exchange is quoted as stating. "We find the women's journals, with their special pages devoted to culinary subjects, have taken hold in splendid style and have veritably made the apple 'king'.

Housewives have been impressed with the nutritive qualities and the wholesomeness of apples, and they have been presented with all kinds of ingenious recipes. Piping hot pancakes with apple jelly, gingerbread gems with apples, war muffins with apple sauce, sweet potato and apple baked together—all these suggestions and hundreds of others have encouraged the use of apples. It will certainly be a great satisfaction to the apple grower to know that 'somebody is doing something' for him. While he is tilling the soil of his field, as it were, it is a satisfaction to know that the field of printers' ink is being well tilled, too."

The well-known magazine "Every-woman's World" in a recent issue published almost entire the Fruit Growers'

Agency's press article, "Eat an Apple, Send a Biscuit," which contained valuable information on apple nutrition, and which was sent out with a special letter to every editor of a woman's magazine on the continent.

This article seems to have occasioned an amount of interest, as is noted, for instance, in the pages of "Good House-keeping," which quoted several of the phrases used therein and also devoted quite a space to nutrition of apples.

**Bee Keepers Can Get Sugar for Their Bees**

Oregon bee keepers will be able to get sugar to feed their bees where the supply of honey has run low. The value of honey as a factor in the increased food supply campaign has been recognized by the Federal Food Administrator for Oregon, and W. K. Newell, assistant, writes Prof. A. L. Lovett, entomologist at Oregon Agricultural College, as follows: "I think you may safely promise all who have applied to you that permission will be given them to purchase the sugar on application either to this office direct or to their county chairman. We appreciate fully the value of the honey crop and the necessity for feeding of the bees for a short time in the spring."

General Apathy and Private Interest are two enemies of our national welfare. Each is as dangerous as a Kaiser's agent and should be excluded from every American home and industry.

**GROWERS!**

"Use Your Brains to  
Wrap Your Fruit"

**STOP! THINK!**  
**"CARO FIBRE"**  
**Fruit Wrappers**

LOOKS BEST  
PACKS BEST  
PICKS UP BEST

"CARO" DON'T TEAR  
STRONG DRY STRONG WET

**THE BUYER**  
**KNOWS "Caro" Prolongs**  
**the Life of Fruit**

Don't Be Fooled by PRICE. Don't Be Penny Wise

Give Your Fruit a Chance  
**INSIST on Getting "Caro Fibre"**

Your Shipper Can Supply You,  
or Write to

**Union Waxed & Parchment Paper Co.**

F. B. DALLAM, Agent  
Santa Maria Building, 112 Market Street  
San Francisco, Cal.

Essentials of Air-Cooled, Etc.

Continued from page 5.

but not practicable ventilating system would provide for the removal of the storage house walls every night. In our practical storage house we are limited by the requirements of reasonable expense and the necessity for supplying walls of considerable strength. How can we approach the ideal system and yet meet practical requirements? The windows for the intake of cold air may profitably be made 24x36 inches, and one such opening should be provided for every ten feet in length as well as width on each side and end of the house. The intakes should open beneath the false floor. In an above-ground storage house this makes it necessary for the false floor to be constructed above the level of the windows. In basement storages the same result can be attained by encasing the windows with air ducts leading from the top of the windows to the level of the false floor. Insulated shutters hinged at the top should be supplied for all windows. The false floor should be at least eighteen inches above the earth or concrete floor, and a greater height is desirable. A very satisfactory decking is made of 2x4's laid flat and spaced one inch apart. A warning in regard to the strength of the floor supports is necessary. In one of the houses built in the summer of 1917 the architect was instructed to figure a floor construction capable of supporting a load of fruit stacked twelve boxes high, the weight per box being estimated at forty pounds. The instructions were not correct, because the weight of a box of packed apples is more than forty pounds. The architect recommended 2x12-inch fir joists laid sixteen inches apart over a span of twelve feet. This construction probably was as light as he dared make it. Fir joists could not be secured at the time and in order to complete the house before apple harvest pine joists were substituted. When harvest did arrive the apple crop was found to be unexpectedly large and a car shortage set in, which made it necessary to stack the apple boxes more than twelve high, and a part of the floor collapsed. This is only one example of the bad results which come from weak construction. The next important consideration is the outlet flues. They should be constructed along the central line of the building, in order that the greatest possible height may be reached before passing through the roof. To obtain free, abundant circulation the openings must be of liberal size, and the air shaft must be straight and direct. We are recommending shafts three feet square for every thirty feet in length as well as breadth. For larger buildings larger flues are necessary, and if the length exceeds forty feet two flues should be supplied. Trap doors should be placed in the inlet opening at the bottom of the flue and in the outlet opening at the top.

As I have pointed out before, the cold air outside the storage house is only slightly heavier than the air inside and at best the flow of the air through the

First Aide to Hostesses  
Who Know

PERHAPS it's only a couple of friends who drop in for a little chat. Or—it may be a knitting party, an Aid Society meeting or what not. Or—who knows?—perhaps it's a big "party"—music and dancing and Japanese lanterns and all that.

In any event, don't overlook the help Ghirardelli's can give you. Whether it's two cups for yourself—or two gallons for your "big affair"—you can make it just as easily.

Just *one* reason why Ghirardelli's has always been first aide to hostesses who know.

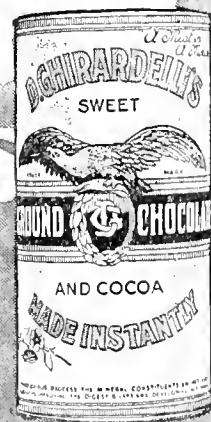
*In 1/2 lb., 1 lb. and 3 lb. cans; a  
tablespoonful—one cent's worth—  
makes a cup.*

D. GHIRARDELLI CO.

Since 1852

San Francisco

Ghirardelli's  
Ground  
Chocolate



Get 'em Quick!

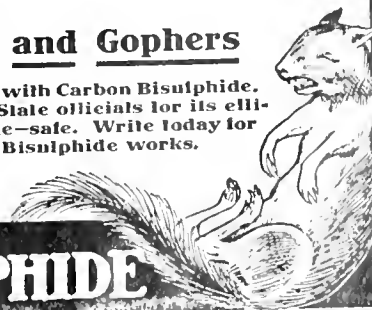
Rid your place of squirrels, gophers, prairie dogs, etc. Do it now when the young of these crop-destroying pests are being born. It's easy and cheap—when the ground is full of moisture to

Exterminate Squirrels and Gophers

and other rodent pests. Just gas them with Carbon Bisulphide. Used and recommended by U. S. and State officials for its efficiency and economy. Simple to handle—safe. Write today for prices and folder telling how Carbon Bisulphide works.

WHEELER, REYNOLDS & STAUFFER  
627 California St., San Francisco, Cal.

with  
CARBON BISULPHIDE





PERFECTION IN  
**FRUIT LABELS**

**THE SIMPSON & DOELLER CO**  
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NORTHWESTERN BANK BLDG.  
PORTLAND, OREGON.  
**E. SHELLEY MORGAN**  
NORTHWESTERN  
MANAGER

WE CARRY IN PORTLAND,  
STOCK LABELS FOR  
APPLES, PEARS,  
STRAWBERRIES  
& CHERRIES

SEND FOR SAMPLES AND PRICES

## *A Message for Fruit and Vegetable Growers*

We desire to get in touch with Fruit and Vegetable Growers in all parts of the country in order to establish Fruit and Vegetable Drying Plants for single firms that want to build new and up-to-date drying plants for themselves and with two or more Growers that would favor the construction of a drying plant on a co-operative basis.

There are many millions of dollars worth of Fruit and Vegetables left to rotten on the ground and many more millions of dollars are paid in freight rates, tin cans and boxes that can and must be saved. We will invest some of our own capital, if you wish, as we are sure that it is to our mutual benefit, if you write us today for particulars. All information on this subject will be given cheerfully and free of charge. If you are in business for making the best profits write now.

**The A. A. A. Evaporator Manufacturing Co., Inc.**

2371-73 Market Street, San Francisco, California

## **F. W. BALTES AND COMPANY** *Printers · Binders*



Unexcelled facilities for the production of Catalogues, Booklets, Stationery, Posters and Advertising Matter. Write us for prices and specifications. Out-of-town orders executed promptly and accurately. We print BETTER FRUIT.

CORNER FIRST AND OAK STREETS  
PORTLAND, OREGON

house is sluggish. The velocity can be increased by the use of fans and the house can be made more efficient, provided the right kind of fan is used and provided it is properly placed. To date I know of no air-cooled storage where a fan is giving satisfactory results. In most cases where they have been tried they have been discarded. The reason is very evident: the fan either did not throw enough air, because it was too small, or it was placed in such a position that it did not supply air uniformly to all parts of the room. Disc fans are of very little value, because their volume is small and because they tend to churn rather than deliver air when working against pressure. Where blowers have been tried they have not proved satisfactory because they were too small or because they were improperly located. The circulation which they created was not uniform or general. Another charge that was made against them was that they delivered a small stream of air at high velocity rather than a large stream at low velocity, resulting in the generation of heat by friction. Air moving at extremely high velocity is undesirable, too, because it carries too much dust into the storage room. Dust is very objectionable where fruit is stored without wrappers, because it sticks to the oily apples and makes them very unattractive. The best type of fan is the sirocco or multiple vein fan, a type in which the blades are parallel with the axis. For a room thirty or forty feet wide and forty or fifty feet long a three-foot fan placed at the mouth of an outlet flue probably will prove satisfactory. The opening into the outlet flue should be in the ceiling near the center of the room. In rooms more than fifty feet long, the air should be taken from the storage room to the fan through a duct swung along the ceiling equally distant from the side walls. Intake openings will occur at intervals along this duct to take the place of the one large opening at the center of the room in smaller houses. The capacity of the fan necessarily must be increased with the size of the house. The openings for the taking of cold air into a storage house equipped with a fan should be similar to those which I have described for a house with gravity circulation. A false floor is absolutely necessary, for unless the incoming air enters beneath the false floor it will not come in contact with all the fruit. Where the windows for the intake of cold air open above the fruit the air will tend to take the shortest route across the top boxes to the vacuum created by the fan in the center of the room.

To recapitulate, a large multiple vein fan draws air from all sides of the room toward a central air duct. The velocity of the air passing through the room is not objectionably rapid because it does not pass through the fan until after it has done its work in the storage house. As a result there is no loss of refrigeration due to frictional generation of heat, and the amount of dust carried into the storage room is reduced to a minimum. After the apples are once cooled in the fall of the year, the matter of keeping them cool would not be difficult pro-



vided there were no prolonged periods of warm weather. But prolonged warm periods do occur and they make the application of some form of insulation necessary.

One of the best insulating materials available is dead air (still air). The only way in which we can maintain a dead air space within a wall is to confine the air within minute areas between bits of other material. Fortunately a cheap and effective material is available, namely, mill shavings. In a paper read before the American Warehousemen's Association a good many years ago George H. Stoddard presented sectional diagrams of walls insulated with shavings, with hairfelt, with granulated cork, and with alternate layers of  $\frac{7}{8}$  inch spruce and  $\frac{3}{4}$  inch air space. His diagrams were the result of tests which he had made on sections of walls built of the above materials. He concluded that an 8-inch layer of mill shavings is the equivalent of  $4\frac{1}{10}$  inches of hair felt,  $6\frac{1}{2}$  inches of granulated cork, or five layers of  $\frac{7}{8}$ -inch spruce separated by  $\frac{3}{4}$ -inch air spaces. In a wall sixty feet long and ten feet high the hair felt costs \$53, the granulated cork costs \$90, and the spruce costs \$95 (Yakima prices), while the shavings cost only \$10 plus the cost of transportation. Insulating material must be dry when applied and it must be kept dry after it is put into a wall, or it will lose its insulating value. Shavings in walls can be kept dry by lining the inside of the retaining wall with odorless waterproof paper. Whenever the workmen tear the paper, they should replace the torn sheet with an unbroken one, or patch the hole so that air cannot enter. The paper should be lapped at all joints so as to thoroughly exclude outside air.

There is some tendency for apples to shrivel in air-cooled storage, the seriousness of the shriveling varying with the variety of apple, the temperature maintained, the operation of the ventilators and the provisions that have been made for humidifying the atmosphere. Shrivelled apples are not attractive, their selling value is greatly depreciated, and they are tough and poor of quality. I have often noted that apples in warm storage houses were more shrivelled than those in cool storage houses. I think this condition was due chiefly to the fact that the warmer storage houses were those which had been ventilated in the daytime when the humidity of the atmosphere was relatively low. In our inland valleys the atmosphere becomes very dry in the daytime, and it picks up moisture very rapidly from all surfaces with which it comes in contact.

Reliable and accurate data are not available to indicate the exact percentage of humidity desirable. Cold storage houses often have a relative atmospheric humidity of 85% to 90%. Air-cooled storage houses have at least 80%. At present I can recommend no method which will maintain that amount of moisture during the fall of the year. Proper operation of the ventilators, sprinkling, and the use of mechanical humidifiers will help.

# The House of Rex

The Institution in Spray Manufacturing

*Founded Upon Quality and  
Developed by Experience  
The Right Articles  
The Right Service  
The Right Price*

Write your nearest "REX" Company for prices and service.

Remember, from them you can obtain a  
" 'REX' FOR EVERY ILL."

**Yakima Rex Spray Company, Yakima, Wash.  
Wenatchee Rex Spray Company, Wenatchee, Wash.  
Payette Valley Rex Spray Company, Ltd., Payette, Idaho**



Cook in a cool, comfortable kitchen this summer. An oil cook stove is comparatively inexpensive to buy and it will soon pay for itself in comfort and lower fuel expense. Meals in a jiffy, and a cool kitchen in summer.

Bakes, broils, roasts, toasts. Better cooking because of the steady, evenly-distributed heat. More convenient than a wood or coal stove for all the year 'round cooking, and more economical.

The long blue chimneys prevent all smoke and smell.

In 1, 2, 3 and 4 burner sizes, with or without ovens. Also cabinet models. Ask your dealer today.

## NEW PERFECTION OIL COOK-STOVE

STANDARD OIL COMPANY  
(California)

## A Distinguished Line of Pianos

In "straight" Pianos we carry a very comprehensive line ranging in price from \$285 to \$3000—each "make" has been selected by us as the very best of its grade.

In the neighborhood of \$300 we carry the Aldrich, a good dependable piano at a very moderate price—it will give the purchaser excellent service.

From \$375 to \$450 we offer the Stroud, Kurtzmann, Emerson and Estey Pianos—four very substantial "makes" which are giving a life time service in thousands of homes throughout the United States.

From \$450 to \$600 we have the Krakauer, A.B. Chase and Weber—these instruments are high grade instruments, in fact they are old and famous makes.

Then at \$575 and upward there is the Steinway, the Standard by which all pianos are judged—To have a Steinway is to have the Best.

Bear in mind we will arrange convenient terms of payment on any Piano—even the Steinway.

**We invite you to call at any of our stores—or write us asking for illustrated catalogues and prices**

*We are dealers in Steinway and other Pianos, Pianola Pianos, Aeolian Player Pianos, etc.*

# Sherman, Clay & Co.

Kearny and Sutter Streets, San Francisco  
Sixth and Morrison Streets, Portland  
Third Avenue, at Pine Street, Seattle  
928-30 Broadway, Tacoma  
808-10 Sprague Avenue, Spokane

Stores also at Oakland, Sacramento, Stockton, Fresno, San Jose, Santa Rosa, Vallejo

## Mr. Fruit Grower:

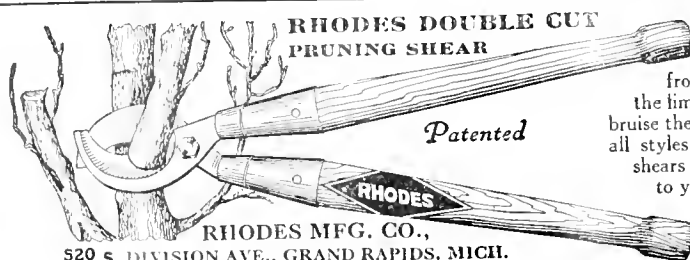
The 1918 apple crop will, in all probability, be the largest yet recorded. Also, there is certain to be the greatest scarcity of labor yet experienced, especially of experienced packers and sorters.

With a **CUTLER FRUIT GRADER** you can teach inexperienced help to pack and sort and handle your crop quickly and at the least cost.

We are giving discounts for early orders and shipments.  
**WRITE NOW** for circular and prices.

### CUTLER MANUFACTURING CO.

**New Address: 351 East Tenth Street, Portland, Oregon**



**RHODES DOUBLE CUT PRUNING SHEAR**

*Patented*

**RHODES MFG. CO.,**  
520 S. DIVISION AVE., GRAND RAPIDS, MICH.

**THE** only pruner made that cuts from both sides of the limb and does not bruise the bark. Made in all styles and sizes. All shears delivered free to your door.  
Write for circular and prices.

In conclusion, a great number of storage houses are going to be built in the near future. A condition has arisen which demands that some place be provided for the holding of fruit till cars can be supplied for its transportation. Therefore it is not necessary for us to urge the construction of storage houses. But we do believe that we cannot say too much on the subject of proper construction. If the Department of Agriculture can persuade you to provide ample means for ventilation, apply sufficient insulation, and take some precautions for the control of humidity, that part of our task which deals with the construction of air-cooled storage houses will have been largely accomplished.

### Attendants Allowed on Green Fruit Cars

The traffic department of the Northwestern Fruit Exchange, J. Curtis Robinson manager, is just in receipt of an important Oregon Short Line tariff supplement which embodies a long-sought improvement in connection with apple shipments, hereafter attendants being permitted to accompany cars in transit for protection of apples against frost. "We were a long time getting this change," states Mr. Robinson, "and it is one that will be welcomed all over the Pacific Northwest among the fruit growers and shippers. The supplement which embodies this ruling is No. 10 to the Oregon Short Line Tariff 2486-G. It contains an item permitting attendants to accompany shipments of apples during the months of October, November, December, January, February, March and April, to look after fires in the cars as a protection from frost. This refers to all green fruits. The attendants are to be furnished with transportation going and returning, that is, from the point of shipment to destination and return. It is provided, however, that the return ticket is dated within thirty days from date of arrival of shipment."

The sugar that goes to waste in the bottom of American tea cups would be a godsend to our Allies in Europe.

Join the Red Cross. They are doing the greatest humane work in Europe that has ever been accomplished.

Remember, three sprays will not always get codling moth. Sometimes it takes four, sometimes five.

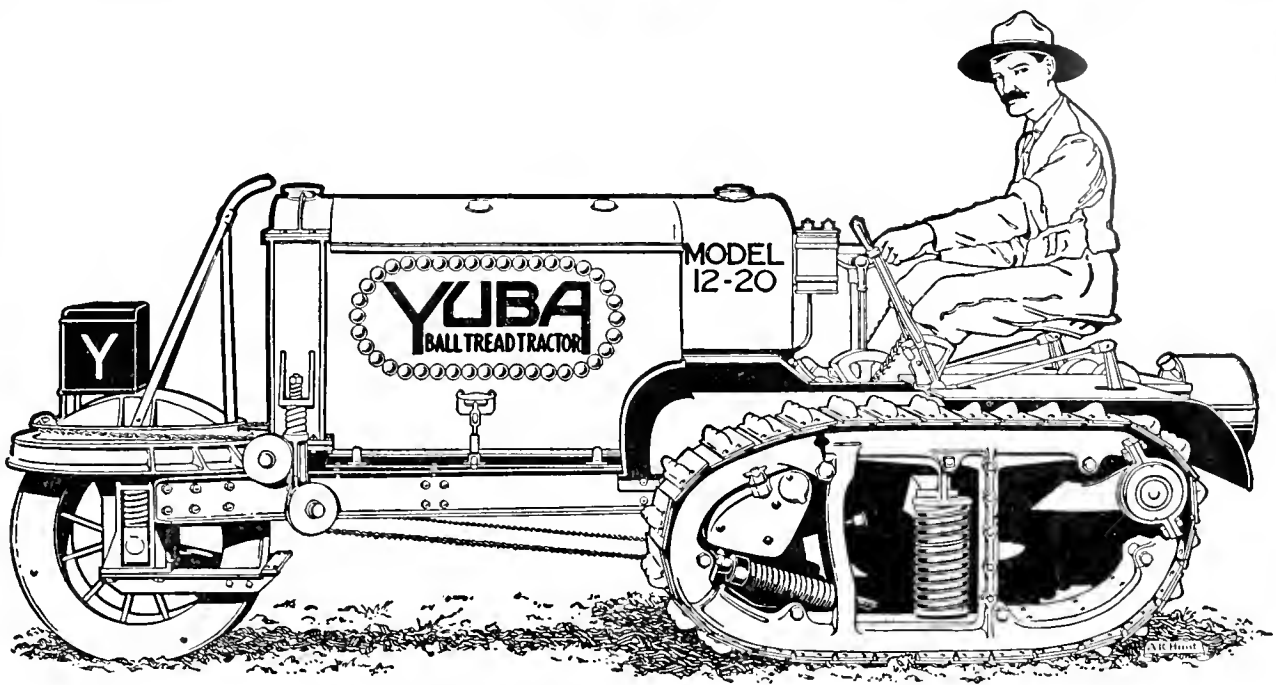
STATE OF NEW YORK.

THE ADJUTANT GENERAL'S OFFICE.  
ALBANY, March 23, 1918.

GENERAL ORDERS,  
No. 15.

In order to assist those engaged in agricultural pursuits which are so necessary to the successful prosecution of the war, commanding officers of organizations of the New York Guard are directed to excuse from attendance at drills during the months of April, May, June, July, August and September, upon their own application, those members of their commands not on active duty guarding property who are actually engaged in civil life in farm labor, whenever their attendance at drills would interfere with their agricultural employment.

By command of the Governor:  
CHARLES H. SHEPHERD,  
The Adjutant General.  
Official:  
EDWARD J. WESTCOTT,  
Major, Assistant to The Adjutant General.



# IMMEDIATE DELIVERY

**YUBA** Ball Tread Tractors, Model 12-20, are now being delivered.

To relieve the shortage of labor—to hasten the planting—to insure the work done now, order a Yuba 12-20 for immediate delivery.

The price is \$2750<sup>00</sup> cash (f. o. b. Benicia, California)—the number ready for shipment is limited—wire your order and put one to work.

**PEACE**—the only way to get it is to fight for it. We're doing our all—three shifts—every hour of the 24—turning out tractors for you.

Get one, put it to work—it will keep going day and night and rarely need repair.

Quick action in securing one of the Yuba Tractors means sure crops for you—and food for our soldiers.

## YUBA MANUFACTURING COMPANY

DEPARTMENT D-1

433 CALIFORNIA STREET  
SAN FRANCISCO

*The World*

*Our Orchard*

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# PRIVATE SALE vs. AUCTION

Experience has demonstrated clearly the manifold advantages of sale by private treaty, which method is now acknowledged on all sides to show more satisfactory results than the auction.

Assuming that you are anxious to dispose of your fruit in the best possible manner and to the best possible advantage we, as **PRIVATE SALESMEN**, have no hesitancy in laying our claim before you.

Whether you prefer to sell your fruit on an outright f.o.b. basis or prefer to have it handled for your own account on a consignment basis, both of which methods are entirely agreeable to us, the fact remains that the firm of

## Steinhardt & Kelly

**101 PARK PLACE**

**NEW YORK**

is in position to give you the best possible service. Our reputation of  
“Never Having Turned Down A Car”  
although practically 90% of our business is done on an outright purchase basis, is a record of which we feel deservedly proud.

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*Our Market*

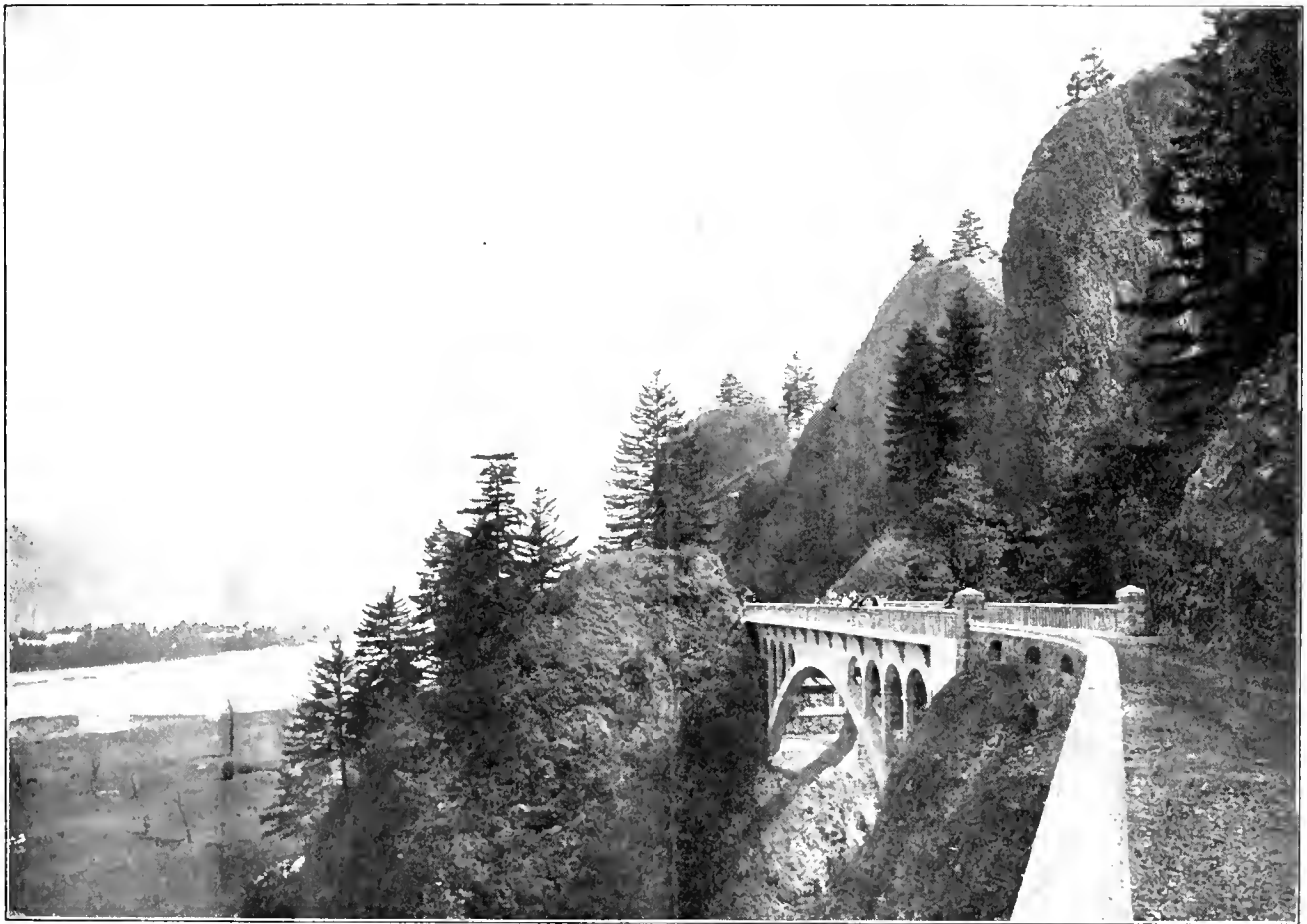
*The World*

# BETTER FRUIT

VOLUME XII

JUNE, 1918

NUMBER 12



Courtesy O-W.R.R. & N.Co

**SHEPPARDS DELL**—One of the many beautiful spots on the Columbia Highway.

The Columbia Highway will be completed for a distance of seventy miles from Portland about the first of July, and is one of the most magnificent in scenic effect in the world.

BETTER FRUIT PUBLISHING COMPANY, PUBLISHERS, PORTLAND, OREGON

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Single Copy 10 Cents



# Federal Farm Loan Bonds Supply Funds To Finance Farmers

## *The First Year's Work*

**The bond of the Federal Loan System should command the attention of all investors.**

The Federal Farm Loan System is the one agency of the United States Government which will bring to America month by month, year by year, and decade by decade through all the future highgrade security, issued for the purpose of carrying out a great national agricultural policy.

The whole world looks for salvation to the American farmer.

The American farmer looks for financial help to the Federal Farm Loan System.

The Federal Farm Loan System seeks to enlist the wise investor in its movement to finance the farmer safely, soundly and conservatively, and thus save the world.

There are twelve regional Federal Land Banks, all operated under the inspection, examination and control of the Federal Farm Loan Board, a bureau of the Treasury Department at Washington.

The first of these banks to be organized received its charter March 1, 1917. Others were chartered immediately afterward. The farmers borrow through national farm loan associations. The first of these associations received its charter on March 27, 1917.

On March 31, 1918, associations had been formed to the number of 2808, or about four associations to every five counties in the United States.

About 56,000 farmers had joined these associations for the purpose of borrowing money on farm mortgages.

Loans amounting to over \$160,000,000 had been approved by the banks and on over 30,000 of these loans money had been paid to the farmers to the amount of about \$80,000,000.

And since March 31st the work has gone on—new associations have been organized; new applications have been made; new bond issues have been authorized.

And it will go on forever. So long

as investors will buy Federal Farm Loan Bonds, and so long as farmers need money and can give security this work will go on. It is a mighty movement to put farming on a better financial basis. You can enlist in it to your own profit and to the good of the Nation by buying Federal Farm Loan Bonds.

Federal Farm Loan Bonds bear 5 per cent interest, payable semiannually, May and November, and in the language of the Federal Farm Loan Act, "shall be deemed and held to be instrumentalities of the Government of the United States, and as such they and the income derived therefrom shall be exempt from Federal, State, Municipal and local taxation." It will be noted that this exemption is complete. Interest on these bonds need not be included in income tax returns.

Such exemption from taxation in a five per cent bond constitutes an advantage hitherto unknown in American investments. These bonds are issued in denominations of \$25, \$50, \$100, \$500 and \$1,000, and in either coupon or registered form. They are due in 20 years and redeemable after 5 years.

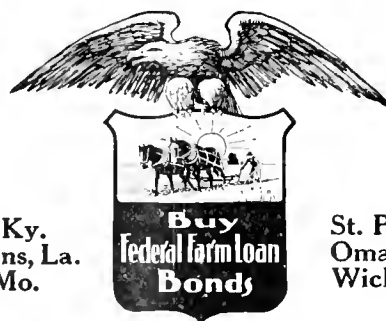
Federal Farm Loan Bonds are printed in the Bureau of Engraving and Printing in Washington, and have the same protection against counterfeiting that is enjoyed by the currency in your pocketbook.

In the language of the Farm Loan Act, Federal Farm Loan Bonds "shall be a lawful investment for all fiduciary and trust funds and may be accepted as security for all public deposits." You can offer your banker no better collateral.

You can buy Federal Farm Loan Bonds at 101 and accrued interest. Order through any bank, trust company, broker or express agent, or write to any of the twelve Federal Land Banks:

Springfield, Mass.  
Baltimore, Md.  
Columbia, S. C.

Louisville, Ky.  
New Orleans, La.  
St. Louis, Mo.



St. Paul, Minn.  
Omaha, Neb.  
Wichita, Kans.

Houston, Texas  
Berkeley, Cal.  
Spokane, Wash.

This space is contributed by  
**Better Fruit Publishing Co.**  
407 Lumber Exchange Building  
Portland, Oregon

or address:  
**FEDERAL FARM LOAN BOARD**  
Treasury Department,  
Washington, D. C.

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46 Clinton Street, Boston**OUR SPECIALTIES ARE APPLES AND PEARS**

The Old Reliable

**BELL & CO.**

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Fruits and Produce**112-114 Front Street  
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**DRYER, BOLLAM & CO.****GENERAL  
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H. M. GILBERT, President and Manager

Growers and Shippers of

**Yakima Valley Fruits  
and Produce**

SPECIALTIES:

Apples, Peaches, Pears and Cantaloupes

TOPPENISH, WASHINGTON

**Pittsburgh Perfect Cement  
Coated Nails** are of the highest standard

The Heads don't come off. Given Preference by Largest Pacific Coast Packers

MANUFACTURED EXCLUSIVELY BY  
PITTSBURGH STEEL COMPANY, Pittsburgh, Pa.A. C. RULOFSON COMPANY, Pacific Coast Agents  
359 Monadnock Building, San Francisco, California**Yakima County Horticultural Union**

FRED EBERLE, General Manager

**Growers' Agents  
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COLD STORAGE IN CONNECTION

**ORCHARDISTS  
SUPPLY  
HOUSE****Franz Hardware Co.**  
HOOD RIVER, ORE.**ARCADIA***America's Greatest Orchard Project*

The home of the big "A" brand of apples.

Winner of first prize at the National Apple Show, 1916,  
in shippers' contest.Only 22 miles from Spokane, Washington  
Gravity Irrigation. Healthful Climate  
Pleasant SurroundingsTracts sold on easy monthly payments.  
Send for free booklet.**Arcadia Orchards Company**  
DEER PARK, WASHINGTON

# The Ideal Fruit Grader

**SIMPLICITY, ECONOMY AND EFFICIENCY**

**ABSOLUTELY NO BRUISING**

Just passed another very successful season. We have the highest of praise for our Grader from all of those who have used them, and from the present indications we will have all sold that we are able to manufacture this season on account of labor being very hard to get that we can use, so we wish to impress on all the growers that we urge them to place their orders very soon so we will have time to make delivery.

There is no machinery—Nothing to get out of order or be fixed connected with the Ideal Fruit Grader. It is practically all wood.

The operation is simple, consisting of a belt for a conveyor, operated by electricity or gasoline engine, and short elastic belts, which move each apple in the proper bin from the belt conveyor.

The Ideal Fruit Grader divides the crop into Extra Fancy, Fancy and C-grade, all at one time. The Extra Fancy being divided into seven bins on one side, the Fancy into seven bins on the other side and the C-grade going into six bins at the end of the grader.

Built for four sorters, the grader is 26 feet long and 9 feet wide. Built for eight sorters, 32 feet long

Further detailed information, illustrated circulars and prices will be furnished upon request.

## IDEAL FRUIT AND NURSERY CO.

HOOD RIVER, OREGON

## GROWERS!

"Use Your Brains to  
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# BETTER FRUIT

AN ILLUSTRATED MAGAZINE PUBLISHED MONTHLY IN THE INTEREST OF MODERN, PROGRESSIVE FRUIT GROWING AND MARKETING

## Northwestern Boxed Apples and Salt Mackerel

By Dwight L. Woodruff, District Manager Apple Growers' Association, New York

**A** SICK business needs curing just as much as a sick man and a sick business is one in which a reasonable amount of success and permanent progress, commensurate with the effort expended is not being realized. The Northwest boxed-apple industry is the business in question and anyone fairly well informed knows that in comparison with other agricultural and horticultural enterprises, this business is not fulfilling its mission; neither is the grower reaping the reward he is justly entitled to reap. Let me ask you, hard-working, self-denying (oftimes heavily mortgaged) apple growers; you, the local merchant, who reads the signs of the times clearly; you, our long suffering and faithful banker, carrying the financial burden of your community, frequently without bankable security; let me ask you, why the commodity in question should be and is selling in this season of 1917-1918 at prices only slightly above former pre-war prices, when nearly all other food products are selling at 50 to 400 per cent advance.

As an illustration: California and Florida oranges are readily selling for from \$8 to \$10 per case, while Northwestern apples at the very best are only bringing from \$2 to \$3 per box. A box of apples weighs 50 pounds and a case of oranges 72 pounds, which only shows a difference in weight of about 45 per cent, while the selling price shows a difference of about 265 per cent in favor of oranges. Expert dieticians claim the food value of oranges and apples is practically the same. The objection will be advanced immediately that there is a very short crop of California and Florida oranges. This is all very true, but at the same time the difference in price is out of all proportion to the crop conditions. The increased prices received this year for Northwestern boxed apples does not begin to offset the increased cost of production. This is an obvious fact. Then why; what is wrong? You will admit there is either something being done that should not be or something being left undone that should be done. You will admit my statements are true thus far. Beyond question a remedy is needed. There is a solution for every problem, otherwise there would be no problem. That an effective remedy is at hand is my firm belief.

A little digression from the main subject and I will then briefly outline a few essential features of the remedy. The dullest business man or the least observant apple grower knows that what we need is a wider distribution of our apples. We all know a freer move-

ment is essential for our best interests. More retailers should be handling our product and selling at a fair profit. To accomplish this we must thoroughly educate the retailer's customers. A good illustration is here presented. One of the largest retail grocery houses in America, located in New York and having fifteen principal places of business, are now specializing and featuring Eastern-grown apples, simply to satisfy a whim—not on account of the superior quality of the apples, as I frequently see displayed in their windows apples such as we send to the cider mill. Another point, referring to a far more serious side of our problem, is: We frequently hear voiced something like this: "Yes, you Western fellows certainly do grow beautiful apples, and you put them up in a dandy package. We take our hats off to you, but your apples don't have the flavor that our apples do." These statements usually come from people of mature years, who are in fact recalling childhood days. They forget that when they were growing children any apple tasted good and satisfied better than our most delicious apple does now. In the past we have been all too willing to mentally agree with that statement, knowing full well it was not true.

Now to get back to the main subject. Human nature seems to be a peculiar quality. You find it everywhere, and it is just as pronounced in the Northwestern apple grower as in the Eastern apple buyer, and perhaps more so. We instinctively rebel when any new thing or movement is advocated. Many times this is a good standpoint, but more often it is not. The business world is being kept alive through new enterprises, new ideas, new viewpoints and new methods. Without them the whole commercial structure would stagnate and rapidly decline. A balance wheel between the unimportant and the essential is always necessary when advocating any untried features. Webster's dictionary tells us that to educate "is to impart knowledge" and that to advertise "is to give notice of information." When we mention advertising to the average man, he immediately shies and quickly sidesteps. It is a mysterious subject to him. It is something he knows, or thinks he knows, little about, but if we say "educate" to the same man, he immediately becomes interested because he knows that education, if rightly used, is beneficial in every walk of life. The point, then, to be brought out is, that we must thoroughly educate the consumers throughout the length and breadth of our whole land so that they will readily use more of our Western apples. The uninformed

will say immediately that "this is all foolishness. We have had apples since the world began. Everyone knows all about apples; everyone knows that we grow the finest apples that were ever produced and advertising cannot do us any good," but that this is false I know from experience.

The possibilities in the growing and selling of Northwestern apples have only very slightly been developed. We grow approximately 25,000 carloads of apples annually in the Northwest, and without giving this any serious consideration, it seems like an enormous quantity, but careful comparison shows that we are not producing any considerable portion of the apples grown in the United States. It is easier, oftimes, to deceive one's self than to deceive others, and that is just the thing that we have been doing for the past several years, and we are doing it much to the detriment of our own individual interests and the interests of our neighbor, no matter what apple section we may represent.

In the early days of the Northwest apple industry, the competition between the various districts tended to promote growth and wider distribution, but there came a time when this ceased to be a fact. Our tonnage became great enough so that one district was competing with another on an oftimes unfair basis, and while that district may have temporarily gained the lead, they have not been able to maintain it. The only competition that should rightfully exist between the various apple districts is that competition based upon the desire and purpose to produce and market an article superior to our neighbor. This competition, coupled with intelligent selling and distributing methods, and climaxed with a centralized, general advertising or educational campaign must and will bring to the grower greater success than has been possible under our methods.

Every apple district has at least one more or less successful co-operative organization, and for all of these I have only words of praise, which also applies to the independent shippers who have worked along constructive lines. Many efforts have been made and are still being made with a larger outlook to combine the marketing efforts of the different districts in one organization. Success along these lines has not been forthcoming, and, for the time at least, it may be advisable to drop further efforts of this character.

Admitting that the time has not arrived calling for centralized marketing as a whole, we will not admit and must not admit that it is not possible—yes,

and eminently practical that we combine, consolidate and centralize our advertising efforts. We want to advertise Northwestern apple, not simply Wenatchee, Hood River, Yakima or Idaho apples, but stick to the one-brand text, namely, "Northwestern Apples." If one district prospers, the other districts must in consequence, providing they are doing business legitimately and up to standard methods. California is a fair example of this method. Money has been spent freely to advertise California products until the magic word "California" whets our appetites and opens our purse strings in response to their educational work. This plan is going to meet with strenuous objections from some Western growers who do not understand Eastern conditions. The grower from the comparatively unknown district will feel that he will not participate in the benefits to be derived through advertising in proportion to his neighbor in the better-known district and the grower in the well and favorably-known district will feel that the grower in the comparatively unknown district will have the advantage over him, but that is just where they are both mistaken.

As an illustration, we will take New York City, which is admittedly the largest apple market in the world. The wholesale and retail buyers here know not only the districts that produce the most perfect apples of certain varieties, but they also know the shippers, regardless of whether they are individual or co-operative, and their methods as well. They go way beyond this and know the individual growers who are producing either a good product or a poor product, and you may rest assured that this co-operative advertising will tend more than any other factor to bring out and establish a survival of the fittest, which, being interpreted in a broad way, means that the individual or corporation that puts the greatest effort along intelligent constructive lines into his methods will unquestionably reap the most reward.

You may be surprised to know that the Florida citrus people, especially the Florida Citrus Exchange, have carried on this year expensive and constructive advertising campaign; this in view of their extremely short crop. The California people may not have advertised so extensively, but they have been living, so to speak, upon the great momentum generated through years of constructive advertising. Their selling methods have reached a point near perfection. In the large cities where auction privileges are to be had they sell practically all of their products through the auction, thereby obtaining the widest distribution possible, with each purchaser on an even basis. Their methods at carlot-points where auctions are not established is to sell at the prices prevailing on that day for the same size and grade of fruit sold at the nearest auction point. They never try to extract from the buyer the last nickel in the box. If there is one thing more than another that this great world war has brought out it is the necessity

Continued on page 25



#### Hood River Apple Box at Tan Che Ssz Temple

SOUTHERN OREGON EXPERIMENT STATION

F. C. REIMER, Superintendent.

A. C. McCORMICK, Assistant Horticulturist.

Talent, Oregon, March 30, 1918.

Mr. E. H. Shepard, Editor *BETTER FRUIT*, Hood River, Oregon.

I am sending you herewith a picture which I think will be of interest to your readers, especially your Hood River readers. During the past summer and fall I spent six months in the Orient making a special study of Oriental pears. This work took me into the wild and mountainous regions of various parts of the Orient. The favorite abode of the Buddhist and Taoist temples is in these mountains, and often in the most secluded and most inaccessible places. These temples were my favorite lodging places, not because there was anything favorite about them, but because they were often the only places of abode, and because they were usually better by one or two notches than the dreary and often unspeakably filthy Chinese inns.

One night was spent at the Hotel Tan Che Ssz Temple in the mountains southwest of Peking. While rumaging around this place viewing with awe and subdued reverence the numerous gods, and the five snake which cures all human ills, I stumbled over one of the most unexpected and most amazing things of

my trip. As you will see, it is an apple box with one end cut off. When I beheld the inscription on the side I was so amazed that I fell over and worshiped the nearest idol. For an instant I thought that it was simply a vision. When I recovered my balance I carried the box out into the courtyard, placed it beside an enormous urn, made a Buddhist priest stand beside it, and then photographed it. When I asked the priests how this box got to the temple all of them shook their heads and blared "mayo," which means "I know not." Now, it was either carried there by some Chinese spirit or by someone who used it to carry supplies from Peking to Montikou, and then across the mountains to Tan Che Ssz.

At any rate this Oregon apple box in this secluded spot in the mountains of China, and in this land of mystery, and misery, seemed quite strange and even mysterious.

Very sincerely yours,

F. C. REIMER,

Southern Oregon Experiment Station, Talent, Oregon.

Do not help the Hun at meal time.

Honey and syrups instead of sugar will make victory just as sweet—and bring it much sooner.



# Summer Pruning of a Young Bearing Apple Orchard

By L. D. Batchelor and W. E. Goodspeed, Riverside, California

THE majority of horticultural writers seem to favor the summer pruning of apple trees. The practice and the arguments made in its favor vary widely and in some instances seem almost contradictory. On the other hand, some experimenters and practical workers have obtained negative results by summer pruning from the viewpoint of crop production and tree growth. Dickens (Kansas State Bulletin 136, p. 181, 1906) caused unproductive ten-year-old apple trees in Kansas to bear satisfactorily during the fourth year of summer pruning. The Gardner's Chronicle (Gardner's Chronicle, 3, Ser. 41 (1907), No. 1069, pp. 400-403, 406, 407) compiled the opinions of more than one hundred and eighty-five fruit growers who practiced summer pruning, and about 82 per cent of these orchardists reported satisfactory results, while the remainder expressed doubts as to the value of the practice. Opinions compiled from English fruit growers by the Journal of Royal Horticultural Society (The Summer Pruning of Fruit Trees, Jour. Roy. Hort. Soc. 33, part 2, pp. 487-499, 1908) showed that the consensus of opinion was uncertain as to the effects of summer pruning and that much depended upon soil, climate, varieties and season of practice. Drinkard (Va. Sta. Tech. Bull. 5, p. 119, 1915) checked wood growth and greatly stimulated the formation of fruit buds by summer pruning but one year. Vincent (Pruning for Increased Color and Yield, Better Fruit, December, 1915, p. 27) found summer pruning to be profitable in Idaho, as it increased the total yield, size and color of the fruit; these trees were not irrigated, however.

The lack of unity on this subject only points out the many factors which must be considered in giving advice on this matter or in planning investigational work which is intended to throw light on this problem. Any treatise on summer pruning of apples must take into consideration many of the following factors, which will bear directly on the results obtained: Nature of both the summer and winter pruning practice, variety, stock, root development, age of trees, soil and climatic conditions. If the orchard is within the irrigated sections the amount and season of available water must also be considered. With these factors in mind the writers planned an investigation on this subject during the summer of 1911.

The soil conditions of the orchard were most favorable to apple production, namely, a well drained, deep, rich, sandy loam. The soil was of much the same consistency to a depth of six or eight feet with a water table about 58 feet from the surface. In the virgin state this soil was covered with a heavy growth of sage brush, which vouches for its natural fertility. Since being brought under cultivation it has been devoted to grain, alfalfa, orchard and the growth of sugar beets as a com-

panion crop to the trees. The soil is in a high state of fertility for the growth of fruit or general farm crops. The varieties include the Jonathan and Gano. The trees had been annually pruned during the dormant season and presented an excellent example of vase-shaped trees, a type common to the Intermountain States. The length of the growing season is sufficient for the production of the late-maturing apples, such as the Gano or Winesap. An abundance of irrigation water is available. It has usually been necessary to water the orchard four times during the latter part of the growing season, from July 1st to September 15th. Much more water could be used if necessary.

In outlining the work it was planned to compare plots pruned only in the dormant season, with similar plots pruned during the dormant season and at different intervals during the summer. Nine similar plots were laid off, and pruned as follows:

Plot 1, to be pruned in February or March, cutting out the cross limbs, crotches, opening up the center, and thinning out the bearing wood of the tree. No limbs to be headed back and no pruning to be done other than at the above season.

Plot 2, pruned as Plot 1, during February or March, and all the suckers to be removed from the center of the tree from time to time during the summer.

Plot 3, same as Plot 1, except the excessive growth in the top of the tree is to be cut back to lateral outside limbs in an endeavor to make the tree take a more spreading and less upright form.

Plot 4, pruned as No. 1, during February and March, and summer pruned in a similar manner to remove suckers and open up the dense growth of the tree during the third week in June.

Plot 5, pruned similarly to Plot 4, except summer pruning was done the first week in July.

Plot 6, same as Plot 4, except summer pruning was done the third week in July.

Plot 7, similar to Plot 4, except summer work was done the first week in August.

Plot 8, all pruning similar to Plot 4, except summer pruning was done the third week in August.

Plot 9, unpruned.

Thus five plots were pruned during the summer, one every two weeks interval from the third week in June until the third week in August.

The summer pruning was similar in every way to the nature of the winter pruning. Crossing and parallel limbs were removed, and the fruiting wood thinned out here and there where it seemed to be crowded. In removing water shoots from the center of the tree, the cut was always made close to main limbs and no stubs were ever left. (Pruning the water shoots to stubs has been persistently practiced by some of the orchardists of the locality, but always with negative results as far as

crop was concerned, according to all observations the writers have been able to make.) Measurement of the crop production of marketable fruit has been the chief means of determining the effect of the several types of pruning. General notes were also kept on the size and color of the fruit and vigor of the trees. There was sufficient crop of Gano apples to warrant thinning all the plots to a minimum distance of five inches during the years 1912 and 1914. The Jonathans were similarly thinned during the latter season only.

The crop productions for the Jonathan plots are shown by Table I. The variation between Plots 1 and 2 was only slight, the average production per tree for the four years for the above plots being 667 and 645 pounds, respectively. Rubbing the water shoots off of Plot 2 had little or no influence on crop production. Water shoots, however, are so much more readily and cheaply removed during the growing season that it will usually pay to remove them at this time because of the saving in labor. Plot 3, which was pruned to cause the trees to spread as much as possible, averaged 88 pounds less fruit per tree during the four years than Plots 1 and 2, on which no heading back was practiced. The summer pruned Plots 4 to 8 averaged 191 pounds of fruit less per tree for the four years than Plots 1 and 2, which were pruned during the dormant period only. The summer-pruned plots also averaged 112 pounds of fruit less per tree than the unpruned plots for the four years. Plots 1 to 2, which were pruned in the ordinary manner during the dormant season only, averaged 79 pounds of fruit per tree more than the unpruned Plot 9. The variation among the total production of the summer pruned Plots 4 to 8 is within the realm of chance except for Plots 6 and 7, which were noticeably low. This was thought to be caused by the fact that these two plots, through causes of no interest here, were more severely pruned during the summer of 1913 than the other plots in question.

Turning now to Table II, which shows the crop production of the Gano plots, much the same comparisons and relative results can be seen. Plots 1 and 2 varied only as much as might be expected between any equal number of trees picked at random in the orchard. These two plots averaged 1,055 pounds per tree while Plot 3 averaged 965 pounds, or 90 pounds less per tree. This was due in part at least to the character of pruning which aimed to spread the trees of Plot 3 as much as possible by cutting back the long terminal growth in the tops of the trees, to the lateral branches. The same results were seen on the Jonathan plots. By the continued efforts of trying to make low-spreading trees, more of the future fruiting wood was removed, and there was a continual attempt on the part of the trees to resume their more

natural upright habit. The ratio of the total pounds of marketable fruit during four years was 100—88 in favor of the trees which were allowed to assume their natural shape. This only bears out the practical advice of earlier horticultural writers. On the subject H. Bailey writes as follows (The Pruning Book, p. 150): "The most rational pruning—when fruit and the welfare of the plant are chief concerns—is that which allows the plant to take its natural form, merely correcting its minor faults here and there." Gardner (Oregon Station Bulletin 130, p. 56, 1915) favors the thinning out rather than the heading in of apple branches for the purpose of increasing the formation of fruit spurs, under Oregon conditions.

The summer-pruned plots 5 to 8, inclusive, show only a small amount of variation well within the realm of chance. The average of these plots again fell below the Plots 1 and 2, which were similarly pruned in the dormant season only. The comparison is as follows: Average pounds of fruit per tree for four years on winter-pruned plots—1,055, summer-pruned plots—937 pounds, or a reduction of 112 pounds per tree. If the entire orchard had been summer pruned it would have caused an average production in yield during the past four years of 257 boxes per acre (this is based on 50 pounds of fruit per box; there are 115 trees per acre in the orchard under consideration), or an average of 64½ boxes per year. With the Gano variety there was an increased yield on the unpruned Plot 9 of 101 pounds per tree compared with Plots 1 and 2, which were winter pruned. This is more than offset, however, as will be seen later by the difference in the quality of the fruit, and the added cost in thinning. It will be interesting to see whether the unpruned plot can continue its annual large crop production and outyield the pruned plots. Bedford (Woburn Exp. Farm Rpt. 7, 1907) and Pickering report that unpruned trees outyielded pruned trees nearly three to one at the end of twelve years' experimentation. The unpruned plot averaged 219 pounds per tree more for the four years than the summer-pruned trees. This is approximately a box per tree per year, or a yearly reduction of 115 boxes per acre, charged against his style of pruning.

It should be noted here that the orchard under experimentation is far from being an unproductive orchard. The winter-pruned plots produced very satisfactory commercial results. Summer pruning, therefore, was not undertaken in an attempt to cause barren trees to become fruitful, but rather to test the value of summer pruning in connection with winter pruning where trees were already producing crops at least equal to average of the region. The color of the fruit on the several plots has not varied materially, except the unpruned Plot 9 has gradually become slightly inferior concerning this factor. This was most noticeable on the lower limbs. During the season of 1914 the fruit on Plot 9 had only about

70 per cent as much color as the other plots. This more than offset the increase in yield of this plot as compared with the pruned trees. No difference whatever could be detected between the color of the fruit on the summer-pruned plots and those pruned only in the winter. All of these trees had a small percentage of sunburned fruit, but the crop as a whole was very evenly colored on all parts of the trees. The size of the fruit was largely equalized by thinning the several plots. It cost about 25 per cent less per tree to thin the pruned trees than the unpruned ones; the actual price being 20 cents and 15 cents, respectively. As a means

of thinning the fruit and improving the color by opening up the dense growth of the tree, the moderate winter pruning is advisable.

The above results may apply only to young, vigorous bearing apple trees of the Jonathan and Gano varieties when planted on a rich, sandy loam, free from seepage, in semi-arid climate, with an abundance of irrigation water available. These varieties under the above conditions show a tendency to overbear soon after reaching a productive age, and are usually thinned; summer pruning reduces the area of fruit-bearing wood, and the vitality and productivity of the tree.

TABLE I.  
Showing Average Yield of Jonathan Trees Under Different Methods of Pruning.

Plot	Method of Pruning	Average Yield Per Tree				Total Average
		Yield 1911 lbs.	Yield 1912 lbs.	Yield 1913 lbs.	Yield 1914 lbs.	
1.	Winter pruned only*	50	208	82	327	667
2.	Winter pruned and all suckers removed from tree during summer	37	150	69	389	615
3.	Winter pruned with excessive growth in top of tree removed to outside lateral limbs	11	200	31	323	568
4.	Winter pruned, also summer pruned third week in June**	33	141	66	356	596
5.	Winter pruned, also summer pruned first week in July	41	141	50	281	513
6.	Winter pruned, also summer pruned third week in July	16	125	8	200	349
7.	Winter pruned, also summer pruned first week in August	16	116	32	204	368
8.	Winter pruned, also summer pruned third week in August	20	112	57	312	501
9.	Unpruned	35	141	59	342	577

\* All winter pruning done during February or March.

\*\* Summer pruning consists of removing suckers and opening up dense growth.

TABLE II.  
Showing Average Yield of Gano Trees Under Different Methods of Pruning.

Plot	Method of Pruning	Average Yield Per Tree				Total Average
		Yield 1911 lbs.	Yield 1912 lbs.	Yield 1913 lbs.	Yield 1914 lbs.	
1.	Winter pruned only*	73	400	147	441	1061
2.	Winter pruned and all suckers removed from tree during summer	107	243	221	478	1049
3.	Winter pruned with excessive growth in top of tree removed to outside lateral limbs	78	243	117	497	965
4.	Winter pruned, also summer pruned third week in June**	106	193	179	478	956
5.	Winter pruned, also summer pruned first week in July	93	225	165	470	953
6.	Winter pruned, also summer pruned third week in July	100	131	224	420	875
7.	Winter pruned, also summer pruned first week in August	92	185	232	446	955
8.	Winter pruned, also summer pruned third week in August	81	175	251	438	948
9.	Unpruned	39	228	342	547	1156

\* All winter pruning done during February or March.

\*\* Summer pruning consists of removing suckers and opening up dense growth.

## Grafting Tardy Walnut Trees

By Chas. L. McNary, Salem, Oregon

THE culture of walnut trees for their fruit in the adaptable portions of the Pacific Northwest has not reached the station where it may be said that all problems confronting the grower have been satisfactorily solved. This situation is mainly attributable to the recentness of the industry and to the indisputable fact that greater skill is required to produce superior walnuts than is necessary in the culture of most fruits. By the force of experiments and through observations covering a substantial period of time, we have clearly demonstrated the practicability of walnut growing in our Northwest country.

Many factors affecting the industry have been studied by enthusiastic investigators, but none more interesting than the attempt to change the behavior of a misbehaved tree by top working to a scion taken from a perfectly behaved tree. This article is therefore intended

to incite further investigation into this profitable field of labor, and to throw such light upon the darkness of this question as my limited experiments have taught.

An interested observer sojourning through the country in the month of June, will have his or her attention arrested by the number of walnut trees in seedling groves that have the appearance of lifelessness on account of their not having entered the period of foliage. This condition is frequently apparent in individual trees standing alone, yet is more noticeable in cluster planting. Upon a close examination of these belated trees, you will discover that they are not dead, but are sleeping, and if you will continue your observations, you will notice that about July 1st, these trees become aroused and then enter upon their short season of growth. Scarcely is it necessary to re-

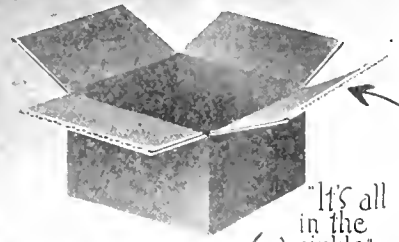
mark that these trees make an unsatisfactory growth and are often crippled by late frosts that occur regularly each fall. These trees rarely make more than two-thirds of the growth made by trees that start at a normal time in this climate, which I shall place as about May 1st, and more rarely do their nuts mature early enough to avoid the frosty nights of the declining year.

On the farm which I own and operate jointly with Mr. W. T. Stolz, five miles north of Salem, Oregon, forty acres of land is planted to seedling walnut trees, mostly of the Franquette variety, ranging in age from four to seven years. In this planting, consisting of more than one thousand trees, about ten per cent were observed to be "sleepy," that is, not leafing until July the 1st of each year. The trees were undersized as compared with those having normal habits, and were otherwise deemed to be valueless as permanent trees. The question of their treatment or their extirpation became imperative and on account of their root and body development, it appeared that a treatment, if practicable, would bring quicker pecuniary returns than the removal of the trees. Consequently, on July 4, 1915, two of the trees were limb worked to Franquette scions that had been carried over in cold storage, involving six separate grafts. Three of these grafts survived and three perished; those that endured attained a growth of approximately five feet. The spring of 1916 witnessed a perfect revolution in the conduct of these trees. The season-old grafts commenced to grow about May 1st in response to the parent tree from whence they came, and continued to grow in the manner and along the custom prescribed by their more intelligent ancestors, until they were abruptly stopped by that killing frost in the early days of October.

Encouraged by the success of late grafting in the summer of 1915, I decided to operate upon the remaining sleepy trees this summer, so during the dormancy of the trees last winter I caused a number of scions to be taken from selected Franquette walnut trees and placed the cuttings in cold storage, where they remained incased in damp moss until June 18, when the work of limb and body grafting commenced. Ninety-two grafts, covering eighty-four trees, were placed upon these backward trees with result that forty-eight grafts grew until cut down by the frost of October. The percentage of those that lived was as 52 is to 100, and each experienced a luxuriant growth, in some instances as much as six feet. It will be remembered that during the 18th and 19th days of June, last, when the work was performed, the days were exceedingly hot, and for that reason, the methods employed will be outlined briefly. The scions were placed on the trees in the usual manner, and at the base of the graft was tied a double handful of damp moss wrapped in oiled paper, and over all was placed a six-ounce paper bag. The principle involved in the using of the moss was to maintain the

humidity in the atmosphere and to conserve all the freshness and coolness possible. To my satisfaction, I have demonstrated that the sleepy tree will conform its habits to the scion when once installed, so that it is both possible and practicable to make the body and root system of an undesirable tree perform the functions of one that answers the requirements of the most exacting culturist.

But, you ask, properly, is it necessary to wait until about the third week in June, or later still, July 1st, when the tree shows life and the flow of sap is abundant to insert the graft? Primarily, I supposed that the only time properly to graft was when the tree first experienced hearty circulation of sap, but latterly, I am convinced otherwise, and now believe that a tree should be grafted when the occasion is most propitious for the scion. That trees experience a rest period has been absolutely demonstrated by many thoughtful investigators and that a walnut scion having a different habit of life will control a tree showing a different and more backward disposition has been developed by my own experience,



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which is infinitesimal as likened to many other growers of this popular nut.

While it is not my purpose to enter upon a physiological discussion of the many principles involved in an elaboration of this question, for the reason of my acknowledged unfitness for the task, yet I shall state my reasons for concluding that the time to top work a walnut tree must be governed by the readiness of the scion for action rather than that of the stump upon which the graft is placed. Students of horticulture have proven that by means of various treatments, the rest period of plants can be broken, causing them to begin growing within a short time following the application of the method invoked. One of the agencies that I have observed is a shock superinduced by a severe cutting of the tree, thus the cutting of a tree back to a stump produces such a shock to the tree as to stimulate it into a much earlier growth than it would have experienced by the omission of the treatment. In other words, the pomologist would say that this violence to the tree would stimulate the enzymes into activity. Further, the walnut tree is never really dormant

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insofar as the sap flow is concerned. Let him who is skeptical remove a limb in the dead of winter, and he will be at once convinced of this statement when he beholds the flow of sap that follows. And for that reason I conceive there is sufficient sap activity in these late-starting trees to supply the demands of a few scions whose needs are modest as compared with the total sap flow which lies in reserve for the tree's use during the active period of their development. Furthermore, it appears that the scion has well-known powers of "pumping" sap independently of the stump on which it is grafted, and that the stump and roots will respond to the draft created at the top of the scion. This must be so, for the scion has dormant life and is seeking every channel to develop its buds, and will, unless retained in almost frigid quarters, commence to bud at its natural time.

As a deduction from what has been said, I would recommend to the luckless orchardist who has trees of dilatory habits, to work them over at the precise time he would give his attention to normally behaved trees, say, about April the 15th, allowing a few days for the scion to callous before the period of growth, and then to place the unused grafts in cold storage and later on, or about the 15th of June, to employ them in instances where the scions did not grow. By accepting this formula, he will be in a position to take advantage of two opportunities for the same work and thereby appreciably reduce his failures, and when successful the period of time required by the transformation will give new significance to the declaration that nature works in a mysterious way her wonders to perform.

## Commercial Prune in the Snake River Valley

By L. G. Dunn, Bliss, Idaho

**M**ANY features of developing the commercial prune in the Snake River Valley will apply favorably to the Boise Valley or other parts of the state. As local conditions vary so much in the different parts of the Northwest, I will confine myself principally to our experience in developing more than 200 acres of Italian prunes on The Swiss Valley Ranch, eleven miles west of Bliss, Idaho. We are located in the Snake River canyon, between the rimrock and the river, where the river makes a three-mile curve around the ranch. Beginning at the east side, flowing southwest, then flowing to the right until it flows directly north, toward King Hill.

This land in the bend of the river is known as the Swiss Valley Ranch, about three-quarters mile wide. The ranch is divided into two principal flats or levels. The lower flat, where we have about 100 acres of Italian prunes is about 60 to 80 feet above the river. On the upper flat we have more than another 100 acres Italian prunes; it is about 250 feet above the river. Then the rimrock on the east side of the ranch is about 100 feet higher, nearly all a perpendicular wall, which shades over a great portion of the orchard quite late in the morning, making a great protection during late spring frosts. The air drainage is generally

good. The soil is rather a coarse silty or lava ash sandy nature, rich in about all the soil elements that go to make ideal fruit land, except humus and nitrogen, which is found deficient in nearly all the new soils of the Northwest. This deficiency we are trying to supply by raising alfalfa, clover and other legumes between the trees. Sometimes plowing under a green cover crop.

The first planting of prunes began in the spring of 1913. The first stock of trees, 20,000, were all the best stock we could get, yearlings four to six feet. The inspector did not throw out a single tree from the 20,000. A few trees purchased were three to four feet, and it might be well to say along this line that, as these three to four-foot trees were about two-thirds the size of the four to six-foot trees, they are still maintaining that comparative standard; and from all appearances at this time they will still maintain that same comparative standard in the production of fruit. It never pays to plant anything but first-class stock. We have also noticed that the early-spring planting got the best results on the growth of the trees up to this time. Fall planting has not proved as successful as spring planting.

Clean cultivation and growing crops between the trees are showing about

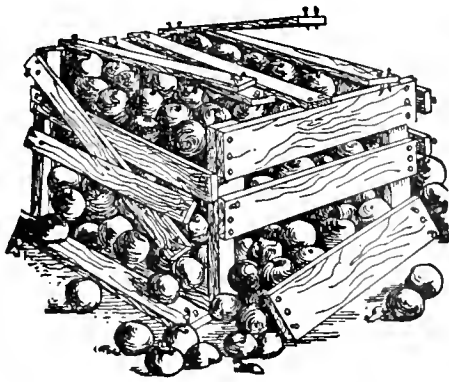
equal results, so far as the growth of the prune trees are concerned, up to this time. Where clover or alfalfa is grown right up under the young trees they require a great deal of water, and then do not do so well, though I think they will be benefited in the future by having had this cover crop there. On some parts of the orchard we have grown corn between the trees for three years in succession, on land that had clover between the trees the two first years. On this portion of the orchard are the very best trees. However, we would not advise planting corn three years in succession on any land.

On the other portion of the orchard we have been raising clover, alfalfa, potatoes, beans and carrots, etc. Other portions are clean cultivated, while certain other portions are so rocky that we do not try to do anything with it except to irrigate it. But that part is not doing so well. Thorough cultivation is getting the best results throughout the valley.

Pruning.—The first year when the prunes were first planted, we cut the switches back to about thirty inches. Second spring the trees were well cut back again, after that just enough pruning to keep the trees balanced. Owing to the strong prevailing winds from the west, most of the pruning is done on the east side. As a rule prune trees do not require much pruning, though a little pruning will always help.

Irrigation.—Our only rule is to irrigate any part of the orchard when it needs it and as much as it needs, regardless of when it was previously watered, or the number of irrigations it has already had in the season. A part of the orchard where there is alfalfa or clover growing all around the trees, we sometimes irrigate ten times during the season. Other portions, where clean cultivated, only two or three times. There are two one-acre patches of prune trees above the ditches that are now five years old that have never been irrigated. These trees are growing just about as well as those that have been irrigated regularly. We have practiced considerable late fall or winter irrigation with very good results. Especially if the fall and winter is rather dry and cold it is of very much benefit, and in our valley it never does any harm.

The oldest trees are now five years old, and over a greater portion of the fields we have developed a very fine young commercial prune orchard. Last spring, 1917, twelve or fifteen thousand of the oldest trees bloomed and set on a heavy crop of prunes, but, like most all the young prune trees of the Northwest, they nearly all fell off before they matured. The cause of this heavy shedding has been a mystery to the horticultural experts, as well as to the prune growers. On The Swiss Valley Ranch, it is our opinion the heavy shedding of the prunes was caused by the unfavorable climatic conditions the past three years, as follows: The winter of 1914 and 1915 were very dry, no snow, and quite cold, followed by a dry, hot summer, with a shortage of water for irrigation. Winter of 1915 and 1916 rather dry and cold in early part of the



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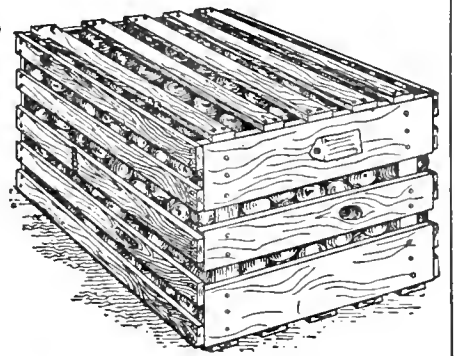
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winter, followed by heavy rain and snow in February, which fell on frozen ground and nearly all ran off. The trees bloomed and set on fruit normally in the spring. Then in May came the coldest late freeze on record. The temperatures were: May 10, 18 above; May 11, 21; May 12, 19; May 13, 23; May 14, 31; May 15, 21. This was quite a shock to the fruit trees. The average minimum daily temperature for May, 1916, was 33.8. Compare this with the average daily minimum temperature for December, 1917, which was 32. We have kept a strict daily record of the maximum and minimum daily temperature at the ranch the past five years, and find it quite interesting in making comparisons.

As you know, the winter of 1916 and 1917 was very cold and long; a late spring followed by extreme heat in July, with a very low degree relative humidity. All these climate conditions seemed to have run down the vitality of the young prune trees until they were unable to mature their fruit. It being the nature of the Italian prune to shed what fruit it cannot well mature.

In maketing the prunes it is the intention, of course, to ship as much fresh fruit to Eastern markets as possible. While in the East last month, I made investigations in several large markets regarding the demand for the Italian prune and found them all wanting more Italian prunes, and the prices are good as compared with previous years. They

are getting to be a favorite fruit with all classes of people in countries where they cannot be raised. The farmers' wives throughout the Middle West are anxious every fall to get a few boxes of Italian prunes (big blue plums, as they generally call them) to can for home use. Taking everything into consideration, the future for the prune industry looks very bright. It is the intention of the Swiss Valley people to build drying plants, etc., to handle by-products and take care of all fruit that cannot be handled fresh, and so develop their 200 acres of Italian prune orchard that will make it one of the greatest commercial prune enterprises in the Northwest.

## Benefits in Horticulture from Cross-Pollination

By O. B. Whipple, Bozeman, Montana

**T**HE term cross-pollination in common usage means the transfer of pollen between flowers borne upon different plants. On the other hand, self-pollination refers to the transfer of pollen between parts of the same flower or between flowers of the same plant. In other words, self-pollination involves in its broadest sense the parts of one individual plant and cross-pollination the parts of two distinct individuals. As the terms are used in horticulture we must still broaden these definitions, for we still consider the flowers of those plants commonly propagated vegetatively (by cuttings, layers, suckers, and by graftage) self-pollinated so long as the transfer of pollen does not extend beyond individuals of the same variety. When the transfer extends beyond the variety, as between a Jonathan and a McIntosh apple tree, we say it is cross-pollination. But strictly speaking horticultural varieties which are propagated vegetatively are nothing more than individuals. All our varieties of fruit have either appeared as seedlings or bud variations. In each case they were single individuals to begin with and propagation by division of vegetative parts does not create new individuals. Two apple trees grown from buds or from stems taken from the same parent plant are no more unlike than two branches of one plant grown from seed,

The purpose of pollination is fertilization, without which flowers are rarely able to produce seed and never fertile seed. But, you may say, we care very little whether a pear produces seeds or not. True; unless we appreciate that most flowers require the stimulus of fertilization before they will develop fruits. Among our horticultural crops there are a few plants which are able to develop fruits without fertilization. The seedless oranges as well as other seedless citrus fruits and the English cucumber are familiar examples in which fertilization, either self or cross, is not necessary for fruit production, although it is necessary for the development of fertile seed. Occasionally our common tree fruits apparently set fruit without fertilization, but these fruits are in nearly every case inferior to those developed from fertilized flowers.

Darwin, an England writer, in a book published in 1859 first called our attention to the fact that in nature certain plants were so organized or their flowers so constructed as to invite, and, in many cases, to insure cross-pollination. Long before this it was commonly known that insects carried pollen from flower to flower and that cross-pollination was probably not uncommon in the plant kingdom, but until the writings of Darwin appeared it was not very definitely known that the plants profited

by the transfer. Darwin observed that among plants in nature there was a tremendous struggle for existence, in which many individuals perished, and he naturally concluded that those best fitted for this struggle survived. In other words, he contended that the various forms of plant life found in nature were forms evolved by this competition. If one plant had an advantage over a neighbor it survived and produced offspring which in many cases inherited the strong points of the parent. He found in nature many plants with blossoms so constructed as to practically insure cross-pollination and reasoned that where such a condition of affairs existed cross-fertilization must be beneficial. The theory advanced was that plants developed from seeds which were the result of cross-fertilization were more vigorous than those from seed of self-fertilized flowers, and consequently more often survived in the struggle for existence. These cross-fertilized seeds no doubt came in the majority of cases from plants where cross-pollination was induced by peculiar structure of flowers or by other means, and in time groups of individuals were developed in which cross-pollination was the rule rather than the exception. Darwin later verified the theory of greater vigor in seedlings resulting from cross-fertilization

Continued on page 19





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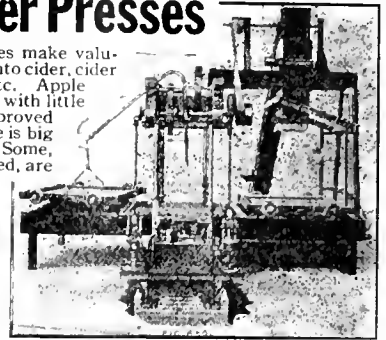
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## Food Control or Famine

By Ernest B. Roberts, in The Montreal Star and The Toronto Globe

DO you remember when the British people first learned that this would be a long war? It was not by Earl Kitchener's famous statement that it would last three years; there was to us then something airy and ultra-professional about the prediction we could not understand. The people had not then learned to speak in soldier's terms. No, it was when Mr. Lloyd George, the "little Welshman," a common man, interpreted for them in common language the full significance of the bad dream they dreamt they were undergoing: "It takes eight months to make the machine on which to make machine guns," he said in July, 1915, after the war had already run its bloody course for eleven months. "We have had to build factories in which to make the machinery for making machine guns. Our high explosive shell requires tools for one hundred separate gauges for the nose alone." The British people gasped, but then, recovering with grand courage, buckled down grimly to meet the worst that the Kaiser's "Big Blond Beast" could give. That British people today, centered in the "little isle set in the silver sea," is down on the mat with that beast with their last nerve taut and tight, fighting a fight that, whether we recognize it in Canada or not, is going to settle for all time the destiny of Canada. For if,—if Britain fails? That is all that happened to France in 1760. But Canada changed hands through the failure.

What does Britain's effort mean to Canada? As little to nine out of ten of us as did Earl Kitchener's in 1914. We read, in a detached kind of way, as though it were of academic interest only, that the nation is now on rations. What is it that puts a whole free people of 40,000,000 on measured meals? Why cannot they have a "second helping" if they can pay for it? We do it in Canada; in fact some in Canada, thanks to British money paid over for shells, are doing it today where they never did it before. But why should the workingman's wife in the Old Country have to dole out her old man's dinner as though she bedrugged it? Why should good, honest folks, not of the "charity type," have to wait hours and hours in

the queues, just as they do at your picture shows in Canada, for the bread which is to keep body and soul together? Why should women and children, bone of your bone and flesh of your flesh, as tenderly brought up as any in Canada, be given just eight little ounces of sugar in a week of seven long days? We ask these things in Canada, those of us who are trying to understand, but we ask with the same sort of bewilderment as we felt in 1914 when told we could not get to Berlin in 1915. Because it takes, to paraphrase Lloyd George's words, much more than eight months to make the machinery which shall feed a nation at war.

That is the present stage of food control. We are still making the bricks of which the factory of food control proper shall be built before we can make the machinery by which food control shall be accomplished. "I fear," said Lloyd George on another memorable occasion, and again we lacked the comprehension to grasp what he spoke of, "I fear the disciplined people behind the Germany army, the rationed family and the determination of wife, and sister, and daughter, and mother to stand and starve so that their fighting men may be fed—I fear it more than the Imperial Army itself." Only with a disciplined people behind can we hope to win that for which our souls are crying out. That is why the British people with a tremendous consecration that reaches to the tender children, have set themselves to a task from which they will only rise victors or vanquished. The rationed nation, the rationed family, the rationed child, blood of your blood and bone of your bone of a common British stock, that is the price they are proud to pay. For in this there is a mighty pride, a conscious measuring of their glory with the best traditions of ancient Sparta and of Imperial Rome, for they know that "it is a far, far better thing that they do than they have ever done." It shall ring and echo forever along the brightest billtops of human history. The Canadian people have not yet had time to understand that the Food Controller's is the only war-time organization which had no workshop, no work-

ers, no anything to guide before the war. The militia department at least had a nucleus round which recruiting accretions could be grouped.

Food control until a year ago was a new science, unlearned so far as the Anglo-Saxon races were concerned, needless as the Prussian goosestep. There was no precedent for anything that had to be done; the Food Controllers in England, the United States and in Canada had to blaze their own trails. Conditions in the United States and in Canada were approximately alike, and the result has been that there is now close co-operation between Ottawa and Washington. It took eight months to make the machine to make machine guns, though they knew how to cast and build those machines from the first. Yet our overfed can only ask in slippered, armchair comfort, "What is the Food Controller doing?"

An outstanding change has taken place in the expert attitude toward food control in the last few months. In fact it is almost a matter of the last few weeks. Food control does not now chiefly mean a regulation of prices for us at home. What Food Controllers are faced with is the shortage of the food to control. It is famine rather than prices. This fact is the more startling the more one knows it. Rhondda, Hoover and the Food Controller of Canada, crossing the threshold almost simultaneously of a new domain, have suddenly come across the hideous shadow of a spectre of world famine darkening every path. What does it mean? Unless the people of North America do their utmost to conserve and to produce food, it means one of two ugly alternatives: Defeat or destitution in France, Italy and England—in homes on whose supplies of food the destiny of Canada depends as inevitably as though our nine provinces were with the departments of Northern France and Northeast Italy actually under the fell heel of Prussianism.

The food of the civil population of France has been so close to exhaustion that it was dependent on British shipping for its maintenance; and this shipping is so depleted by the submarine campaign that not a ship could be spared to carry the huge supplies that Italy had bought and paid for in Argen-

lina, but which, while the Italian people have in some cases escaped starvation so narrowly that even reduced France had to send them shipments just before Christmas, must remain there. Yet we in Canada have our "second helpings," and some people write to the Food Controller with sardonic humor to ask if "food control is not a joke." So little have we learned in forty months of warfare that we have not yet comprehended that Italy is fighting in effect as much for Canada as are our own Canadian soldiers just north on the same line. Had Canadians been in the tight place that the Italian civilians are now they would long since have cried out for a fairer bearing of the weight. Can one wonder that Italy, in dire distress, is looking for more loyal help from an allied Dominion?

This is not charity, this thing, food control. It is war. The Allies have a right to demand it. They have a right to resent the offer of only what is "left over." Those who are fighting a common battle for civilization and common



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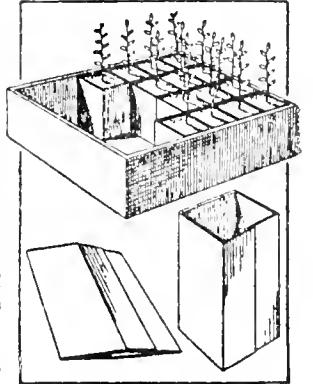
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protection have a higher claim than Lazarus had to only the "crumbs that fell from the rich man's table." The Canadian people must get the right ethics of war-time food control.

Remember, we have had the warning: "I fear the disciplined people behind the Germany army, the rationed family, \* \* \* more than the Imperial army itself."

## Small Fruits

By W. H. Paulhamus, Pres. Puyallup and Sumner Fruit Growers' Canning Co., Puyallup, Wash.

THE present demand for jellies, jams and preserves has given a new stimulus to the growing of bush fruits, consisting of blackberries, red raspberries, black raspberries, gooseberries, red and black currants, loganberries, phenomenal berries, and in fact every other kind of berries that do so well in our North Pacific Coast climate.

A few years ago red raspberries were a drug on the market at four to five cents per pound; today the canner is paying the grower eight cents per pound for the same product and is unable to secure a sufficient quantity to take care of his requirements. The old evergreen blackberry that has been so much of a pest to the average farmer has certainly come into its own, with a result that every canner is anxious to secure all of the evergreen blackberries that are obtainable and is willing to pay a price ranging from five to five and one-half cents per pound. In fact, every cross-roads merchant can create a market for these blackberries by arranging to put them in barrels for some responsible canner and ship them daily to a cold-storage plant. In other words, the present prices of all bush fruits should stimulate very materially an increased production.

The question that naturally arises in the mind of the man who has a few surplus acres of land is the advisability of planting; what variety to plant; how they should be planted, and the best method of handling after the planting is completed.

In red raspberries the desirable variety is the Culbert, for the reason that it can be used in jam making or in canning in syrups. There is no other red raspberry grown that has sufficient texture to withstand the necessary processing required in putting up in cans. Of course, in jam making it doesn't

make any difference how much the berry is crushed up the jam is equally good, but this is not true in canning and is equally not true in whole-fruit preserves in glass.

In the black raspberry the Munger variety appears to do the best in the canneries of the Pacific Northwest, therefore the grower should produce the black raspberry that the canner desires to purchase.

In the loganberries, it doesn't make any difference to the manufacturer of loganberry juice whether it is the loganberry or the phenomenal berry, but from a canning standpoint the larger the berry the more satisfied the consumer. Inasmuch as the phenomenal berry is very much larger than the loganberry and of equally good quality, it would be advisable to set out a portion of the new plantings of phenomennals and a portion of loganberries; in fact, the variety to plant depends entirely upon the adaptability of the berry to the particular soil that you are using. The phenomenal berry is a little more tender in some places than in others, but it is not advisable to undertake to plant too great an acreage of phenomennals without having some experience as to the adaptability of this berry to your particular community.

In strawberries, of course we all appreciate that there is no strawberry equal to the Clark Seedling either for fresh consumption or for canning purposes; but the Clark Seedling is generally considered a shy bearer, therefore if you could produce a crop of one hundred per cent more berries of some other variety the chances are that the crop producing the big yield will be the greatest price getter for you. Next to the Clark Seedling, from a canning standpoint, is the Wilson, which is an

excellent canner and a very fine berry for every purpose. In the Puget Sound country the Marshall comes third, as it is a good cropper and an excellent canner berry. The Magoon berry appears to grow the greatest yield per acre, but if berries are plentiful it would be impossible for the grower to sell any Magoons to a canner just as long as he is able to procure any other variety for his requirements.

Gooseberries are becoming a great factor in the manufacture of jam. The old-fashioned Oregon Champion appears to be the most desirable that can be grown. Gooseberries should be planted not closer than five feet apart and should be sprayed very thoroughly at least twice every year so as to produce the best results.

Victoria red currants are good, heavy croppers. The berry is of good size, good texture, and of excellent quality. The black currant is very desirable for jam-making purposes and can be marketed at a very satisfactory price.

Damson plums are in great demand for jam-making purposes, as are also Quinces. Quinces and Damson plums do about as well in this part of the world as any other tree fruit that is available, but they are hard to secure for the reason that there are so few places that they can be used to advantage, but the increased demand for jam makes them a very desirable product.

The apple grower needs a reasonable amount of bush fruits on his farm so as to give him early money. The gooseberry is the first berry to ripen, then comes the strawberry, red raspberry, loganberry, currants, and finally the blackberry. All of these crops are matured and out of the way before the apple crop is ready to harvest, and there is no grower who should not enter into all of these lines to a reasonable extent.

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of Congress of March 3, 1879.

**Advertising the Apple.**—In this issue we present to our readers a very interesting article, "Northwestern Box Apples and Salt Mackerel," by Dwight L. Woodruff, district manager of the Apple Growers' Association of Hood River in New York. During the past few months Mr. Woodruff has been afforded some excellent opportunities for studying market conditions. The subject of advertising is one that is little understood by many fruit growers. In California the growers of citrus fruits and the raisin growers are fully appreciative of what advertising has done. Take up any of the national publications and you will see full page advertisements of raisins, and during the past few years the raisin industry has been put on a stabilized basis and is bringing the growers splendid net returns. Some years ago the loganberry growers were unable to market their crop. With a small fund of not more than \$1,000, which they spent in advertising, they succeeded in moving the crop, and the demand for loganberries, canned, dried, and loganberry juice, has become so great and such splendid prices realized, that the loganberry industry is fast becoming a very important one in the Northwest. A few years ago the walnut growers of California were receiving poor profits—the growers were low-spirited; their groves were neglected, and the result was small, scrubby, unattractive looking nuts. The California Walnut Growers' Association determined to emulate the methods of the California Fruit Growers' Exchange, which handles citrus fruits. A big advertising campaign was carried on, with the result that today the California nuts are bringing very high prices—the industry is stimulated, and the walnut industry is bringing to the growers big returns.

Elbert Hubbard once wrote a definition of advertising: "Advertising is the education of the public as to who you

are, where you are, and what you have to offer in the way of skill, talent or commodity. The only man who should not advertise is the man who has nothing to offer the world in the way of commodity or service."

A couple of years ago a meeting was held in Spokane during one of the National Apple Shows, consisting of representatives from Oregon, Washington, Idaho and Montana, to discuss the advisability of a general advertising campaign to advertise Northwestern box apples. This idea did not meet with the approval of all of the apple districts of the Northwest, but many of the districts have carried on splendid individual advertising campaigns. The Northwestern Fruit Exchange has spent large sums in advertising the Skookum Brand. The "Y" Brand, which is put out by the Yakima Fruit District Association, is well known throughout the Eastern states, through a good advertising campaign. In 1916 Hood River increased its advertising fund, which met with splendid success.

Advertising is necessary to increase the demand for any food commodity. It has proved to be successful for Northwestern apples, so that every fruit grower should be willing to spend a certain sum per box to create a greater consumption, which means better prices. Mr. Woodruff urges advertising not simply as Wenatchee, Yakima or Hood River, but advertising them as "Northwestern Apples," and he cites California as an example. It is through advertising that the by-product business of the Northwest is doing so much for the fruit industry—that they have been able to make more money out of the discarded fruit than is realized for the first-class product. It is certainly time that the fruit growers realized the value of advertising to create a wider demand, which means better prices.

**Saving the Wheat.**—In each issue of BETTER FRUIT we aim to publish cooking recipes that will assist our readers to prepare palatable dishes so as to save the flour, sugar and meat. The wheat shortage is becoming more serious, and so great is the European demand for flour that the Food Administration is urging farmers not to hold wheat of their last harvest for the seeding of their next crop, except in a few states where this is absolutely necessary—where the period of harvesting winter wheat overlaps the period of planting. It has long been a practice to hold over wheat for seed, but with the exception of a few sections this is not necessary. There has never been such an urgent need for wheat, and every bushel that can be put into action within the next few months will play an important part in the war. Each bushel of wheat, at the present rate of consumption, would provide bread for at least one of our Allied soldiers until the next crop is harvested. There is every indication of a bumper crop—the largest ever grown, if weather conditions continue favorable. The object of the Government was to produce a billion bushels, and with the outlook at the present time it is very probable this

mark will be reached. Throughout the country millions of people are reducing their consumption of wheat flour to the barest minimum—some households have used no wheat flour for months. The sacrifice is very little when we think of what the soldiers are doing and the tremendous sacrifices the people of Europe have been called on to make, and we urge that every reader of BETTER FRUIT will reduce the consumption of flour to the barest minimum, or do without it entirely, so as to relieve the suffering of our Allies in Europe.

It is about seven years ago that the first apple grading machine was first introduced in the Northwest. Since that time many new makes have been manufactured, some firms have discontinued, but each in their time have given pretty good satisfaction, but new improvements are continually being added. The grading machines that are being placed on the market now are giving excellent satisfaction, many claiming that their machine will grade every variety of fruit without bruising. Growers have found by actual experience that by using grading machines in the packing house it means a saving of from six to ten cents per box, and in addition the fruit is graded more uniformly to size. By the old style method, when the fruit was graded by the box, the worker tried to do as many boxes per day as possible, and in many instances the work was not done properly, and the packer who is packing by the box will not take the time to sort out the apples that are not up to grade, and the result was very often a poor pack. This year it will be necessary for growers to equip their packing house with every possible labor-saving device, and any grower who has once used a grading machine would not be without it if it cost twice the sum. This year much of the work of harvesting will be done by women and girls. In many districts the schools are suspended for one or two weeks to enable the growers to harvest their crops without loss. We would strongly urge every grower who has not already a good fruit grading machine to lose no time in sending for catalog or price lists, and to purchase early in the season the machine that seems best suited to his requirements.

Mr. Benjamin Wallace Douglass, Trelac, Indiana, has recently published, through the Federal Publishing Company of Indianapolis, a most interesting and valuable book, "Orchard and Garden." For many years Mr. Douglass has been preaching the doctrine of better fruit and better gardens, and it is with the hope that in publishing this book it will prove a safe guide to the beginner. The last few chapters are devoted to flowers and shrubbery.

The first box of California cherries was auctioned May 1st, by the American Central Fruit Auction Company of St. Louis, for the benefit of the Red Cross. Bidding was brisk—the box changing hands several times, and more than \$1,000 was realized.

**INCREASED  
PROFIT**  
==  
**Less  
Labor**

The Packer who  
uses the Bushel  
Shipping Basket



Shipping Peaches in Bushel Baskets at Koshkonong, Missouri

# The Universal Package

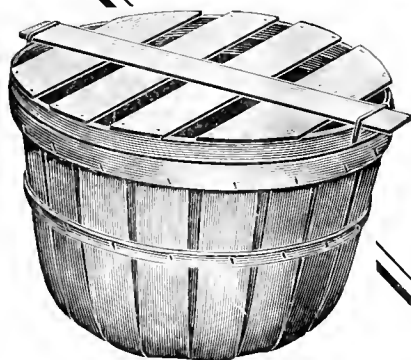
MAKES LARGER NET PROFITS

It is much better to get a good price for fruit packed with a small expense than to get the highest price and then spend all your profit in packing.

*Send for Prices that will save you money.*

## Package Sales Corporation

106 East Jefferson St., South Bend, Indiana



A big cannery and evaporating plant is to be erected at Wenatchee, to be run under the very able management of Mr. W. H. Paulthamus, manager for the Puyallup and Sumner Fruit Growers' Canning Company, Sumner. School children are being urged to put in gardens as a means of assisting to get the cannery started, and which will mean a good many extra pennies for the children to invest in War Savings Stamps. Splendid prices are offered for all varieties of small fruits, beans and vegetables, but the main product to be turned out will be apples, such as evaporated apples, canned apples, jelly, and apple butter, for which there is a big demand.

Wilmer Sieg, formerly salesmanager for the Apple Growers' Association of Hood River, and for the past year salesmanager for the Earl Fruit Company in Spokane, has accepted the position of salesmanager for the California Fruit Distributors. C. E. Virden, general manager of the California Fruit Distributors, has gone to Washington in an effort to improve traffic facilities, so that the coming crop, which promises to be very large, may be handled successfully. Mr. Sieg will take Mr. Virden's place during his absence.

We have just received from the Kentucky Tobacco Company an "Illustrated Spray Chart for Sucking Insects," which is not only very handsome, but very valuable for every fruit grower. The drawings and the colors were done by Mr. B. B. Fulton of the New York Agricultural Experiment Station, who is not only a very able entomologist, but an artist of high ability. The spraying directions were prepared by the Kentucky Tobacco Company and submitted to Professor H. E. Hodgkiss of the New York Agricultural Experiment Station for his approval.

The illustration showing the box of Hood River apples is evidence that Northwestern apples are enjoyed in remote parts of the world.

### May Restrict Importation of Nursery Stock.

The Secretary of Agriculture has called a public hearing, to be held in Washington May 28, at which will be considered the advisability of restricting the importation of nursery stock and other plants and seeds from all foreign countries. The meeting will be held at 10 a.m. May 28, in room 11, Federal Horticultural Board, Department of

Agriculture. Any person interested in the proposed restrictions may be heard either in person or by attorney. The restrictions are contemplated in order to prevent the introduction into the United States of any tree, plant or fruit diseases or of any injurious insects new to or not heretofore prevalent in this country. It is feared that certain injurious plant diseases and insect pests may gain entrance through the agency of ornamental and other plants imported with earth about their roots. There is also said to be special danger from plants imported from little-known countries, because lack of information as to the insect pests or plant diseases of such countries makes it impossible safely to pass such plants by inspection or to safeguard them by disinfection. Many of the most important injurious insects and plant diseases have been introduced in this country through such importations. On the other hand, there is a long list of similarly destructive insects and diseases which have not yet gained entrance.

Food control in North America today means chiefly getting the food across the Atlantic at all costs.



"Hep! Hep!" Ten miles more to hike—then camp and the comforts of a little chew of Real Gravely.



### See That He Never Lacks a pouch of Real GRAVELY Chewing Plug

Your fighting man will go to almost any lengths to get good tobacco. Many a man has paid \$5 for less good tobacco than you will send him in a pouch of Real Gravely Chewing Plug. Only costs you 10 cents.

Give any man a chew of Real Gravely Plug, and he will tell you *that's* the kind to send. Send the best!

Ordinary plug is false economy. It cost less per week to chew Real Gravely, because a small chew of it lasts a long while.

If you smoke a pipe, slice Gravely with your knife and add a little to your smoking tobacco. It will give flavor—improve your smoke.

#### SEND YOUR FRIEND IN THE U. S. SERVICE A POUCH OF GRAVELY

Dealers all around here carry it in 10c. pouches. A 3c. stamp will put it into his hands in any Training Camp or Seaport of the U. S. A. Even "over there" a 3c stamp will take it to him. Your dealer will supply envelope and give you official directions how to address it.

**P. B. GRAVELY TOBACCO CO., Danville, Va.**

*The Patent Pouch keeps it Fresh and Clean and Good  
—It is not Real Gravely without this Protection Seal*

**Established 1831**



## Live Stock and the Orchard

By Prof. L. J. Iddings, University of Idaho, Moscow

**T**HERE has been in Western agricultural practice a strong tendency for several years toward specialization. In so far as this has meant for more intensive methods and for greater intelligence and skill devoted to the production of special crops or special farm products, the movement has been worthy of high commendation. Weaknesses have been found in the system, however, and the trend of today is away from extreme specialization and toward diversification in the handling of the Western agricultural farm holdings.

A fundamental difficulty for the man of limited means in any plan of high specialization is that he does not, and probably cannot afford to prepare himself for a season of loss. It is not always entirely well with a specialty. Whether it is with the cereals or the forage crops of the field or the crops of the orchard, there comes a season when conditions are unfavorable and the income is small. With the fruit grower, furthermore, there may be the problem of the orchard not yet in bearing and diversification offers at least part solution for the problem of maintaining the family until the orchard is of bearing age. Diversification, therefore, does not run counter to the best interests of the fruit grower, but on the other hand, assists in increasing his income and in staying over certain periods when the orchard is young or when, for some reason, it does not yield in abundance. A modern slogan that is now quite popular in the agricultural field is the warning not to put all the eggs in one basket.

There are four direct reasons why the orchardist should be able to find a use for live stock in connection with his main business, which is that of fruit production. In the first place the live stock furnishes an additional source of income and often contributes directly to the support of the family by furnishing animal products for home consumption. Second, live stock may be made to furnish a market for many of the crops grown by the orchardist between the rows of trees. Some of the crops, such as legumes, corn, grains of various kinds, can, as a rule, be most profitably marketed through live stock. Third, the orchardist needs live stock for the purpose of maintaining soil fertility. We find that more and more fruit men are giving consideration to the question of fertilization and we all recognize that one of the cheapest and most efficient means of maintaining the soil in the best possible physical condition for maximum production is through the use of farm manures secured through live-stock keeping. There is a fourth reason why the orchardist should at this particular time think seriously of live-stock production. This is because the leaders of the American government today are calling for more animals and more animal products. The larger share by far of the needs of the nation in this direction will, of course, be taken care of on the ranges and on the farms. The fruit grower, however, can aid materially in this direction, and if a few head of live stock were kept on the average fruit farm of the West the sum total would be of real assistance in meeting the present-day needs of America.

Granted that live-stock keeping is feasible, we may immediately consider the kinds of live stock that are best adapted to the fruit farm. A few horses will always be kept, but many orchardists question the advisability of trying to breed horses in connection with an orchard plant. Beef cattle are produced most successfully and profitably where there is ample room and cheap grass. In a similar way sheep have, in past years, been regarded as better adapted to cheaper lands that are devoted largely to grazing purposes. In the past two or three years, however, hundreds of small flocks of sheep have been bought by the farmer and it will only be a short time, if the present tendency prevails, when sheep on the Western farms will be as common as they have for years been on the farms of Ohio and Indiana. There is a possibility of using a small band of sheep in connection with the orchard. For the average man engaged in fruit growing, however, the dairy cow and the brood sow lend themselves better to his needs. These two classes of animals fit well together on the farm and make a splendid combination for use in connection with the orchard.

Those who are keeping in touch with dairy conditions of today feel that the time is not far distant when dairymen are to be paid well for their work in producing milk and butter fat. Prices have not been adequate and the dairyman has been losing money for many months. The result has been the selling of a large number of dairy cattle and we will unquestionably soon be face to face with a condition in regard to milk and butter-fat production that will mean one of two things—the dairyman will be well paid or the consumer will do without dairy products. I am



familiar with one of the well-known irrigated districts of the West where many of the farmers have made a specialty of dairying. Two of the very best herds of that tract that have been tested and have a wide reputation for high production are now offered for sale. When the best of dairymen are thinking of quitting the business it is well for us to think seriously of the future. It is my opinion, confirmed by many experienced men with whom I have talked, that now is a mighty good time to get into the dairy business. Good cattle are being sold in many sections at quite reasonable prices and, as before indicated, there can be no other outcome than such prices for dairy products of all kinds as will enable the dairyman to meet all costs of keeping the herd and have a reasonable profit for his efforts.

In the orchard may be produced corn, peas and oats, and other crops for silage. The production of legume hays such as clover and alfalfa fit in well with the fertilization of the orchard and give the orchard dairymen the very best roughages for milk production. If the silo is not advisable, root crops can be grown between the tree rows to wonderful advantage. Grains may be purchased or may be grown in connection with the orchard. The combination of legume hay for roughage, of either silage or root crop for succulence, and of our Western-grown grains for concentrates, gives exactly the right kind of ration for heavy milk and butter-fat production. The grains that are needed are barley and oats, in addition to bran, which is now one of the relatively cheapest feeds that can be bought in the market.

The dairy cow, therefore, fits in with the orchard plan for between-the-row crops and not only furnishes the family with highly-nutritious foodstuffs, but in addition gives the fruit grower a week by week or month by month cash income to supplement the income from fruit production.

Swine fit in well with dairy cattle because one of the best of all feeds for growing pigs is the skimmed milk, which on many farms is a by-product of the dairy business. Fundamentals in successful swine production are pasture for the brood sow and pigs; by-products such as from the dairy for supplementing other rations and for keeping down cost of production, and concentrates for finishing swine for market. All of these feeds, to a limited extent at least, can be produced in connection with the fruit farm. The pasture could be legume pasture, either alfalfa or clover. In addition special between-the-row crops such as peas and oats, rape, kale and other crops of a similar nature can be seeded for hog pasture. Skimmed milk, unsalable fruit and wastes from the household may be used in connection with swine feeding. In addition there will be needed concentrates for fleshing swine for market. At present prices of feedstuffs, shorts and barley are probably the most eco-

## Mr. Fruit Grower:

The 1918 apple crop will, in all probability, be the largest yet recorded. Also, there is certain to be the greatest scarcity of labor yet experienced, especially of experienced packers and sorters.

With a **CUTLER FRUIT GRADER** you can teach inexperienced help to pack and sort and handle your crop quickly and at the least cost. We are giving discounts for early orders and shipments.

**WRITE NOW** for circular and prices.

### CUTLER MANUFACTURING CO.

**New Address: 351 East Tenth Street, Portland, Oregon**

## WAR SAVINGS STAMPS DELIVERED TO YOUR HOME

**Tear Out—Fill In—Hand Letter-Carrier—or Mail to Post Office**

**TO THE LOCAL POSTMASTER:—**Kindly have letter-carrier deliver to me on \_\_\_\_\_ for which I will pay on delivery:


(Date)

\_\_\_\_\_ \$5. U. S. WAR-SAVINGS STAMPS at \$\_\_\_\_\_ each  
(State number wanted) (See prices below)

\_\_\_\_\_ 25c. U. S. THRIFT STAMPS at 25c. each.  
(State number wanted)

Name \_\_\_\_\_

Address \_\_\_\_\_



April	\$4.15	July	\$4.18	Oct.	\$4.21
May	4.16	Aug.	4.19	Nov.	4.22
June	4.17	Sept.	4.20	Dec.	4.23

W. S. S. WORTH \$5.00 JANUARY 1, 1923

nomical feed to use in swine feeding. A nitrogenous supplement should be fed in addition and tankage, skimmed milk, or alfalfa hay are feeds valuable in this connection.

There are a large number of questions of breeding, feeding and management that should be considered in connection with dairy cattle and swine for the orchard. Time, however, does not permit extensive treatment of these problems unless there is some particular point that needs amplification. It is not only true that dairy cattle and swine are best fitted of the farm animals for use in connection with the orchard, but in addition it is peculiarly appropriate that these animals be bred at this particular time, since of all the animals of the farm the dairy cow is most efficient in that she provides more human food from one hundred pounds of feed, through her milk, than can be obtained through the means of any other animal product. Swine rank second in efficiency to the dairy cow.

There is one other branch of the livestock industry that should be mentioned at this time, one of the great industries of the American farmer. I refer to poultry raising. Poultry should not only be part of the general plan on

the fruit farm, but in addition should be kept on every American farm. It is rather unfortunate that we find grain farmers as well as fruit growers going to the butcher or the groceryman for poultry that ought to be produced at home. Poultry on the fruit farm will not only furnish the family with foodstuffs among the most nutritious of all that are available for human consumption, but in addition, if properly handled, can be made to yield during the year no inconsiderable income.

The great fruit industry of the Northwest will lose nothing of its importance as a highly-organized specialty, but on the other hand will be strengthened and rendered more stable and permanent by the adoption of diversification to the extent of live-stock keeping along the lines suggested above.

In England, "His Majesty the King" and the humblest subject have duplicate ration cards.

Pick up the plow where it stands in the furrow—patriotism is the practical doing of the next job.

Bread is the staff of life, but very few Americans need a staff.

## Sugar Rations and Jam

This season of the year suggests summer fruits, canning, preserving and the sugar supply. Three pounds per person per month, the voluntary ration, permits little margin for preserving, and careful householders are asking, "Will there be more?" The United States Food Administration answers that it is endeavoring to supplement this allotment and provide ample sugar for the home-canning season. Provident housekeepers, however, can co-operate with this plan by saving from their present supplies for the time when they begin to put up summer fruits for winter use. On account of the shortage of ships the January and February sugar receipts in this country were far below those of the corresponding months of last year. Our sugar supplies are further limited by the fact that America and the Allies draw on the same source for sugar, and that source is principally Cuba. So even with an improvement in shipping facilities housekeepers cannot get the pre-war supply of sugar.

America's problem is simple compared with that of England, whose people are almost to the point of counting the grains. Such is the shortage of food there that householders must see to it that every ounce of sugar counts and every piece of fruit is saved. Last January the British Food Controller advised saving as much sugar as possible for jam making out of the meager individual ration of eight ounces a week. The women were assured that such savings would not constitute hoarding. People with orchards and fruit gardens had been asking whether they would receive extra sugar for preserving. At first the chairman of the Royal Commission on the Sugar Supply took the position that it was not considered fair to the town population that extra sugar for jam for home consumption should be allotted to people living in the country just because they were fortunate enough to have the fruit (*London Times*, January 16). In February, however, he sent out more encouraging news, and in the parliamentary debate of March 21, Lord Rhondda stated that it would be possible during the coming fruit season to distribute 10,000 tons of sugar to private fruit growers for putting up their own fruit (*National Fruit Journal*, March 27).

Just as the ration card deals with King and workman alike, so this extra supply of sugar will be distributed with a democratic fairness, inspired by that spirit of sharing which has come to England out of common danger and suffering. Those who receive extra sugar for jam making must guarantee not to use it for any other purpose. They will be credited with one and three-quarters pounds of jam for every pound of sugar supplied, and will be expected to reduce their purchases of jam to that extent so as to leave for city dwellers the commercial jams and marmalades. The actual amount of sugar each anxious housekeeper receives will depend on the quantity of raspberries, strawberries and plums that grow in

her well-kept English garden. However, the local food controller will not allot more than ten pounds of sugar for each member of the family unless the jam maker will guarantee to sell her jam back to him for the benefit of the jamless public. In this case the Food Committee will pay her a price for her jam based on quality, but not above current wholesale price.

This careful looking after jam pots and preserving kettles is to make up somewhat for the shortage of butter. Butter has virtually disappeared from the English grocery store and home-produced and imported margarine has taken its place. When we remember that the weekly individual ration of butter or margarine is only four ounces, we understand the even-handed distribution of sugar for jam. In view of this shortage of butter and the demands of the army and navy, England has found it necessary to supply the manufacturers of jam with sugar to maintain their maximum output. England's 1918 jam belongs to the national pantry and not merely to the shelf of prideful housekeepers. The Food Controller means to make no slip on jam. Each pound of sugar allotted is to produce its quota of jam and surplus fruit will be carefully stored for more jam whenever sugar is available.

England has worked out a method of pulping and preserving fruit that insures its keeping for two years. Additional pulping stations have been established in the fruit-growing districts to take care of this season's surplus. Through these means and the control of transportation and the distribution of fruit to markets the Food Controller counts on getting the fullest use of this year's fruit crop for the benefit of all the people.—U. S. Food Administration.

## Potatoes and Patriotism

Every potato in the land is crying to be eaten, crying to be allowed to save wheat. Satisfy your hunger with potatoes.

**Scalloped Potatoes and Cheese.**—Arrange a layer of sliced raw or boiled potatoes in a greased baking dish and sprinkle with grated cheese. Repeat until the dish is nearly full. Pour milk over the whole, about one-half cup to every three potatoes. Skim milk may be used. Bake in a moderate oven until done. The length of time required depends upon whether the potatoes are raw or boiled and whether the baking dish used is deep or shallow. Boiled potatoes baked in a shallow dish will take only 20 minutes. Raw potatoes in a deep dish may take as much as one and one-half hours.

**A Shepherd's Pie.**—Grease a baking dish; cover the bottom with mashed potatoes. Add a layer of cooked minced meat or fish, seasoned well and mixed with meal stock or gravy. Cover with a layer of mashed potatoes at least an inch deep. Bake long enough to heat through, 20 or 30 minutes.

**Potato Biscuit.**—(Using one and two-thirds cups instead of three cups of flour.) No liquid, 3 tablespoons fat, 1 teaspoon salt, 5 teaspoons baking

powder, 1½ cups wheat flour, 1¾ cups mashed potatoes. Sift dry ingredients, work in fat and add mashed potatoes. This makes a very stiff dough. Roll one-half inch thick and cut into biscuits. Bake 30 to 35 minutes in a moderately hot oven.

**Potato Biscuit.**—(Using two cups of flour instead of three.) 1 tablespoon liquid, 3 tablespoons fat, 1 teaspoon salt, 5 teaspoons baking powder, 2 cups flour, 1½ cups mashed potatoes. Sift together dry ingredients, mix in the fat and add the potatoes and liquid. This makes a very stiff dough. Roll one-half inch thick and cut into biscuits. Bake 30 to 35 minutes in a moderately hot oven.

**Potato Rolls (three dozen).**—3 cups mashed potatoes, 4½ cups flour, 3 teaspoons salt, 2 tablespoons corn syrup, 1 cake compressed yeast softened in ¼ cup water, ¾ cup milk (scalded), 2 tablespoons fat. Add the hot milk to the potato and when the mixture has cooled until it is lukewarm, add the softened yeast and other ingredients. Allow the dough to rise to double its bulk. Work it down and let it rise until it has increased in size by about one-half. Then shape the rolls, let them rise until they are double in size and bake them in a hot oven.

**Potato Muffins.**—(Saving a fourth of the flour.) ¾ cup liquid, 1 tablespoon fat, 2 tablespoons syrup, 1 egg, 1 cup mashed potatoes, 1½ cups wheat flour, 1 teaspoon salt, 4 tablespoons baking powder. Add the liquid, melted fat, syrup and beaten egg to the cooked potato. Sift the dry materials together and add to the first mixture. The dough will be too stiff to mix easily with a spoon. Use a knife or a fork. Bake about 30 minutes in a moderately hot oven (205 degrees C, 400 degrees F.). Makes eight large or twelve to sixteen small muffins.

**Potato Soup.**—2 cups hot rice or mashed potatoes, 1 quart milk, 2 slices onion, 3 tablespoons butter, 2 tablespoons flour (rice flour or corn flour), 1½ teaspoons salt, celery salt, pepper, cayenne, 1 teaspoon chopped parsley. Melt the butter, add to it the flour and seasonings, stirring the mixture until smooth. Add gradually to this one cup of milk and boil for one minute. Add the potato, mix thoroughly. Then add the rest of the milk and the slice of onion. Heat to boiling. Remove the onion, strain the soup if necessary, add the parsley and serve. Water saved from cooking celery is a good addition to potato soup. Two cups of tomato juice and one-sixteenth teaspoon of soda may be substituted for two cups of milk.

**Potato Puff.**—Add beaten whites of eggs to mashed potatoes (2 eggs to 6 medium-sized potatoes). Pile the mixture lightly in a baking dish and bake it in the oven until it puffs and browns. The yolks of the eggs and one-fourth cup of grated cheese also may be added.

So long as the boys are at the front, difficulties are to be subdued, impossibilities to be trampled down.

**Benefits in Horticulture, Etc.**

Continued from page 11

by experiments with a large list of plants. He also demonstrated that some plants refused to produce seed unless cross-pollinated. Darwin and others have more recently added much to our general knowledge of the advantages to be derived from cross-pollination.

In those horticultural crops where seeds are used for reproduction cross-pollination in the broader sense (the transfer of pollen between individuals of different varieties) is undesirable. We know that varieties of sweet corn planted side by side may become cross-fertilized and that the value of the crop for seed is thereby impaired. The same is true of many other garden crops. The seedsman who makes a business of growing pure seed of those crops where cross-pollination may take place must isolate his varieties so cross-fertilization, in the broader horticultural sense, is impossible. Among horticultural crops, cross-pollination in the narrower sense (the transfer of pollen between individuals of the same variety) is rarely, if ever, detrimental, and with many crops it is beneficial or absolutely essential. Little work has been undertaken with common garden crops, but no doubt cross-pollination in the narrower sense commonly occurs, and possibly in some cases is quite necessary. It is among those horticultural crops commonly propagated vegetatively (by cuttings, layers, suckers, graftage, etc.) that the value of cross-pollination is so apparent.

First, there are those plants which produce imperfect flowers. The strawberry is a familiar example. We all know that certain varieties of strawberries do not produce pollen, the flowers bear only pistils or organs to receive the pollen. Without pollen from another plant these flowers will not form seeds and without the stimulus of fertilization the fleshy fruit will not develop. Not only must we grow varieties with perfect flowers beside these imperfect flowered sorts but there must be means of transferring the pollen. The persimmon tree always bears the pollen-producing flowers upon one plant and the pistillate or female flower upon another. If we expect fruit we must have the two plants, although the one bearing pollen is fruitless.

We might go on mentioning other cases where such a system of flower production necessitates the transfer of pollen from plant to plant, or we might mention the less striking arrangement as in cucumbers, melons and pumpkins, where the two types of flowers are borne upon the same plant, thus necessitating a transfer of pollen from flower to flower, but not necessarily from plant to plant. In these cases it is easy to understand the importance of cross-pollination, and where the plants are not propagated by seeds it matters little whether the transfer of pollen is between individuals of the same variety or individuals of different varieties, so long as it has the desired effect, to stimulate the development of fruits. All we need is to see a plant of this

Pacific Coast Agents  
**United States Steel  
Products Co.**

San Francisco  
Los Angeles  
Portland  
Seattle



**J. C. Pearson Co., Inc.**  
Sole Manufacturers

Old South Bldg.  
Boston, Mass.

**PEARSON**

**E**CONOMY in buying is getting the best value for the money, not always in getting the lowest prices. PEARSON prices are right.

**A**DHESIVENESS or holding power is the reason for PEARSON nails. For twenty years they have been making boxes strong. Now, more than ever.

**R**ELIABILITY behind the good is added value. You can rely on our record of fulfillment of every contract and fair adjustment of every claim.

**S**ATISFACTION is assured by our long experience in making nails to suit our customers' needs. We know what you want; we guarantee satisfaction.

**O**RIGINALITY plus experience always excels imitation. Imitation's highest hope is, to sometime (not now) equal Pearson—meantime you play safe.

**NAILS**

*Experts Say*

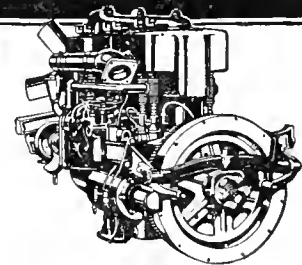
**"ZEROLENE IS BETTER"**

—because it holds better compression, gives better protection to the moving parts and deposits less carbon.

Zerolene is the correct oil for *all types* of automobile engines—the correct oil for your automobile.

Get our Lubrication Chart showing the correct consistency for your car.

STANDARD OIL COMPANY  
(California)



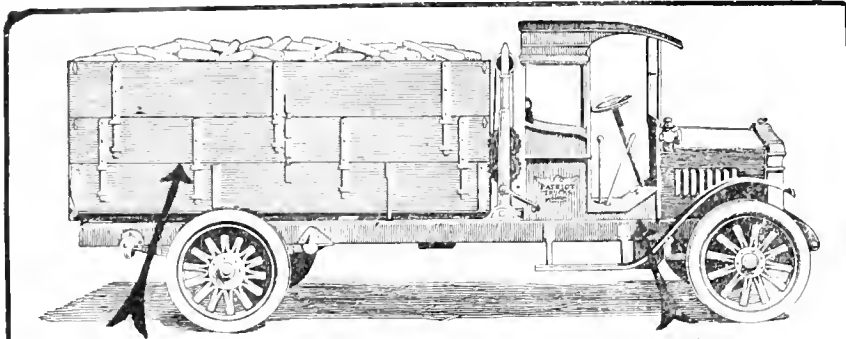
The "T"-Head type engine, illustrated here, like all *internal combustion engines*, requires an oil that holds its lubricating qualities at cylinder heat, burns clean in the cylinders and goes out with exhaust. Zerolene fills these requirements perfectly, because it is correctly refined from selected California asphalt-base crude.

**ZEROLENE**  
*The Standard Oil for Motor Cars*

type in bloom and we know at once that cross-pollination is needed, for the imperfections in the flower are easily seen with the naked eye.

But there is another list of plants much larger than the one just mentioned in which cross-pollination is just

as important. These are the plants that will not produce seed, and in many cases fruit, when pollinized with pollen of the same plant, or, in some cases, even with pollen from another plant of the same variety. We call these plants self-sterile. These are the plants the



Body Built for Country Loads

Truck Built for Country Roads

# PATRIOT FARM TRUCK

**Built for Country Roads—Built for Country Loads**

There is real need for motor trucks on the farm—to speed up transportation—

- To bring better markets nearer—
- To master bad roads—
- To save high-priced horses—

But—the farmers have not bought them to any great extent. Why? The reason is, there has never before been a real Farm Motor Truck on the market.

Those that have been sold were built for the paved streets of the cities—not the soft roads and fields of the country.

Or—they have been mere cheap units to combine with worn-out, low-priced, low-powered cars—forming makeshift trucks that never were expected to deliver real farm service.

**The Patriot Is the First Motor Truck Built for Farm Work**

But now—the farmer has a real truck—built in the center of Agricultural America—by experienced truck and body makers, in a new, complete and modern factory—and built for farm service.

Every farmer with 160 acres or more should find out what a Patriot Farm Truck will save. Write for information.

## HEBB MOTORS COMPANY

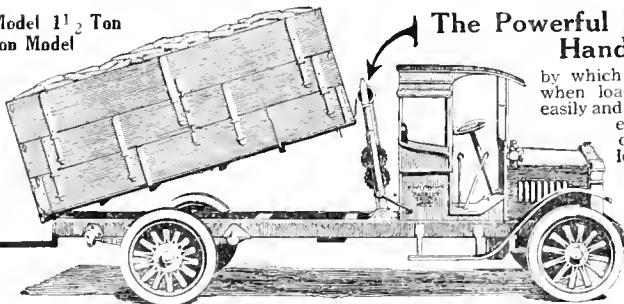
Manufacturers of Patriot Farm Trucks

1337 P Street

Lincoln, Nebraska

Lincoln Model 1 1/2 Ton  
Washington Model 2 1/2 Ton

Contioceotal Motor  
Internal Gear and Worm Drive



### The Powerful Patriot Hand Hoist

by which the body, when loaded, may easily and quickly be elevated to dump its load.

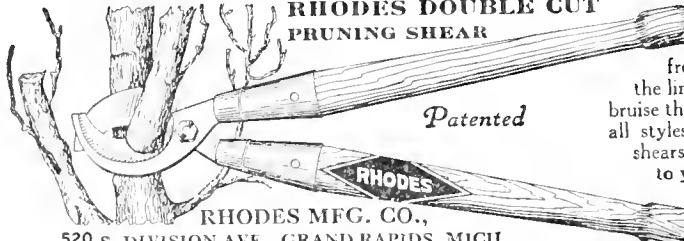
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horticulturist is interested in, for the most striking examples are found among our fruit trees. In fact self-sterility is so common among fruit trees that it is generally considered unsafe, or at least unwise, to plant single varieties in large blocks. Much experimental evidence has been accumulated upon this subject. The first work in this country was upon pears. Waite reported experiments with something like twenty-three varieties of pears and classed fourteen of them as practically self-sterile—unable to set fruit with their own pollen. Among the common pears classed as self-sterile were Anjou, Bartlett, Clapp Favorite, Lawrence, Howell and Winter Nelis. Some of those found self-fertile were Angouleme (Duchess), Flemish Beauty, Seckel, Kieffer and LeConte. Other workers with pears have reported Kieffer as self-sterile and there is little doubt but that Bartlett and some others classed as self-sterile in the east are self-fertile under other conditions. Much work has been done upon apples. The Oregon Station, reporting upon eighty-seven varieties of apples, states that fifty-nine were found self-sterile, fifteen self-fertile and thirteen partially self-fertile. Some of those reported self-sterile were Gravenstein, Gano, Jonathan, King, Rome Beauty, Transendant Crab, Wealthy, Winesap and York Imperial. Of those reported as self-sterile Grimes Golden, Duchess, Shiavanssee (Missoula) and Newtown Pippin are the common ones. Ben Davis, Spitzenberg, Wagener, Whitney and Yellow Transparent are reported as partially self-fertile (capable of setting fruit with their own pollen, but only sparingly).

Early work with plums showed that many, if not quite all, the American plums required cross-pollination. The Japanese are also self-sterile in the majority of cases and many of the domestic varieties are apparently benefited by the transfer of pollen from one variety to another—some are self-sterile, but just how many we don't know. Peaches have seldom been reported as failing to set fruit without cross-pollination. From what we now know most peaches are self-fertile.

The Oregon Experiment Station reports experiments with the sweet cherry where the entire list of sixteen varieties worked with were self-sterile. Not only this, but it was found that some varieties were inter-sterile. Bing, Lambert and Napoleon, the varieties most commonly planted in this state, were found to be inter-sterile. In other words, these three varieties inter-planted by themselves under Oregon conditions would not be expected to produce fruit. We do not know so much about the sour cherries. They are more or less satisfactory as pollinizers for sweet cherries and are in turn probably easily fertilized with pollen from the sweet varieties, but we do not know just how important or necessary cross-pollination is.

It is not so easy to explain just why self-sterility so commonly exists among fruit trees. Just why normal pollen



**RHODES DOUBLE CUT PRUNING SHEAR**

Patented

RHODES MFG. CO.,  
520 S. DIVISION AVE., GRAND RAPIDS, MICH.

**THE only pruner** made that cuts from both sides of the limb and does not bruise the bark. Made in all styles and sizes. All shears delivered free to your door. Write for circular and prices.



**THE GOLDEN GATE WEED CUTTER**

Greatest Weed Cutter on the Market Today

Cuts seven feet or less, weighs 230 pounds and is all made of steel. The Golden Gate Weed Cutter is the greatest of its kind on the market. For workmanship, simplicity and durability it cannot be excelled, as it does its work to perfection. Those who are using it say that no money could buy it if they could not get another. It not only cuts all kinds of weeds, but cultivates the ground as well. One user said that it has saved him \$200.00, as he did not have to plow after using.

Write for free descriptive circular and list of testimonials from those who have purchased machines and praise it in every way.

Manufactured by **C. C. SIGURD**  
Capital Ave. and McKee Road San Jose, Cal.



## Fifty-nine Years

of continuous service to the Northwest is the record of this pioneer bank.

Today, as always, it bears the reputation of being at once conservative and progressive—a wise combination.

We solicit accounts, either personal or business.

## Ladd & Tilton Bank

PORTLAND, OREGON



grains produced by a Wealthy apple tree and capable of fertilizing flowers on a McIntosh tree will not fertilize flowers on a Wealthy tree is not clear. We say that nature has in some way provided for cross-fertilization, the purpose of which is, we believe, to better maintain vigor in plants. We have explained why the transfer of pollen between two Wealthy apple trees does not constitute cross-pollination in the same sense as it does between two red clover plants each produced from a seed. So we see why with fruit trees it is necessary to inter-plant varieties for cross-pollination. It has been found impossible to compile lists of self-sterile and self-fertile varieties which will be found reliable under all conditions—these characters are not constant. Whether or not the variety is self-fertile or self-sterile is determined somewhat by conditions under which it is grown. Some believe that varieties are as variable in this respect as in color, size or shape of fruit. Under arid conditions where little rain falls during the blooming period the list of self-sterile varieties would probably be smaller than in a humid section. Varieties self-fertile under ideal conditions for growth may become self-sterile when planted in poor soil or in an unfavorable climate.

Aside from this necessity for cross-pollination, commonly found among fruit trees, it has been observed that, even in those varieties where it is not absolutely necessary the transfer of pollen from another variety often im-

proves the quality of the resulting fruit both in size and color. This has been reported in the case of plums, pears and apple, and although the improvement has not been phenomenal it has in many cases been considered sufficient to recommend the inter-planting even of self-fertile varieties.

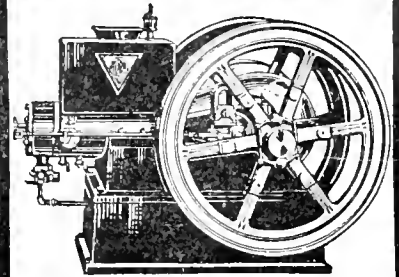
To the orchardist at least the question of cross-pollination is such an important one that we can no longer overlook the value of inter-planting varieties. Only a limited amount of work has been done to determine whether or not certain varieties are best pollinized by certain other varieties. If a variety is selected chiefly as a pollinizer, it should be a good pollen producer. This quality may vary under different conditions. Gravenstein, Grimes Golden, Winesap and Yellow Transparent have been reported as poor pollen producers, and under some conditions Black Twig is also a poor pollen producer. Under most conditions Gano, King, Wagener and York Imperial produce an abundance of pollen. In the case of sweet cherries the Oregon Station found that Black Tartarian and Waterhouse were very efficient pollinizers.

To be adapted to cross-pollination varieties must bloom at the same time. In the case of pears there is not much difference in dates of blooming. In the case of apples some very early bloomers like Gravenstein or Transcendent may be past blooming before a late bloomer like Rome Beauty is ready to receive pollen. Nearly all cherries bloom near enough together to cross-fertilize. Plums vary more, but usually those of the same class bloom near enough together to insure a set of fruit.

As to the proportion of pollinizers, weather conditions and insects will determine this. If the blooming season is usually warm and free from rain, one pollen producer in ten will usually be sufficient. In most cases it would be safest to double this proportion of pollinizers. Trees planted for pollen production need not be mixed indiscriminately through the orchard. Always plant them in rows for convenience in spraying and gathering, one row in ten, one row in five, or whatever the proportion is.

Next we must have agents for distributing pollen. It has been estimated that fully 99 per cent of cross-fertilization in the orchard is brought about by insects. Wind plays very little part in distributing the pollen of our common fruit trees. No doubt the common honey bee is the chief pollen bearer. Other bees and flies distribute pollen to a limited extent. Especially in those fruits where the transmission of blight is not a factor any orchardist would do well to keep a few bees, or, better still, encourage the bee keepers in his community. Even in the case of the apple and pear where the spread of blight may be directly attributed to bees, it is still a question whether the bees are more harmful than beneficial. Once we have eliminated those varieties responsible for harboring blight from year to year, the honey bee cannot be denied the good will of the progressive orchardist.

# ALPHA



## Gasoline Engines Spraying — Irrigating

1½ to 28 H. P.

If the successful outcome of your crop DEPENDS on this work, put a DEPENDABLE ENGINE behind the pump. We will gladly recommend the proper size engine for your requirements.

If the engine on your sprayer is not absolutely dependable, make sure of results by replacing it with a smooth running Alpha Engine. Built in magneto—no batteries used—starts easily without cranking.

Full details on request.

**De Laval Dairy Supply Co.**

61 Beale St.

San Francisco

## NOW is the time to send to Milton Nursery Company

MILTON, OREGON

FOR THEIR 1918 CATALOG.  
FULL LINE OF NURSERY STOCK.

"Genuineness and Quality"

## True-to-Name Nursery

ESTABLISHED 1902

Offers a general line of nursery stock, with a special offering of Anjou, Bosc and Bartlett Pears. These trees are grown with buds personally selected from bearing trees and are guaranteed "true-to-name."

Address all communications to

**TRUE-TO-NAME NURSERY**  
H. S. Galligan, Prop. Hood River, Oregon

## FISH!! FISH!!

100 lbs. salmon in brine, shipping weight  
165 lbs ..... \$11.00  
Smoked salmon, 20 lbs. net ..... 3 25  
Dried True codfish, 10 lbs. .... 1 50

Ask for our fresh and cured fish price list.

T. A. BEARD, 4322 Winslow Place, Seattle, Wash.

## Nice Bright Western Pine FRUIT BOXES

AND CRATES

Good standard grades. Well made. Quick shipments.  
Carloads or less. Get our prices.

**Western Pine Box Sales Co.**  
SPOKANE, WASH.



# Superior Player Pianos

We handle the products of the famous Aeolian Co., the largest Piano manufacturers in the world, makers of the famous Pianola, the Stroud, Steck, Wheelock and Weber Pianos and the wonderful Aeolian Pipe Organ.

We offer as our lowest priced player the **Aeolian Player Piano**, which contains most of the features of the Pianola—it is a beautiful instrument, sweet toned, plays all the 88 note music. It will give much pleasure and render long and efficient service. Price \$480.

Then we offer the **Pianola** line. The Pianola is distinguished from all other player instruments because of its many exclusive and wonderful features—the Metrostyle, the Themodist, the Automatic Sustaining Pedal, etc., etc. The Pianola line begins with the Aeolian Pianola at \$585; then the prices range upward according to the Piano model—whether in the Stroud, Steck, Weber or Steinway.

The climax of the Player line is the Duo-Art—which is first a “straight” piano; secondly a player piano playing any roll, the motor being operated electrically enabling the player to devote his entire attention to the expression devices; and thirdly—with the special Duo-Art rolls, reproducing the actual playing of the world's great artists—Bauer, Gabrilovitch, Grainger, Saint Saens and scores of others. (We cordially invite you to hear this marvelous instrument.)

We will arrange convenient payment terms on any Player instrument.

**We invite you to call at any of our stores—or write us asking for illustrated catalogues and prices**

*We are dealers in Steinway and other Pianos, Pianola Pianos, Aeolian Player Pianos, etc.*

## Sherman, Clay & Co.

Kearny and Sutter Streets, San Francisco  
Sixth and Morrison Streets, Portland  
Third Avenue, at Pine Street, Seattle  
928-30 Broadway, Tacoma  
808-10 Sprague Avenue, Spokane

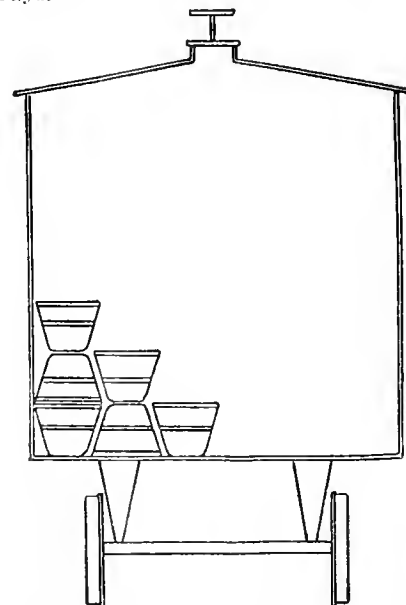
Stores also at Oakland, Sacramento, Stockton, Fresno, San Jose, Santa Rosa, Vallejo

### The Best Method of Loading Cars

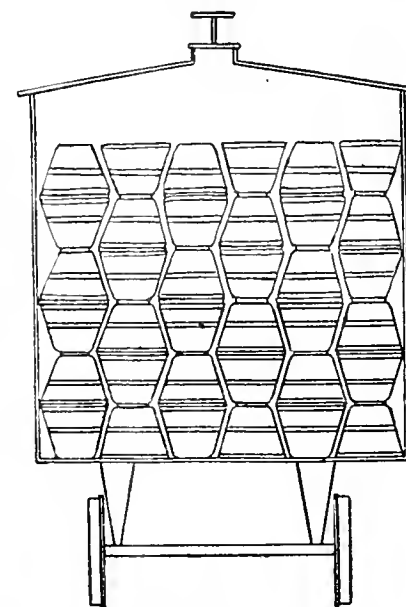
1st. The baskets being stacked close, the danger of wreckage in transit like in shelved cars or other methods of loading is eliminated.

2nd. It saves cost of lumber for shelving and time in loading cars.

3rd. The center post in the basket makes it as stiff as a box and prevents crushing of fruit both in cars and on drays.



Standard shipping baskets and covers, manufactured by Package Sales Corporation, 106 East Jefferson Street, South Bend, Indiana, are recognized U. S. standard of measure. Are specially adapted to carrying all kinds of fruits,



produce—peaches, pears, apples, grapefruit, oranges, lemons, lettuce, onions, spinach, peppers, turnips, potatoes or any garden truck. Made in one-half and one bushel sizes. Set up, ready to use.

Farm machinery is the artillery of agriculture. In what condition will your “field pieces” be for the spring drive?

# The House of Rex

The Institution in Spray Manufacturing

*Founded Upon Quality and  
Developed by Experience  
The Right Articles  
The Right Service  
The Right Price*

Write your nearest “REX” Company for prices and service.  
Remember, from them you can obtain a  
“‘REX’ FOR EVERY ILL.”

**Yakima Rex Spray Company, Yakima, Wash.**  
**Wenatchee Rex Spray Company, Wenatchee, Wash.**  
**Payette Valley Rex Spray Company, Ltd., Payette, Idaho**

**Fruit Storage Facilities**

That more apple-storage facilities will be needed this year than ever before is the opinion of local shipping experts. This is due not only to the constantly increasing acreage and yield, but owing to the fact that it is becoming increasingly difficult for the railroads to furnish cars for shipment. The unusual demands for cars, such as the army contentments and shipments to France for our army over there, are displacing the ordinary routes of traffic, and there have been no cars built recently to replace the annual wastage and depreciation. It is reasonable to assume, therefore, that the supply of cars available for use during the rush season will be entirely inadequate to take care of the demand, and the grower who is able to store his crop in his own frost-proof warehouse stands to profit handsomely for his foresight.

The distribution of labor effected by a good storage warehouse is no unimportant item at this time when labor is so scarce. The grower who has a well-ventilated storage house can pick and loose-store his apples from the orchard and pack them later, using the same labor, in many cases supplied by the members of his own family, thus saving in direct expenditure as well.

Hollow interlocking tile seems to be the most popular form of construction for permanent warehouses. It is made of burned clay, is fireproof and will last for generations, while the dead-air spaces within the wall act as a blanket to keep out the cold in winter and the heat in summer. Proper ventilation of an apple-storage warehouse is as essential as proper insulation. Means should be provided by which the warm air can be taken out of the room at the ceiling and fresh cold air brought into the room near the floor line. By this means and with intelligent care the temperature can be regulated and a proper amount of fresh, pure air be always available. It is possible to so ventilate a storage room that there will be no smell of the fruit when entering the room. The practice of leaving large, open attic spaces should be avoided, as

**700 ACRES**

of the highest quality Willamette Valley soil, all in one chunk, is probably worth no more than passing notice. But if you knew that 200 acres was in bearing fruit, 200 more in grain, balance pasture, you might give it a second thought. And if I told you it was not in Southern Oregon, and that there was not an apple tree in the bunch, you might write for further information. This property can be bought and bought right. Ample buildings, equipment and shipping facilities. No curiosity seekers need answer. If you have \$100,000 or more we might get together. Your reply will reach the owner and be treated in confidence.

Address X Y Z, care Better Fruit

**Turn stump land into Money**



Increase your acreage and thereby increase your income.

Clear your stump land cheaply. No expense for teams or powder.

One man with a can outpull 16 horses. Works by leverage—same principle as a jack. 100 lbs. pull on the lever gives a 48-ton pull on the stump. Made of the finest steel—guaranteed against breakage. Endorsed by U. S. Government experts.



Write today for special offer and free booklet on Land Clearing

Works equally well on hillsides and marshes where horses cannot operate

WALTER J. FITZPATRICK  
Box 634 182 Fifth St., San Francisco, Cal.



**Aluminum or Steel National All Sizes and Prices**  
STEAM PRESSURE CANNERS AND COOKERS

The National Aluminum Cooker and Canner—the same as used by County Agents and Home Demonstrators—enables housewives to save by cooking and canning with steam—makes delicious dishes from inexpensive cuts of meat. Easy to operate; nothing to get out of order. The only home cooker and canner having adjustable safety valve for maintaining correct cooking pressure at all times. Send for our Canning Book.

Get this Book FREE



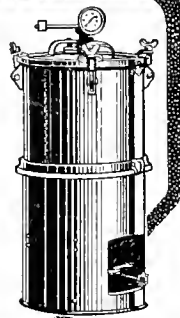
**COLD PACK CANNING**

By the Steam Pressure Method

described in detail. Shows how to can fruits, vegetables and greens easily, quickly and cheaply either for home use or to sell. Tells how housewives can use the National Aluminum Cooker for both cooking and canning; describes larger outfits made of steel for canning in larger quantities.

FREE Valuable Recipe Book—Cold Pack Canning Instructions—Facts you ought to have about National Steam Pressure Cookers and Canners. Write today.

Northwestern Steel & Iron Works, 820 Spring St., Eau Claire, Wis.



\$18 to \$2000 for home or factory

**Power and Mileage**

The full series of high boiling points in "Red Crown" makes power and mileage sure. Look for the Red Crown sign.

STANDARD OIL COMPANY (California)



*The Gasoline of Quality*

it simply provides that much more air space which is very difficult to control. A ceiling at the height of the top of the walls should always be provided.

Regulating the humidity of the air in apple-storage warehouses is a subject which should be given much thought by those having apples in storage. There are those who believe it is nearly as important as the ventilating feature and that humidifiers should be provided in all storage rooms. Where dirt floors are used the same results can often be obtained by soaking the earth thoroughly at proper times.

The time is coming when every grower will have a small, compact, scientifically constructed, frost-proof storage house on his own farm; just the same as the manufacturer of various kinds of foodstuffs has his own storage facilities at the factory and ships from storage rather than from the factory, according to the demands of the market and his own convenience.

Uncle Sam is today the quartermaster of a hungry world. He is playing the game squarely and counts on every American to do the same.



PERFECTION IN  
**FRUIT LABELS**

**THE SIMPSON & DOELLER CO**

1425-24  
NORTHWESTERN BANK BLDG.  
PORTLAND, OREGON.  
**E. SHELLEY MORGAN**  
NORTHWESTERN  
MANAGER

WE CARRY IN PORTLAND,  
STOCK LABELS FOR  
APPLES, PEARS,  
STRAWBERRIES  
& CHERRIES

SEND FOR SAMPLES AND PRICES

## *A Message for Fruit and Vegetable Growers*

We desire to get in touch with Fruit and Vegetable Growers in all parts of the country in order to establish Fruit and Vegetable Drying Plants for single firms that want to build new and up-to-date drying plants for themselves and with two or more Growers that would favor the construction of a drying plant on a co-operative basis.

There are many millions of dollars worth of Fruit and Vegetables left to rotten on the ground and many more millions of dollars are paid in freight rates, tin cans and boxes that can and must be saved. We will invest some of our own capital, if you wish, as we are sure that it is to our mutual benefit, if you write us today for particulars. All information on this subject will be given cheerfully and free of charge. If you are in business for making the best profits write now.

**The A. A. A. Evaporator Manufacturing Co., Inc.**

2371-73 Market Street, San Francisco, California

## **F. W. BALTES AND COMPANY**

### *Printers · Binders*



Unexcelled facilities for the production of Catalogues, Booklets, Stationery, Posters and Advertising Matter. Write us for prices and specifications. Out-of-town orders executed promptly and accurately. We print BETTER FRUIT.

CORNER FIRST AND OAK STREETS  
PORTLAND, OREGON

## American Tractors Go to France

To increase France's crops and to lighten the burden of toil on her old men, women and children, the United States Food Administration will ship 1,500 farm tractors to that country. The first hundred are already on the way, and the whole number will be in France by March, in time for the spring plowing. They are expected not only to be of immense service to France, but to release added tonnage for the Allies and American troops by increasing the amount of food produced there, thus decreasing the amount of food that must be shipped from America.

The idea originated with former American Ambassador to Turkey Henry Morgenthau and his son, Henry Morgenthau, Jr. The Food Administration approved the idea. Deck space was provided for the first shipment of tractors aboard a naval transport through the efforts of Assistant Secretary of the Navy Franklin Roosevelt and Paymaster-General McGowan. The Food Administrator designated Henry Morgenthau, Jr., to follow the machines to France and put them in operation. He will organize schools of instruction for French operators and will assist the French Minister of Agriculture in distributing the tractors and operating them economically.

French High Commissioner M. Tardieu approved the idea on behalf of the French government and a committee of the National Implement & Vehicle Association assured Mr. Morgenthau that the tractors can be furnished, and that with the shipments made now the manufacturers will not be embarrassed in taking care of the American farmer, since they will have time to manufacture an additional number to meet the home demand when it comes. The need for these tractors is shown by this comparison of the present and pre-war acreage of crops in France:

The acreage sown to crops in the uninvaded portion of France in 1917 was 30,742,157 acres, compared with 40,657,293 acres in 1913. This is a decrease of 9,915,136 acres, or 24.4 per cent.

The total crop production in France this year is officially given as 22,200,000 metric tons (24,581,290 short tons), compared with 35,800,000 metric tons (39,462,340 short tons) in 1913, a decrease of 13,600,000 metric tons (14,881,050 short tons), or 61.3 per cent, or a decrease of 38.7 per cent.

The following figures give an idea of why it is good tactics to send tractors to France now, and tractors can plow 500,000 acres this spring and another million acres for planting fall wheat. Half a million acres in potatoes would produce 1,500,000 tons of potatoes. One million acres in fall wheat would produce 450,000 tons of wheat. This increased production in France would greatly relieve the food situation in that country, leaving, moreover, 1,950,000 tons of shipping in 1918 available for other purposes.—U. S. Food Administration.

## Northwestern Boxed Apples, Etc

Continued from page 6.

for "co-operation" and "co-ordination." These two points, coupled with intelligent efforts and right motives, are vital to the success of any large undertaking.

Nothing but praise should be bestowed upon the advertising and educational work being done by the Northwestern Fruit Exchange, the Hood River Apple Growers' Association and the Yakima Valley Fruit Growers' Association. Much good has come from this work. It is constructive. They have been the pioneers and deserve unstinted praise, but comparisons oftentimes bring out a point, and the advertising efforts of the Northwestern fruit growers up to date can well be compared with our trying to whip the German army armed with pea-shooters. We have got to get out of the pea-shooter class and we have got to arm ourselves with the greatest weapon known to the modern business world; that is, education, commonly known as advertising.

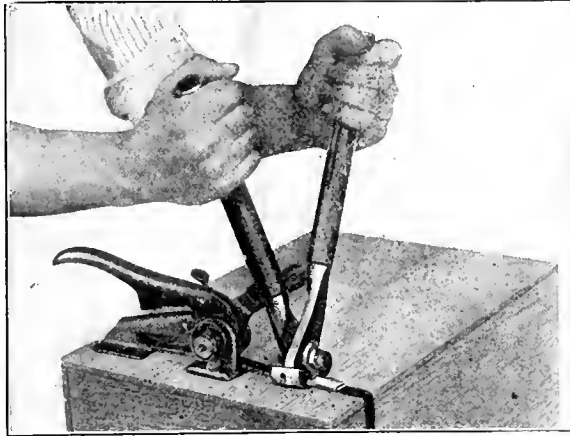
Just stop and think for a moment what the fruit by-products people are doing in the Northwest. They are making more money out of the discarded fruit that we are unable to sell to the trade than the grower is out of his first-class products, and why? Simply because they are using the methods we have not—advertising, educating the people to know the value of their product. Why should we stand still and allow our more progressive brother to outstrip us? We must awaken and see conditions as they exist and not as we wish them to be. Simply because Adam was supposed to be the first apple dealer is no reason why we should follow along methods that he advocated, and this is more especially true at this time than at any time during the history of our business.

When this war is settled, as it must be some day, we are going to find ourselves surrounded by new conditions; conditions which we did not make, but conditions that we must adapt ourselves to if we would take our proper place in the business world. Let us not deceive ourselves any longer. One of our greatest mistakes is in being content with an unsuccessful business and dallying along from year to year. The Northwestern apple business is conducted in most part as if this was our last season. We lack stability of purpose. We fail to grasp the wonderful possibilities lying at our door. We are hoping that "something will turn up" to help us out, but that is a mistaken notion. Things don't just happen. Permanent success will come only through patient endeavor, untiring and intelligent efforts, coupled with a steadfast purpose. We must adopt a definite, well-defined, broad-gauge plan and then carry it through. Let us not hang onto a non-productive business, but let us get behind it and make of it what we are entitled to.

Our points of perfection appear in about the following order, allowing 100 per cent as standard: Growing, packing and warehousing, 65 per cent; transportation, 75 per cent; distribu-



## Steel Box Strapping



Used in connection with metal seals consists of encircling a package with a metal strap, drawing the strap very tight and interlocking the overlapping strap-ends within a metal sleeve (**SIGNODE**) in such a manner that the joint has a greater tensile strength than the strap itself. Nails, rivets and buckles, with their attendant objections, are entirely eliminated.

*Write for Catalog*

Acme Strapping packed in bbls. of about 500 lbs. or larger pkgs.  
Metal Seals packed in cartons containing 2,000-2,500 seals.

### ACME STEEL GOODS CO. MFRS.

Factory: 2840 Archer Ave., Chicago

311 California St., San Francisco

Stock carried in Seattle and San Francisco



**COOK  
WITH  
PEARL  
OIL**

A New Perfection Oil Cook Stove means kitchen comfort and convenience. Ask your friend who has one. Used in 3,000,000 homes. Inexpensive, easy to operate. See them at your dealer's today.

## Kitchen Comfort

No matter how hot it is outside, your kitchen is always cool and comfortable when you use a New Perfection Oil Cook Stove.

Steady heat concentrated on the cooking. No smoke or odor; no dust or dirt. Lights at the touch of a match and heats in a jiffy. Bakes, broils, roasts, toasts—all the year round. Economical. All the convenience of gas.

In 1, 2, 3 and 4 burner sizes, with or without ovens or cabinets.  
Ask your dealer today.

**STANDARD OIL COMPANY**  
(California)

## NEW PERFECTION OIL COOK STOVE



## "The store where I do my trading"

**T**HROUGHOUT the West—go where you may—big town, small town, cross-roads store—there you will find Ghirardelli's.

This West-wide distribution has been made necessary *by demand*—a demand for a delicious, sustaining food-beverage; a demand that is met by Ghirardelli's, and by this alone.

Result? Today Ghirardelli's Ground Chocolate is in daily use in more homes in the West than all other brands combined.

As a beverage it is beneficial; as an aid in baking and cooking it is invaluable.

Be sure to ask for it—at "the store where you do your trading."

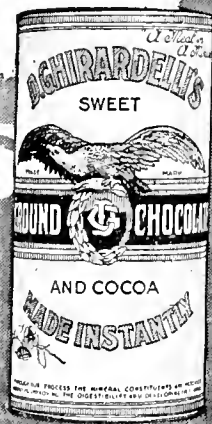
*In ½ lb., 1 lb. and 3 lb. cans; a  
tablespoonful—one cent's worth—  
makes a cup.*

D. GHIRARDELLI CO.

Since 1852

San Francisco

# Ghirardelli's Ground Chocolate



tion, 50 per cent; selling, 60 per cent; advertising, 2 per cent, which shows an unbalanced, top-heavy structure.

We should avoid starting the season with prices so excessively high that they must decline and show the dealer a loss. We should practice free selling early in the season, always remembering that the purchaser who buys and makes a fair profit comes back for more. Allowing that we have 15,000 cars of late-keeping varieties, we are doing the industry an injury in selling the first thousand cars at high prices and the balance on a declining market. We should reverse the situation, carefully feel our way step by step and start where we can advance the market and work on an advancing market.

We should begin right now to launch a well-balanced advertising or educational campaign. No single organiza-

tion or district can do this by itself. It must be done collectively, and it can be done because, as I have said earlier, the problem is before us and we must solve it. None but a coward would shrink from it. A sum sufficient to properly carry through an advertising campaign to a successful result can be collected, wisely and honestly used. In taking this great forward step this coming season, a board of governing trustees should be formed to be composed of one trustee from each participating district, each man to be of the character and quality that will inspire perfect confidence, and this board to select a qualified man to handle the campaign from the best located Eastern point. This is not to be done for one season, but for every season, increasing the appropriation each year.

You have probably been asking yourself a number of times in reading this article what salt mackerel has to do with apples. In one sense it may have nothing; in another sense a great deal. We have all known about salt mackerel ever since we can remember about anything and on the face of it it would seem sheerest folly to an intelligent American business man to advertise it, but it is being done on a very large scale in the East. No name is signed to the advertisement. It simply opens the way for people to purchase and use more of this food.

I recently made inquiry at one of the large wholesale fish houses as to who was paying for this advertising campaign. The reply was, the wholesale dealer and producer of salt mackerel. I further inquired if satisfactory results were being obtained and the answer came back, they certainly were. Now, salt mackerel is not an article governed by weather or other conditions that surround the production of apples, but the mackerel people saw that if they could educate the people to use more salt mackerel they could keep larger fishing fleets employed, keep their packing houses running to capacity and their selling force as well.

If advertising (educating) will put the salt mackerel business on a paying basis, there is yet hope for the Northwestern apple grower if action is taken instead of living in hope.

### Mark Twain Would Have Bought Them

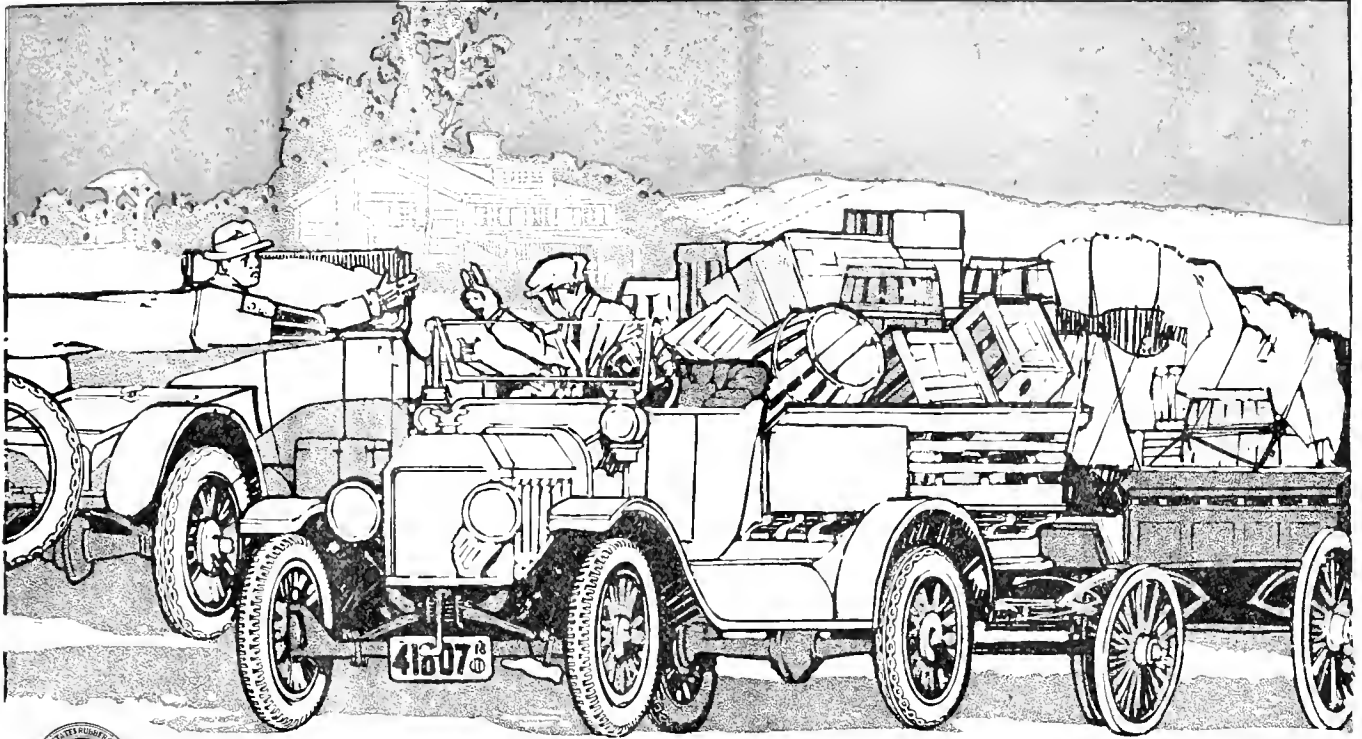
Were the lovable Mark Twain alive today, he would doubtless be in the first-line trenches of the home re-trenchers, for Mark was thrifty and the government's Thrift Stamps and War Savings Stamps offer would have appealed to him mightily. Mark Twain had many financial reverses in his lifetime, largely because of bad investments, but his thrift and happy disposition pulled him out of the box every time, and he squared up with the world and accumulated a "stake" before he passed on "over there" to make heaven the happier for his coming.

Talking one day to his friend, William Dean Howells on the vicissitudes of the humorist's earlier days, Mark Twain said: "My difficulties taught me some thrift, but I never knew whether it was wiser to spend my last nickel for a cigar to smoke or for an apple to devour." "I am astounded," replied Mr. Howells, "that a person of so little decision should meet with so much worldly success." Mark nodded wisely. "Indecision about spending money," he said, "is worthy of cultivation. When I couldn't decide what to buy with my last nickel I kept it, and so became rich." So Mark Twain, because of his love of country and his thrifty nature, would have been a generous purchaser of Uncle Sam's Thrift Stamps.

Thrift and War Savings Stamps and Liberty Bonds are the answer. Are you answering?

To make you grange meetings and farmers' institutes thoroughly patriotic, heat the hall with wood instead of coal.





## Linking Farm and Market

Transportation is an increasingly vital factor in the farming industry.

As farm crops become more diversified, the markets must be studied more carefully and reached more quickly.

Profitable farming has found a wonderful aid in motor transportation.

Power-driven vehicles on rubber tires have greatly widened the possible market that can be reached from any given point.

They have made timely marketing possible, enabling the grower to take advantage of price changes.

They have cut to a minimum the time used. What was formerly an all-day trip now requires but a couple of hours and leaves the horses at their work on the farm.

Using motor vehicles for business reasons, it is important that you treat their equipment in business fashion.

Buy tires on the principle that long and continuous service is the first requirement.

In this year of war, your time and efforts are more important than ever before. You need your car more. Your tires must be dependable.

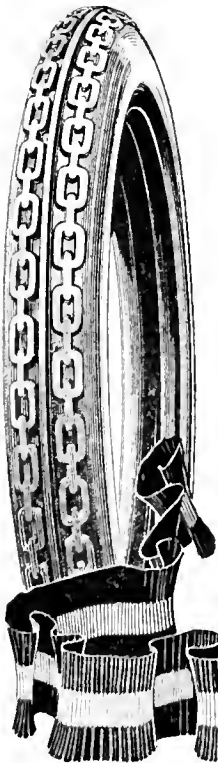
Equip with United States Tires.

Use them for the same reason they are chosen by big commercial companies having large fleets of cars—because they give greater mileage per dollar of cost and permit maximum service from the car.

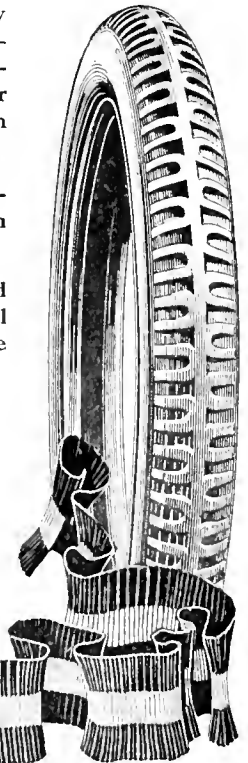
There is a United States Tire scientifically built to meet every condition of service.

One of the thousands of United States Sales and Service Depots will cheerfully aid you in selecting the right type and tread.

'Chain'



'Usco'



## United States Tires are Good Tires

*For commercial cars the Solid Truck Tire and the 'Nobby Cord.' Also Tires for Motorcycles, Bicycles and Airplanes.*

*United States Tubes and Tire Accessories Have All the Sterling Worth and Wear that Make United States Tires Supreme.*

*The World*

*Our Orchard*

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# PRIVATE SALE vs. AUCTION

Experience has demonstrated clearly the manifold advantages of sale by private treaty, which method is now acknowledged on all sides to show more satisfactory results than the auction.

Assuming that you are anxious to dispose of your fruit in the best possible manner and to the best possible advantage we, as **PRIVATE SALESMEN**, have no hesitancy in laying our claim before you.

Whether you prefer to sell your fruit on an outright f.o.b. basis or prefer to have it handled for your own account on a consignment basis, both of which methods are entirely agreeable to us, the fact remains that the firm of

## Steinhardt & Kelly

**101 PARK PLACE  
NEW YORK**

is in position to give you the best possible service. Our reputation of  
“Never Having Turned Down A Car”  
although practically 90% of our business is done on an outright purchase basis, is a record of which we feel deservedly proud.

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*Our Market*

*The World*





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